



## **Foreword from the Executive Director**

Jullay!

As the Ladakh Ecological Development Group (LEDeG) steps into its 25<sup>th</sup> year of existence, it is with pleasure that I bring to you the Annual Report for 2006-2008. This report tries to condense the broad activities of all the projects in the past three years.

The Nobel Peace Prize of 2007 awarded to Al Gore and the Intergovernmental Panel on Climate Change has irrefutably brought the state of the Environment into the forefront as one of the basic concerns for years to come. In this perspective, the work and mission of LEDeG, that is, to promote “Social, cultural and ecologically... sustainable development” appears truly visionary. Since its interventions, LEDeG has strived to promote the livelihoods of rural local Ladakhi communities while cherishing the ideal that our ecology must be at the heart of all our endeavours.

The realisation that the Environment is our global commons and that it needs united stewardship has come not a day sooner. While governments attempt to create international mechanisms to combat global climate change, it needs to be kept in mind that the partnership of grassroots level NGOs like LEDeG is crucial in the quest for sustainable development.

At this point, I, on behalf of the organisation, would like to thank our funding agencies – BORDA, GERES, ICEF, and SRTT – for recognising our efforts and supporting us wholeheartedly.

I also take this opportunity to thank our staff for all the hard work they have put in these last three years. I also thank all our volunteers, for their help to compile this report.

Warmly,

Dr. Tondup Tsering  
Executive Director  
Ladakh Ecological Development Group.



## About LEDeG

Ladakh Ecological Development Group (LEDeG) was formed in 1978 by likeminded people through the 'Ladakh Project'. Later, it was registered under the Societies Registration Act VI in the Indian State of Jammu & Kashmir in 1983. Since then, LEDeG has been working as a Non-Government Organization, mainly in the fields of appropriate technologies using renewable energies, preservation of local Ladakhi culture, agricultural, food-processing and handicrafts practices.

## Our Vision

**“To Promote Ecological and Sustainable Development that harmonizes with and builds on the local Traditions & Cultures of Ladakh”.**

## Our Mission Statement

To promote Ecological and Sustainable Development of Ladakh mainly focussing on appropriate technologies using renewable energies, preservation and enhancement of local culture, traditions and religion of the region, dissemination and implementation of local agricultural practices of Ladakh, encouraging and empowering rural women with income generation activities and actively carrying out awareness programmes about environment, culture and development in the region.

## Our Aims and Objectives

- To create an awareness among the local people about long-term impacts of development.
- To spread awareness among the Ladakhi people about conservation of the environment and traditional culture in Ladakh's development.
- To encourage the use of perpetually renewable natural resources in Ladakh.
- To test and demonstrate low-cost technologies which make use of such perpetually renewable natural resources.
- To provide financial assistance for appropriate community based development projects.
- To raise funds for the achievement of the above objectives through donations, grants, collections etc. and through the carrying on of any business this may help to promote the above objectives.



### ***Infrastructure at LEDeG***

LEDeG has its main head administrative office in Karzoo, Leh town for both districts of Leh and Kargil. It also has sub-administrative and monitoring offices in Kargil and Zaskar for all the projects that are being implemented in these regions. The main head-office has a well equipped library, an exhibition hall, a conference hall, Aditya solar shop and a craft shop. LEDeG also has a demonstration campus consisting of a fully equipped workshop, store-house, agriculture-testing centre, a plantation of apricot trees, a greenhouse where vegetables are grown in the summer, a solar passive Trombe-technology hostel and guest house for trainees and guests, approximately two kilometres from the head office. This campus is fully run on solar energy for electricity and water heating. The group also runs a Rural Building Centre near Choglamsar, on the outskirts of Leh.

### ***Governance and Staff at LEDeG***

LEDeG has 39 full-time employees who tend to the general administration and implementation of various projects. In turn, employees report to a Working Committee of eight members through an appointed Director. The Working Committee fulfils the managerial responsibility of LEDeG's projects. The Working Committee is elected by a General Body comprising of 100 members. Each year, the organisation has several national and international volunteers who get involved in various ongoing projects in Leh, satisfying the organisation's need for staff.



## ***Members of the Working Committee***

### **Rev. Thupstan Paldan: President, LEDeG**

A renowned scholar of Ladakh, he has to his credit several years of dedicated service in the Cultural Academy and has also authored a number of publications and articles in the same field.

### **Mr. A. Azim: Vice President, LEDeG**

A retired IAS officer, he served as a District Magistrate and Development Commissioner in Ladakh region. He has been actively involved in various activities in the field of Rural Development.

### **Mr. Tsewang Rigzen**

The Ex. Executive Director of LEDeG, he served as revenue officer to J&K Government for about 35 years. He has been strongly involved with LEDeG's organic farming initiative.

### **Dr. Tsering Norboo**

The first surgeon from Ladakh region has been serving the local community for several years now. His services have been recognized all over the region and he has been conferred several National and International awards.

### **Mr. Tsewang Dorjey**

An expert in Agriculture Sciences, he is currently working with the J&K Government as the District Agriculture Officer. He has been instrumental in banning use of pesticides in the region and has been promoting organic farming in Ladakh.

### **Ms. Sarla Tsewang**

A member of the Royal Family of Ladakh, she has served the society for number of years in various capacities. She has been associated with LEDeG for several years and is presently the President of Mahilla Mandal.

### **Ms. Tashi Yanskit**

One of the first women graduates in the region, she is a reputed educationist and has been extensively working for the Education department, J&K Government for over three decades now.

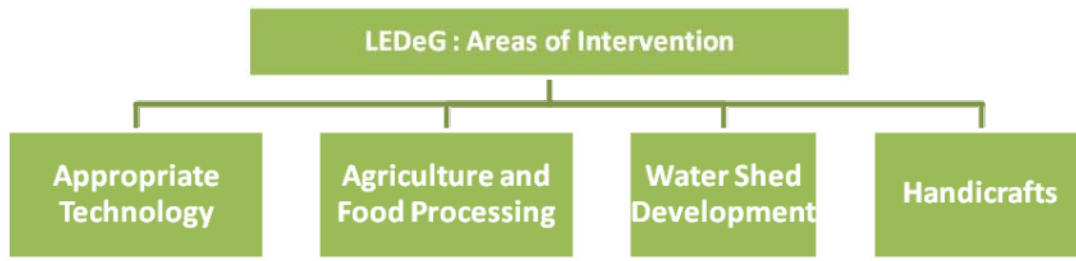
### **Ms. Tsering Angmo**

A Government school teacher and a well known organic farmer, she has represented Ladakh at several cultural and farmer's exchange programmes, both at the national and international level.



## *LEDeG's major areas of intervention*

LEDeG's major areas of intervention touch every aspect of daily life of the people of the Ladakh region. The flowchart below shows the major categories of areas of intervention.



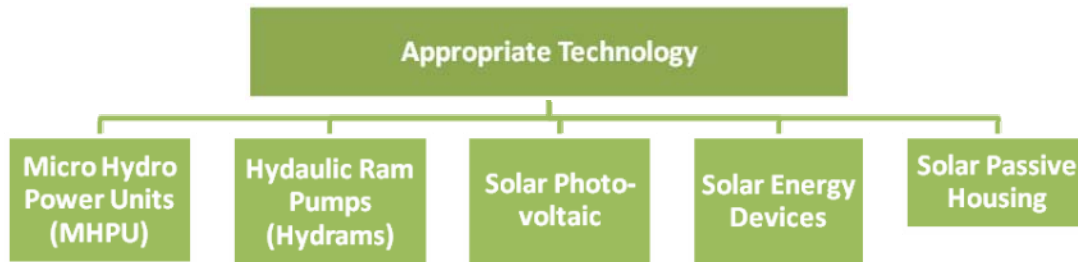
### *1. Appropriate Technology*

The isolation and remoteness of the Ladakh Region makes centralised energy distribution models, neither feasible nor viable. Extreme weather conditions with a prolonged winter season, when temperature falls below zero degree Celsius, remoteness and a crucial scarcity of natural sources of energy like “fuel wood” renders life difficult in the region. Therefore, it is not at all difficult to understand the importance of a daily energy need for the Ladakhi people. Various programs of government agencies for the provision of clean energy sources like electricity and natural gas have not reached majority of Ladakhi people, which has, hence, deprived remote villages of basic need facilities.

This is the prime reason which led LEDeG to bring in intervention which aimed at providing a platform for Community Based Services (CBS), so that the Basic Need Services (BNS) could be facilitated. The first step towards this aim was to encourage a decentralised model of energy production and distribution, using local renewable resources. These are mainly sunlight and water resources which are found abundantly in the region.

LEDeG has worked on a wide variety of appropriate technologies by carrying out adaptive research and feasibility studies vis-à-vis local conditions, needs and requirements. Presently, LEDeG has in-house expertise in propagation of various appropriate technologies, such as Micro Hydroelectric Power Units, solar water-heating systems, Trombe wall technology, solar ovens, solar parabolic reflector cookers (both, for individual families and communities), hydraulic ram pumps, improved water mills and solar photovoltaic lanterns and house hold units. The main emphasis of LEDeG is on the ‘Decentralisation of Energy and Water Supplies’ (DEWAS) which fits the requirements and needs in the socio-cultural and geographic context of Ladakh.





➤ *Micro Hydro Power Units*

A Micro Hydro Power Unit (MHPU) is a simple technology used to generate electricity using water from the available streams fed by the melting snow. The technology is very feasible to use in Ladakh where almost all the villages and hamlets are situated near such water streams. The capacity of MHPUs installed by LEDeG varies from 5kW to 30kW, which depends on the minimum power requirements of the consumers and the potential of the source. LEDeG, in cooperation with Dan Church Aid (DCA), Denmark, and Bremen Overseas Research and Development Association (BORDA), Germany, have installed more than 56 MHPUs in the remote villages of Ladakh since 1989.



**MHPU**



**MHPU shed**

LEDeG has been successful in installing 62 MHPUs (5kW- 15kW) providing electricity to the remote corners of Ladakh.



### Advantages of Micro Hydro Power Units in Mountains

- Dependence on centralised electric distribution significantly reduced
- Small project size ensures less hazard to environment
- No need to construct big dam sites and resultant relocation of people
- Minimal maintenance required, therefore, less dependence on external technicians
- Locally available resources optimally used
- Community mobilized and sensitized for income generation activities

#### ➤ *Hydraulic Ram Pumps (Hydrams)*

A Hydraulic Ram Pump (Hydam) is an automatic pumping device which uses the pressure from the fall of water in-order to lift the water to a greater height. It does not require any of the conventional energy sources such as electricity or fossil fuel for its operation. With the cooperation of BORDA, LEDeG has implemented 63 hydraulic ram pump projects in Ladakh from 1993 till date.

### What is Hydraulic Ram Pump?

A Hydraulic Ram Pump, popularly known as a Hydam, is an automatic pumping device to lift the water to greater heights mainly to irrigate agriculture lands or for drinking purpose.



**Hydraulic Water Pump**



➤ *Solar Photovoltaic (SPV)*

The abundant sunshine in Ladakh makes Solar Photovoltaic Energy (SPV) Production highly feasible for the region. LEDeG expertises in using renewable and energy efficient technologies like solar and hydro power. The prime focus of LEDeG is to tap such renewable resources and utilize them by using appropriate technology in a suitable manner to promote and prioritize conservation of the fragile environment.

LEDeG in collaboration with India Canada Environment Facility (ICEF), Ministry of New and Renewable Energy (MNRE), Ladakh Autonomous Hill Development Council (LAHDC) and people of Durbuk block has installed a 4X25 kWp solar photovoltaic power plant at Tangtse in Durbuk block in Leh District, which has completely replaced the existing Diesel Generator (DG) set. This intervention has saved an average annual consumption of 48,200 litres of diesel and ended air pollution in the pristine and extremely fragile environment of the region. This SPV plant is now managed by local people through a cooperative society known as Renewable Energy Development Cooperative Limited (REDCO).

LEDeG has also installed smaller SPV power plants at the Lingshed School and also at LEDeG's offices at Karzoo and residential campus in Ribook Centre.

➤ *Solar Energy Devices*

- *Solar Water Pumping Systems*

In the mountainous region of Ladakh, the most challenging task for any developmental agency is to provide water for domestic, industrial and irrigation use and to ensure sustainable drinking water supply to communities living in the most vulnerable patches. In remote villages, drinking water is generally fetched manually by the women who walk long distances on a rugged terrain adding to their misery. On the other hand, use of motorized diesel consuming machines for supplying drinking water increases air pollution.



**Solar Water Pump**

LEDeG, therefore, encourages the use of submersible and surface type solar pumping systems. In the case of submersible solar pumping systems, ground water can be extracted without the use of conventional sources of energy and in surface type water pumps, water can be raised against the gravitational gradient, using motorised pumps run by solar energy. Five of each type of solar pumping systems, were installed by LEDeG in Durbuk block of Leh district for community drinking-water purposes.



- *Solar Cookers and other Devices*

Since its inception, LEDeG has been promoting the use of solar cookers, all across Ladakh. Two types of solar cookers, namely the Parabolic Dish Type and the Box Type solar cookers, have been disseminated by LEDeG. Parabolic solar cookers have been found to be efficient and convenient as compared to conventional box type cookers. A study has also indicated that a solar cooker can save wood equivalent up to two trees of 10 years of age.

From the year 2003 onwards, conscious efforts were made by LEDeG to promote solar cookers in fuel scarce regions of Ladakh, targeting the Changthang region of Durbuk block. As of now, 300 parabolic solar cookers and 80 box type solar cookers have been distributed in the remote villages of Durbuk block. In June 2007, another 420 box type solar cookers were distributed among the most needy and deserving in the region.

LEDeG has been providing house-holds in remote villages with solar home-lighting system which provides electricity in the evening. Till date, we have distributed over 1015 solar home-lighting systems and 1420 solar lanterns in Ladakh under the MNRE's programme.

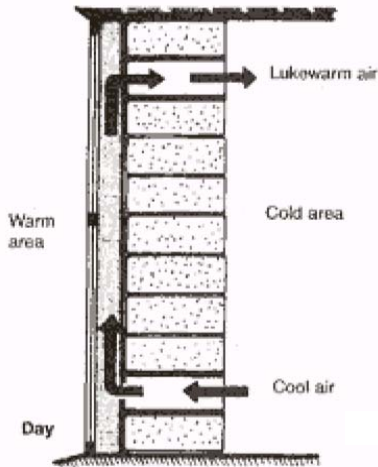
**Other solar technologies include:**

- Solar Fruit Dryers
- Solar parabolic cookers (SK-10, SK-14 and Scheffler)
- Solar water heaters (evacuated type).

➤ *Solar Passive Housing*

In Ladakh region, with the temperature dropping down to -25 to -30 Degree Celsius in winter, room heating, primarily in the evening and early morning, is not a choice but a matter of need for survival. The conventional method of room heating is use of the kitchen stove and Chullah (stove) fuelled with dung, wood and kerosene. LEDeG has been trying to address the problem of space heating through the use of solar energy. The Trombe wall technology is an extremely simple technology built on the principle of passive solar gain and minimisation of heat loss through various designs and insulation techniques.





**A section through typical Trombe Wall**

**A Trombe Wall for solar passive heating**

In 1984, in collaboration with the Ladakh project, LEDeG installed 75 solar retrofitted houses. A Trombe house can reduce reliance on heating fuels by about two-third, besides reducing indoor air pollution and health hazards. Under the project titled 'Integrated Development of Durbuk Block Using Renewable Energy Resources', LEDeG retrofitted 135 houses with Trombe wall in Durbuk block of Leh district.

#### *Aditya Solar Shop and Service Centre:-*

Aditya solar shop, promoted by the Ministry of Non-Conventional Energy Sources (MNRE), was established in the year 2001 at LEDeG's Karzoo centre. The shop is a showroom cum sale centre for various non-conventional energy and energy efficient devices, particularly solar based devices such as Home Light Systems, Solar Photovoltaic (SPV) modules, Parabolic Solar Cookers (SK10 and SK14), LED Torches, Batteries, Components and Spare Parts. The shop also provides a servicing facility for various solar devices.

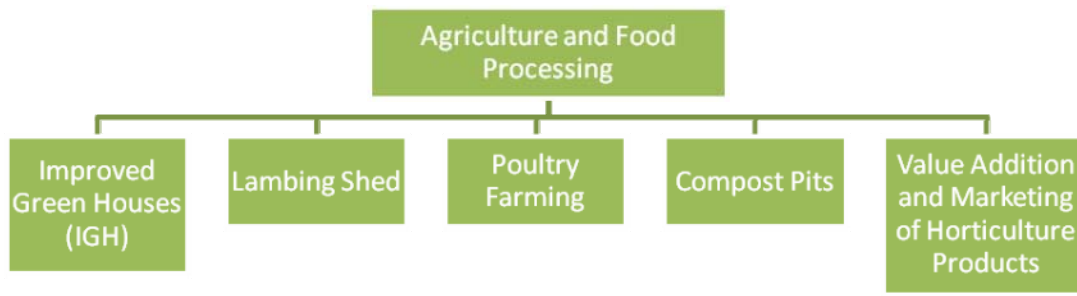
A sustained subsidy support, made available by the central and state government for the past few years, has made LEDeG's Aditya solar shop a big success. However, due to the withdrawal of the subsidy in the current financial year, the sales from the shop have been modest. Nonetheless, the centre is committed to providing sustained technical, servicing and maintenance support for the growth of non-renewable sources of energy in Ladakh.



## 2. Agriculture and Food Processing

Ladakhi agriculture is primarily subsistent in nature but unique and representative of the Tibetan plateau farming system. Until recently, Ladakhis grew and consumed their own grains, cereals and vegetables, prepared their own manure, seeds and other agricultural inputs, reared their own animals and prepared their own farms in an integrated and balanced manner as a response to Ladakh's agro-climatic conditions.

However, low cropping intensity, less productivity and a short agriculture season has resulted in the dependence of its growing population on import of food grains, vegetables and spices. Besides, as Ladakh opens to the world, its traditional agricultural system and crops face severe disruptions. Agriculture has now taken a back seat to the rapid growth of tourism in the region. Nonetheless, there is a huge potential for agriculture in Ladakh, despite its high altitude and arid climate. Ladakh grows niche crops, both agricultural and horticultural, which with an appropriate value added and proper marketing can herald a green revolution of its own sort in this region. Focusing on vegetable production in winters and using cost effective technologies, so as to tap the local market in the prolonged winter season can prove to be very beneficial to local farmers.



LEDeG has committed itself to promote advanced agricultural techniques, based on traditional methods of agriculture, for achieving agricultural self sufficiency of the region of Ladakh, for over two and a half decades now. LEDeG has achieved, through all its years of experience, a level of expertise in the following:

- Diversification of Ladakh's agricultural base, so as to minimise the risk of a single crop failure.
- Introduction and domestication of high yielding crop varieties.
- Motivating and supporting farmers to adopt the appropriate technologies so as to increase production.
- Promoting the horticultural sector in the region.
- Value addition and marketing of agricultural products.
- Organic farming and seed production.
- Dissemination of technical knowledge of agricultural extension through trainings, workshops and meetings.





➤ *Improved Green Houses (IGH)*

Improved Green Houses are constructed to help small-scale marginalized farmers, who are dependent on agriculture as their sole livelihood. They are primarily used in the winter months to grow vegetables when vegetables cannot be grown in the open and supply of fresh vegetables from the Indian plains is difficult due to the heavy snowfall which makes road access impossible.



A cost-effective design is being propagated using new techniques so that it is suitable to the area. The design also takes into account proper ventilation and orientation. The Improved Green Houses (IGH) are primarily constructed out of readily available local materials, such as stone, brick and wood. They use solar energy to grow vegetable all year round, even in the peak of winter. The green house consists of a double wall filled with straw which acts like insulation on the three sides. The south-facing side is covered with a transparent, UV resistant poly-sheet for maximum infiltration of sunlight. The roof is made of local wood.

➤ *Lambing Shed*

During winters, when the temperatures are negative and fodder availability is limited, sheep and goat mortality rate, particularly of new born lambs and kids, is very high. This results in the reduction of livestock. One of the primary reasons for such loss is the traditional practice of keeping animals in the open where they are subjected to the extreme and harsh climatic conditions.

To tackle the above mentioned difficulties, LEDeG has started the construction of Solar Lambing Sheds in collaboration with individuals of the Changthang area, who



follow a nomadic or semi-nomadic lifestyle. It was observed that the mortality rate has considerably decreased and livestock rearing has improved since.

### ➤ *Poultry Farming*

The problem of transporting chicken and eggs arises in the winter months when heavy snowfall does not allow access by road. Heating poultry farms during the winter months cannot be done with fuel wood as it is not available and fossil fuels are expensive and polluting.



In order to overcome these problems, solar poultry farms are being built, using passive solar heating techniques. The solar poultry sheds have the same design and principles of the trombe technology. Each room has a large glass window and side ventilation. A green house covers the south side to warm the rooms making the conditions more conducive for the chicks.

### ➤ *Compost Pits*

LEDeG's Agriculture team has been actively involved in promoting the use of organic manures and bio-fertilisers in Ladakh to avoid the over usage of chemical fertilisers, which is both detrimental to environment as well as unhealthy. Also, increase in the cost of production has led the agriculture team to promote the use of locally available biomass in the form of organic manure which has been suitable for a region like Ladakh. The group has also been encouraging the use of non-conventional sources of energy for heating and cooking, diverting cow-dung and agricultural waste from village hearths to village fields. This is an area that needs immediate intervention which LEDeG took as an integrative development approach.

In the year 2006-07, seven advanced farmers were involved in the construction of compost pits in different villages of the Leh district. It is assumed that other farmers will employ the use of locally available biomass for fertilising their agricultural fields in the near future realising the benefits through the experience of others.



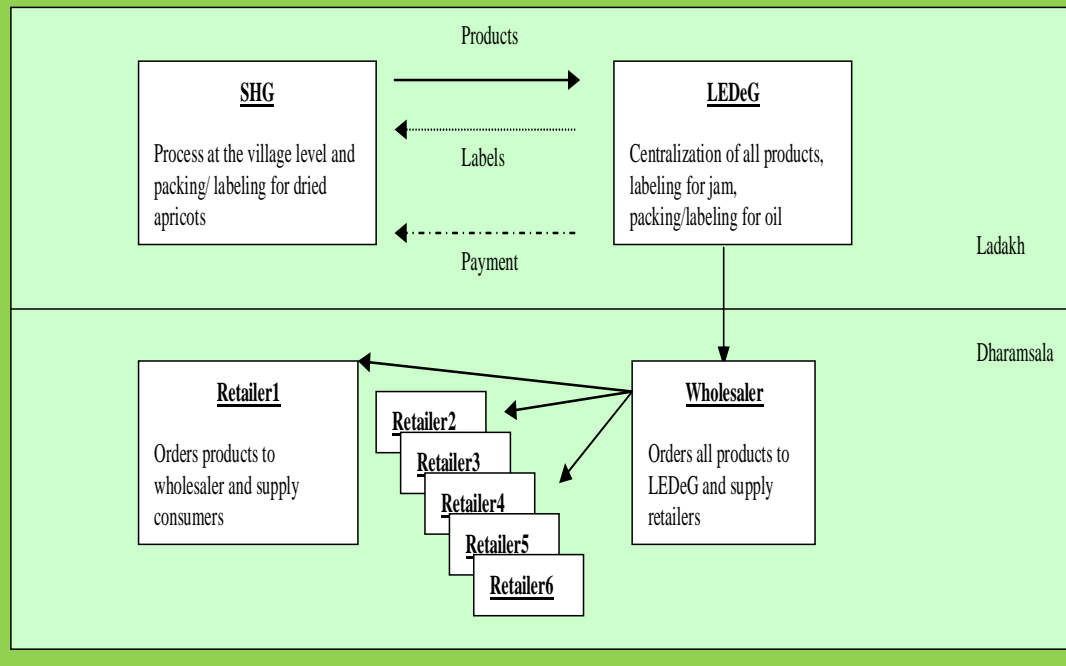
➤ *Value Addition and Marketing of Horticultural Products*

Ladakh, being a unique agro-climatic region of the world, bears a huge potential for niche crop production. However, the traditional agricultural practices have barely generated any surplus for the communities and rarely fulfil the complete food requirements of the people. Therefore, there was a need to explore avenues of income generation through value addition and fresh marketing networks. There was also a need to create a distinct Ladakhi brand of horticultural produce.

### Fruit Processing and Marketing at LEDeG

A fruit processing unit has been established at the Ribook centre of LEDeG at Leh. The raw material procured from the various SHGs is processed using scientific machinery, packaged in glass bottles and attractively labelled. Processing of apricots to make jams and jellies is also carried out at the village level by SHGs. Training, for various types of fruit processing, is conducted by LEDeG's Agriculture Team for SHGs as well.

Presently, the processed products of Apricot and Sea-Buckthorn are marketed in Leh and Dharmshala (H.P) markets through a distribution channel, comprising of SHGs, LEDeG, Wholesalers and Retailers directly.



Presently, two horticultural crops namely Apricot and Sea-Buckthorn (wild as well as cultivated) are marketed through conventional marketing channels where growers are exploited to a greater extent. LEDeG's Agriculture Team, therefore, has been engaged in value addition of these two crops at the SHG level, by making jam, jelly and juices followed by improved packaging and marketing. Additionally, Natural Halman, Sulphurised Halman, Osmotic Apricot and Apricot Oil are some of the other products produced by women SHGs and marketed by LEDeG.

### 3. Watershed Developments

#### ➤ *Watershed Management Programmes*

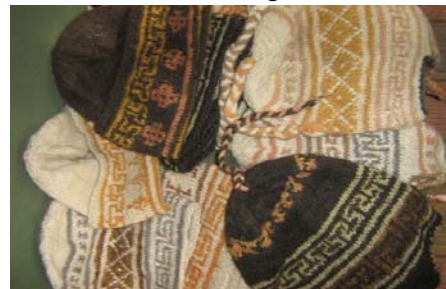
Watershed management models have been declared to be a pragmatic solution to sustain integrated and holistic developments in mountainous regions of the world. The natural systems of mountains are heavily interconnected as well as fragile, and an unplanned intervention seldom leads to desired outcomes. Therefore, developmental programmes focusing on individual watersheds, mainly on its physical, biological and social components and utilising decentralisation processes, have been LEDeG watershed development team's main approach.

LEDeG has been associated with the government for the implementation of watershed programmes from 1993 onwards and has worked in 12 villages of Nyoma block of Leh district. Promoting overall development of the villages and conserving their natural resources has been LEDeG's priority.

From 1999-2005, LEDeG developed 149 hectare (2980 Canals) of waste land and planted 2,00,200 saplings of endangered species in the 12 watershed villages of Nyoma.

### 4. Handicrafts

Ladakh has been a land of distinct and unique culture and tradition since long. It's peculiar geographical location, diverse climatic conditions and more or less isolated way of life has nurtured and preserved different kind of local arts as per need base. This is reflected in its artefacts, costumes, folk-songs and dances. The introduction of relatively effortless ways of producing the artefacts has caused the local traditions to ebb. Nonetheless, the tourist influx has helped sustain the growth of the traditional Ladakhi handicraft sector to a great extent. In consideration of both, the opportunities and threats that tourism poses, LEDeG felt that





handicraft is a potential area of intervention, for revival of the handicraft sector in Ladakh. This was to be done by adopting participatory approaches in collaboration with the community, especially with the Self-Help Groups (SHG).

**Through its handicraft intervention, LEDeG strives to:**

- (i) Preserve the cultural heritage of Ladakh and the Ladakhi people through popularising their art and artefacts.
- (ii) Utilise the local resources through value addition and inclusion of appropriate and cost effective technologies.
- (iii) Provide a dedicated marketing infrastructure and logistic support for handicrafts manufactured.
- (iv) Generate sustainable and alternate sources of livelihood to its people.
- (v) Strengthen community based institutions.

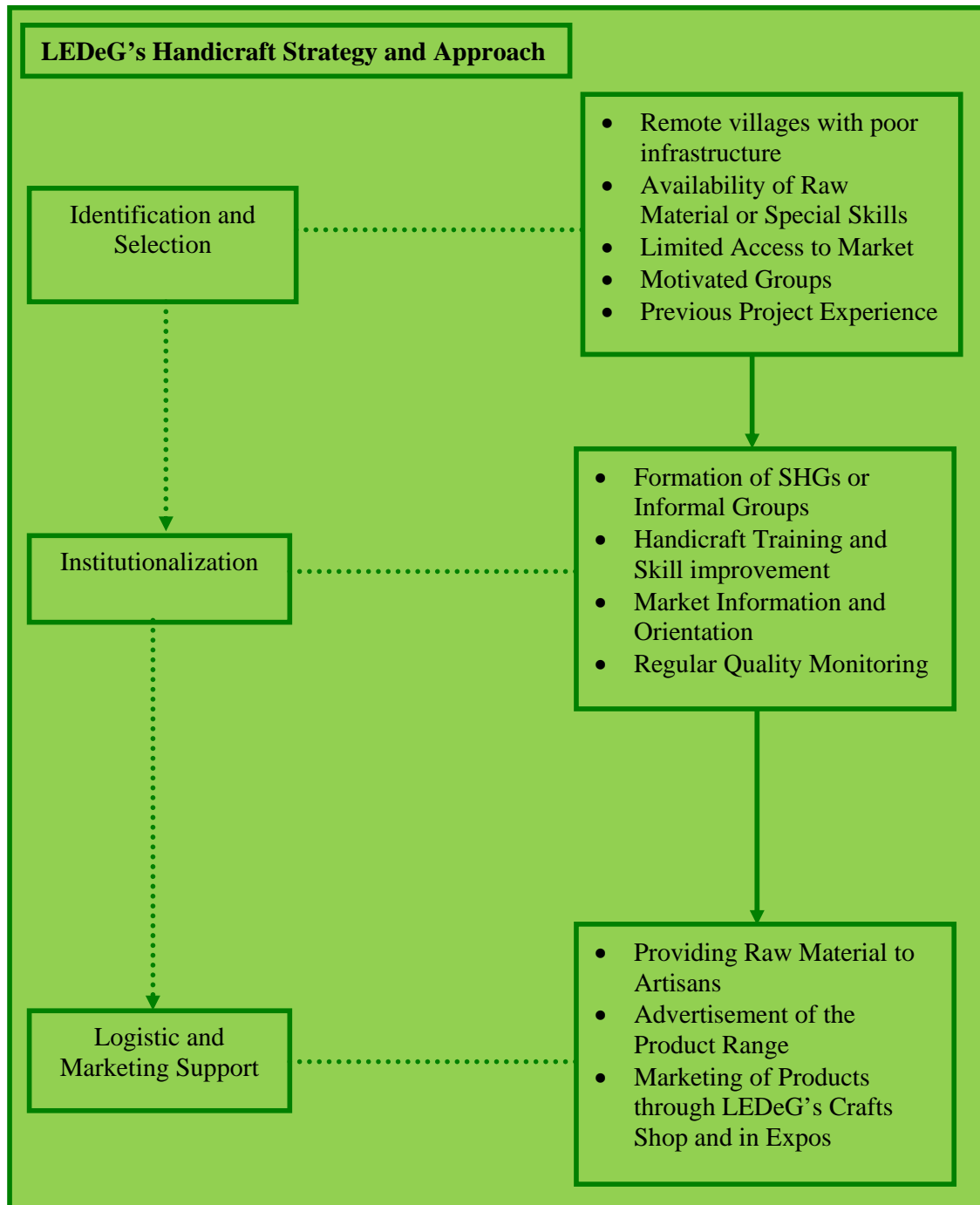
LEDeG, through its handicraft intervention strategy, is presently working with 38 Self Help Groups (SHGs) from various remote regions having poor infrastructural facilities. The organisation is active in select villages, where it has the experience of running projects and working with the community. It is also one of the partner NGOs of a Consortium of five prominent NGOs of Ladakh, as constituted under the European Union's (EU's) project- "Income Generation in the Western Himalayas". LEDeG not only provides marketing support to its artisans but also trains them on new designs, techniques, adoption of new technologies such as efficient spinning-machines etc. Training of trainers (TOT) is also arranged, particularly in designing. Dastakar and NID have been important resource organisations that skilled our trainers.



➤ *Marketing Approach*

A variety of handicraft products manufactured by SHGs are marketed through LEDeG. The majority of the products are woollen and Pashmina items, both of which are cheap raw-materials available in the region. LEDeG's handicraft team takes care of the whole production cycle by advising, supporting and training the artisan groups, keeping in view the market demand.

Since the majority of these SHGs are based in far-flung areas of Ladakh and have poor infrastructure, LEDeG has made a buy-back arrangement of handicrafts from these promoted SHGs. The product line is then marketed through LEDeG's Crafts Shop at its Karzoo office in Leh and other exhibitions throughout the country.



## *Other areas of intervention:*

### *5. Information, education and cultural preservation*

It is important for the Ladakhi people to be fully aware and well informed about the questions of development. Through gained knowledge, LEDeG's information, education and cultural team has been trying to make a difference in Ladakh through different techniques of disseminating it. These are primarily through awareness campaigns. The main tools used for the mass dissemination are through audio and visual documentations based on past learning. One of the main aims is also to observe days like World Environmental Day, World Bio-Diversity Day etc. in order to make the community aware of its importance.

The LEDeG team has produced various IEC (Informative, Educational and Communication) materials in the past as well as in 2006-07.

### *6. Solid Waste Management*

Ladakh, particularly Leh and Kargil town, is presently facing a problem of Solid Waste Management and if not addressed immediately, it might result in a major problem for the administration as well as the local residents. Ladakh receives approximately around 30,000 tourists from all over the world. In order to cater to the needs of the ever growing demands in the tourism sector, there has been a huge influx of packed food and water products. This has generated large amounts of garbage in urban as well as peri-urban areas of Ladakh region.

LEDeG, though not expertise, has been making some small efforts to address this issue in a proper manner. These small efforts include cleanliness drives and field studies to analyse the problems of Solid Waste Management.



## Major Projects in the Year- 2006-2007-2008

### 'Integrated Development of Durbuk Block Using Renewable Energy Resources'

**Year:** 2003 – 2007  
**Total budget:** 7.32 Crore (INR)  
**Status:** Completed.

#### **Funding Agencies:**

- a) India Canada Environment Facility (ICEF), New Delhi
- b) Ministry of New and Renewable Energy (MNRE), Government of India, New Delhi
- c) Ladakh Autonomous Hill Development Council (LAHDC), Leh

#### **Aims and Objectives:**

- a) Capacity development of the community to operate and maintain renewable energy technologies and to replicate such projects on their own over a period of time.
- b) Development and utilisation of renewable energy sources, particularly solar for providing clean energy in Durbuk block thus leading to improvements in its environment and quality of life of the people.
- c) Ensure enhanced income to the community by identifying available natural resources, formation of SHGs, provision of training in income generation activities like handicrafts, eco-tourism, maintenance of solar technologies etc.
- d) Suggest models for meeting the energy needs of people in similar areas not reachable by grid in a decentralised manner.



### Project outcomes:

- a) Installation of 4x25kWp solar photovoltaic power plant at Tangtse.
- b) Retrofitting of 135 solar houses using passive solar architecture or Trombe wall technology.
- c) Distribution of 300 solar dish cookers (SK-14).
- d) Distribution of 500 solar box cookers.
- e) Distribution of 630 improved smokeless Chullah (stove).
- f) Installation of five solar submersible pumps and five solar surface pumps.
- g) Up-gradation and solarisation of 10 Community Health Centres.
- h) Establishment of eight eco-tourism units at Durbuk Laga, Mugleb, Spangmik, Tangtse.
- i) Formation and promotion of 12 women Self Help Groups for handicraft development.

### Special achievements:

#### 1. 100kWp Solar Photovoltaic Power Plant at Tangtse

The SPV power plant was commissioned in February 2005 and since then has continuously supplied electricity to over 350 households, five hours a day. Consumers have replaced ordinary incandescent lamps with Compact Fluorescent Lamp (CFL) to achieve proper utilisation of the electricity.

The plant replaced the existing 250kVa Diesel Generator of the Power Development Department (PDD) provided the government. This means that the community saves up to 48,200 litres of diesel annually or Rs.16,38,300/- in terms of money. The DG Set costs Rs. 2,21,500/- to run and maintain per year, as per information provided by the PDD, Leh. The plant being environmentally friendly helps reduce 120 tons of Carbon Dioxide emission.

#### 2. Formation of a Local Institution 'REDCO'

REDCO is a local institution registered as a society, formed to take over the functions of managing the SPV power plant from LEDeG, after its formal commissioning in June 2006. It is managed by an elected board of 15 members who take decisions on identification of beneficiaries and other project activities. The Board is headed by its Chairman and Secretary. The head of the five revenue villages of Durbuk block are also members of the Board of Directors. The remaining eight members are elected by the General Body. One person from each benefited household constitutes the General Body.



REDCO is responsible for:

- Operations, maintenance and management of the power plant.
- Looking into the effective distribution of the energy generated.
- Timely collection of monthly tariff.
- Managing conflicts and problems that may arise within the community.
- Ensuring regular supply of electricity to the consumers.

### **REDCO: A Co-Operative managed by local youth**

Renewable Energy Development Cooperative Ltd. (REDCO) is a local cooperative body formed in Durbuk block of Leh district and is registered by the Govt. of Jammu & Kashmir. With encouragement from LEDeG, the cooperative was institutionalised to oversee the proper management of solar energy initiative of LEDeG and to decentralise the whole process of project implementation. The cooperative also ensures active participation of people and is an executive body with respect to selection of beneficiaries, service charges to be incurred by users etc.

REDCO, through its Electricity Management Committee, manages a Solar Power Plant at Tangtse village. The cost of energy, paid by users, goes directly to the account of the society, to be used later for various developmental activities. In turn, the service users of any solar energy component, de facto become the members of the society.



## 'Pilot Project for Improvement of Living Conditions of Residents of Structurally Disadvantaged Areas of Ladakh through Development of Village-based Micro-Enterprises'

**Year:** 2006 – 2007  
**Total budget:** 2, 50, 000 (INR)  
**Status:** Completed.  
**Funding Agency:** Sri Ratan Tata Trust, Mumbai.

### **Aim:**

' The main goal of the Project is to improve the living conditions of people residing in structurally disadvantaged areas of Ladakh through promotion of profitable village based micro-enterprises making sustainable use of the limited natural resources'.

### **Objectives:**

- a) Identification and initiations of agricultural based programs to spur people's interest in agriculture.
- b) Promotion of new methods and techniques for value addition to local resources based in income generation activities.
- c) Documentations and demonstrations of pilot project results in large scale implementations.

### **Project outcomes:**

- a) Production and sales of vegetable seeds organically produced.
  - b) Organic certification is underway; expert from IMO, Bangalore visited LEDeG recently and follow-ups are taken up by our staff.
  - c) Training on organic farming to farmers from Lehdo.
- 9 varieties of local vegetable seeds procured (10 kilos each) and sold to Zanskar.



Pollination of 3 varieties of flowering seeds.





## ‘Skidmang Nunnery Community Solar Cooker Project’

**Year:** 2006  
**Total Budget:** 1, 26,000 (INR)  
**Status:** Completed.  
**Funding Agency:** Jullay Ladakh- JAPAN

Skidmang, a village in Nyoma block of Leh district, is situated at a distance of about 140Kms from Leh, Ladakh. The nun retreat centre is 7Km or two hours walk from the road head.

The solar cooker was put up in a nunnery where 30 nuns reside. Earlier, the nuns



cooked their food in collective. The cooking fuels had to be transported from Leh, which was a large investment. It is estimated that they used, on an average, 3-4 gas cylinder per week, which costed them Rs.1,220, that is Rs.65,000/- per

annum for the gas cylinders.

Skidmang is situated at an altitude of, 13,000 feet above sea level. The temperature drops below -15°C at night, in winter and early spring. The nuns collected biomass fuels (cow and sheep and goat dung) to cook as well as for room-heating. The traditional stoves emitted enormous amounts of harmful smoke, thus, increasing the indoor air pollution, which affected the health of the residents.

LEDeG submitted a project proposal to Jullay Ladakh to fund a project – “Installation of a community solar cooker at Skidmang Nunnery” in 2006. Jullay Ladakh agreed to support the project with a budget of Rs.1,26,000/-.

A detailed technical survey including the duration of sun





radiation, technical feasibility and site selection, for the installation of the Scheffler cooker, was carried out by our Appropriate Technology team in November 2006. Since it was very close to the fall of winter, construction could not begin in 2006.

Our AT team started the fabrication of the solar Scheffler cooker in our workshop at the Ribook Centre, Leh in the interim. The team began construction of the kitchen in April 2007. Finally, the solar community cooker was installed in May 2007. The solar cooker is now being used effectively.

### **‘Improvement of People’s Livelihood in Remote and Mountainous Areas of Ladakh (J&K State) Of India’**

**Year:** 2006 – 2008  
**Total Budget:** 40,622 Euros (23, 15,422.00 INR)  
**Status:** Completed  
**Funding Agency:** BORDA (Bremen Overseas Research and Development Association), Germany

#### **Aims and Objectives:**

- a) To provide decentralised electrification on a sustainable basis to communities / house-holds using renewable energy.
- b) To provide drinking water and irrigation on a sustainable basis to communities / house-holds.
- c) To improve people’s income on a sustainable basis through combination of power generation with additional tools, devices and training programmes.
- d) To achieve the above objectives by using a participatory approach and by strengthening community organisations.
- e) To strengthen the capacity of LEDeG.

#### **Other objectives:**

- a) Environmental protection through conservation of natural resources and usage of appropriate technologies.
- b) Empowerment of women.
- c) Reduction of human drudgery.
- d) To conserve the unique environment of Ladakh and revive its traditional culture and communal harmony.
- e) To influence the local decision makers to adopt the use of renewable energy resources and holistic development approach promoted under the BORDA-LEDeG programme.
- f) To set an example of successful development co-operations, implemented by a multi-religious NGO team in a multi-religious area with a high level of military



presence, as a contribution for communal harmony and conflict resolution in the region, and the development of peaceful strategies for conflict resolution in general.

**Project outcomes:**

- a) Hydram Installation in 2006:
  - (i) 4 Hydrams installed (1 in Hemis chu in Leh and 3 in Drass in Kargil) in 2006.
- b) Hydram Installation in 2007:
  - (i) 4 Hydrams installed (1 each in Lamayuru and Wanla in Khaltse Block, Leh District and Mangbore and Padum in Zanskar Block, Kargil District), 2007.
- c) Installations of Micro-Hydro Power Units in 2006:
  - (i) 4 in Leh District – Mangyu- 15kW, Domkhar- 5kW, Digar- 10kW, Teri-Phu- 5kW.
  - (ii) 1 in Kargil District- Pidmo- 5kW
- d) Installation of Micro-Hydro Power Units in 2007:
  - (i) 1 in Leh District – Hinju- 5kW.
- e) 4 eco-sans toilets installed in 2006.
- f) A National workshop on ‘Meeting Basic Needs Services through Decentralization of Energy Supplies’ was conducted at New Delhi on November 14, 2008.

**‘LIGHT: Learning Income Generation in the Himalayas Together’**

LEDeG, in collaboration with GERES, is implementing project LIGHT. The project has different components and LEDeG, along with other local NGOs part of the network, is responsible for the implementation of the activities in different project areas across Ladakh. The project aims at improving the livelihood of the rural population in the Indian Western Himalayas consisting of Ladakh and parts of Himachal Pradesh.

**Project Year:** 2006-09

**Status:** Running

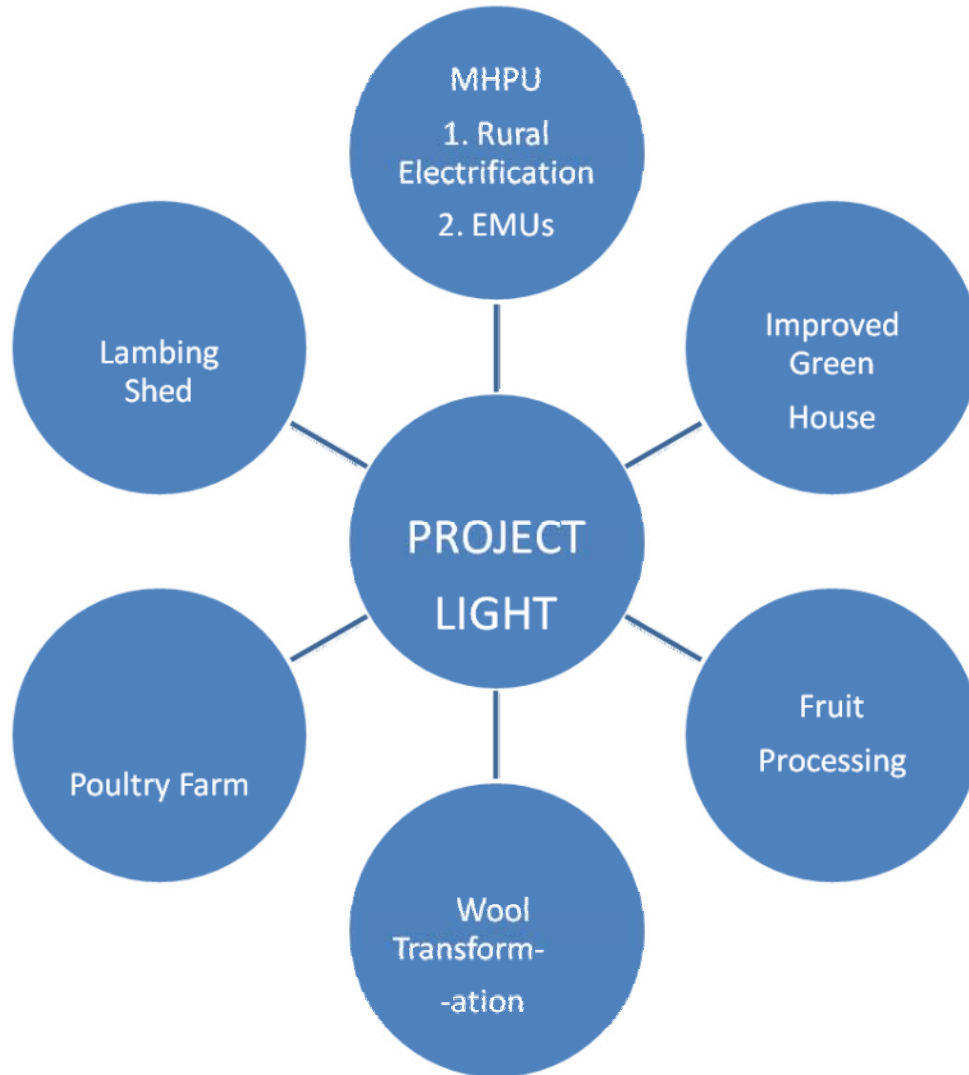
**Project Area:** Ladakh and Himachal Pradesh

**Objectives:**

- a) To set up additional income generation activities.
- b) To empower rural women.
- c) To improve the villagers' health.
- d) To build the capacities of local NGOs.



## Components of LIGHT Project



### ***Component I: Fruit Processing***

Value addition of horticulture products, available in the low lying Sham area of Ladakh, has added another dimension to the rural economy. Owing to the inflow of tourists, the demand for such products is ever increasing.

The fruit processing activities are primarily aimed at providing extra income for the women along with promotion of local products. Efforts are also being made to explore new markets outside Ladakh.

**Project Areas:** Leih-do, Achinathang (Khaltsi Block, Leh District), Gyapak (Zanskar, Kargil District)



**Target Group:** Women SHGs

**Objectives:**

- a) To enable SHGs on technical process, marketing, eco-finance and to help them to insert in sustainable product channel.
- b) To create income for villagers, in particular for women.
- c) To strengthen SHGs, give them self-confidence and impulse social innovative dynamic.

**Activities:**

- Training and Capacity Building
- Production
- Marketing

**Training and Capacity Building conducted in the project areas till end of 2008:**

- a) Technical inputs on value addition of horticulture products (Apricot and Seabuckthorn).
- b) Training on marketing of the products.
- c) Exposure visits for SHG women.
- d) Training on tools of business management.

**Production Details 2006 - 2008**

Leih-do and Gyapak

Line Items	Production 2006	Production 2007	Production 2008
Apricot Pulp		29 drums (50 lts each)	7 drums (50 lts each)
Apricot Jam (500gm)		1460	192
Apricot Jam (250 gm)		1100	----
Osmosis		400kg	
SBT Pulp			55lts
<b>SBT Juice (200ml)</b>			<b>60 bottles</b>



## Production Details 2007 - 2008

### Achinathang

Line Items	Production 2007	Production 2008
Osmotic Apricot	400kg	400 kg

### Other Activities Accomplished till the end of 2008

- Construction of work-shed and purchase of machinery at Leih-do.
- Initiated the process of acquiring FPO license for Leih-do.
- Media tool: Technical Posters on Processing: Apricot Jam and SBT Juice processing, Booklet on Guidelines for FPO License.
- Marketing of products (Apricot Jam) at Dharamshala.
- Sale of products through the Crafts Centre at LEDeG, general stores in the local market, guesthouses and hotels in and around Leh and through exhibitions in different parts of India.

### *Component II: Wool Transformation*

Livestock rearing is one of the primary occupations in the high altitude areas of Ladakh. Different kinds of wool are available: yak and goat wool in the highest parts and sheep wool elsewhere. Every ladakhi family, traditionally, transforms the wool into different items including clothes, carpets, shoes, blankets as well as tents.

Apart from that, Pashmina is the main resource of the livestock rearing population, especially in Changthang, where the finest quality of Pashmina is produced. The wool transformation component of the project aims at value addition of the local wool based products.

### Project Areas:

Leh District: Fanjilla, Rely Eaching, Hanupatta

Kargil District: Purkitse, Kartsekhar,  
Shagmakarpo, Rangdum, Juldoh, Rantaksha, Gyapak, Padum, Kisharak, Karsha, Pidmoo.

### Objectives:

- The project aims at developing wool transformation as an income generating and women empowering activity.
- To support Women Self Help Groups (SHGs), paying particular attention to enabling the women to control the whole channel, from raw material



purchasing to production and marketing, in order to ensure the sustainability of the activity after the project ends.

### Activities:

The projects support the SHGs in the different dimensions of the activity:

- Activity management: Groups are trained to plan their production and record their income and expenditure (simplified accounts), so that they can plan their future investments (raw material, tools purchasing...)
- Technical skills improvement: Technical trainings are provided to the groups, according to their needs (knitting, natural dyeing, weaving, tailoring...)
- Appropriate technology: To lighten some of the transformation tasks and reduce the time required, appropriate techniques are proposed and trainings provided e.g. Carding machines, spinning wheels, frame looms.
- Micro-credit: If required, during the first years of the activity, the project provides loans to the groups, as revolving fund. To facilitate the investment in tools, it proposes the payment in different instalments.
- Marketing: SHGs market their products locally, to villagers or tourists, either by themselves or through a shopkeeper. Marketing tools are developed, and linkages with shopkeepers or other buyers are created.

### Activities Accomplished\Undertaken till the end of 2008:

#### Trainings:

- a) Fanjilla: Training on Thikma dyeing (tie and dye)
- b) Refresher course on knitting
- c) Rely Eaching: Refresher course on knitting
- d) Kargil: Purkitse and Kartsekhar: Meeting for winter
- e) Pokar Phoo: Future plan for wool transformation
- f) Fangilla: Follow up of winter production
- g) Implementation of spinning and carding by different machines powered by Micro- Hydro for SHGs as they are the main potential users of the machines
- h) Hanupatta: Discussion about management of self help groups and wool transformation under the new project of income generation programme
- i) SHGs meeting at LEDeG on experience sharing of women on wool transformation.
- j) Coordinator meeting at LNP on wool transformation.



### Component III: Improved Green House

The harsh winter condition of Ladakh does not allow vegetables to be grown in open fields during the winter months. And during the short summer months when production is possible, the local vegetable sellers have to compete with vegetables transported from the Indian plains. During the winter months, due to scarcity of fresh vegetables, vegetables have to be air lifted which come for triple the price. However, such facilities are absent in the more geographically remote areas.

Improved Green Houses make it possible to grow vegetables even during the winter months. Some new and essential techniques to create a design adaptable to the area, keeping in mind cost-efficiency and local material availability, have been developed. The resultant improved greenhouse is made of stones, bricks and wood, has a double wall filled with straw on three sides, roof, ventilators, and is covered on the South side by a transparent and UV resistant polysheet. Except the sheet, all materials used for the construction are available locally.

**Year:** 2005 - 2009

**Project Area:** Khaltse, Durbuk, Kargil, Zanskar

#### Target group:

This project targets those families who potentially get more benefits from IGH: families depending mainly on agricultural income, i.e. active farmers who do not have any important alternative source of income as a government job.

#### Objectives:

- a) Enable families to construct and run an improved green-house.
- b) Train local masons to the construction technique.
- c) Produce fresh vegetables.
- d) Increase income of the owner's family.

#### Result Details: 2006 - 2008

Project Area	2006	2007	2008	Total
Khaltse	4	14		
Durbuk				
Kargil	19	39		
Zanskar	12	41	14	<b>67</b>



**Component IV: Lambing Shed****Project Area:** Durbuk

Project Area	2006	2007	2008	Total
Durbuk	4	13	8	25

**Component V: Poultry Farm****Project Areas:** Kargil and Zanskar

Project Area	2006	2007	2008	Total
Kargil	2	3		
Zanskar	2			

**Component VI: Micro Hydro Power Units: Rural Electrification and End Use Machines**

Remote in the Himalayan hills of the Jammu and Kashmir and Himachal Pradesh states, the valleys of these desert areas lie at more than 3000 m. During the harsh and long winter, the temperature frequently falls below -20°C. The villages are then isolated for more than six months per year, the access passes being closed because of the snow.

Traditionally, families rely essentially on agriculture and livestock rearing. But in the last 50 years, this region has been subject to a rapid and deep evolution, due to the massive arrival of army to control the disputed borders, the development of the administration and NGOs, and the aperture of the area to tourism.

The meager incomes the project is working in Leh district (Nubra, Sham, Chang Tang, Leh area), in Kargil district (Zanskar, Panikar, Sanku, Kargil), and in Jammu and Kashmir state. It is also implemented in Lahaul and Spiti district, and in Himachal Pradesh state, where conditions are similar to the ladakhi ones.

LEDeG participated in the project LIGHT as a resource NGO with other local partner organizations, both on the implementation and installation of MHPUs, and of End Use Machines. It also participated as a proximity NGO for about six villages in the project, less technically experienced, but who has built trustful relationship with community in





its working area, take advantage of resource NGO's expertise to implement the project.

**Aims and Objectives:**

The main objective was to assist the rural population to set up supplementary income generation activities in order to earn financial resources for the access to basic services.

Under the Income Generation component, the specific objectives were:

- a) To promote the development of services or of income generation activities powered by micro-hydro units.
- b) To enable the appropriation of end-use machines by target.
- c) To build capacity of local NGOs (micro-enterprise, development support, IGA activities).

**Activities completed till end of 2008:**

**Area:** Khaltse, Nubra, Kharu, Zanskar.  
**Results:** Installation of Micro Hydroelectric Power Units and End-user Machine in year 2006, 2007, 2008



S. No.	Site of installation (village)	Block	District	Month & Year	Installed capacity of the MHPU	End-user machines installed
1.	Mangue	Khaltse	Leh	Oct 2006	15kVA	a. Flourmill b. 8 Butter churners
2.	Domkhar	Khaltse	Leh	Oct 2006	5kW	a. Flourmill b. Nut cracker c. Carding machine d. Spinning machine
3.	Digar	Nubra	Leh	Aug 2006	10kW	a. Oil Expeller b. Flour Mill
4.	Tiri Phu	Kharu	Leh	July 2006	5kW	a. Flourmill
5.	Pidmo	Zanskar	Kargil	Sept 2006	5kW	
6.	Hinju	Khaltse	Leh	July 2007	5kW	a. Flour Mill
7.	Udmaroo	Nubra	Nubra		30 kW	a. Carpentry Machine b. Flour Mill c. Oil Expeller
8.	Purkitshey	Sankoo	Kargil	2006	10kVA	Spinning machine Carding machine
9	Pangbar-Yarkashing	Sankoo	Kargil	2005	5kVA	Flour mill 2 butter churners

### Training and Capacity Building

1. Design of training on Management of IGAs (Income Generation Activities) for Entrepreneurs in the project villages.(EUM)
2. Training in basic business management skills conducted for owners of EUMs(End Use Machines) in Udmaroo, Mangyu, Fanjilla, Hinju, Pangber, Purkitsey and Pidmo.(EUM)
3. Centralised Capacity Building Training for EMCs(End Use Machines) and Operators of the project villages-2 in Leh,1 in Kargil.(EUM)
4. Centralized Trainings on O&M (operational and Maintenance) of MHPU in 2007 & 2008 for both Leh and Kargil District MHPU sites under REC Project for EMC members and Operators of MHPU. (REC)



## 'Livelihood initiatives based on Apricots in Ladakh'

The project aims at supplementing the existing income of the resource poor through optimal utilization of available natural resources (Apricot) in a sustainable and environment friendly manner.

The main component of the project is value addition of horticulture products and assisting the women groups in additional income generation activities in the geographically remote regions within the Ladakh region.

**Year:** 2008 -2010  
**Total Budget:** 40.91 Lacs  
**Status:** Running  
**Funding Agency:** SDTT, Mumbai.  
**Project Area:** Leih-do (Khaltsi Block), Udmara (Nubra Block)

### **Aims and Objectives:**

- a) Facilitating shift from traditional subsistence agriculture to cash income based farming system.
- b) Improve access to market through coordination.
- c) To lessen the number of intermediaries between producers and consumers.
- d) To serve the society as a whole without degrading the ecological environment.
- e) Improve market oriented non-farm and agro processing activities\ strategies for underutilized agricultural produce.
- f) To empower the producers by the end of the project year to be self sufficient in marketing and processing activities.

### **Activities Accomplished till the end of 2008.**

- a) Identification of women groups in Leih-do and Udmaoo interested in Fruit Processing activities.
- b) Training on processing of Apricot jam and pulp.
- c) Training on marketing of products to the SHGs
- d) Construction of work-shed and purchase of machinery initiated in Leih-do and Udmara.
- e) Training on processing of Apricot jam and pulp.
- f) Training on marketing of products in Leih-do.



## **Passive Solar Housing in Western Himalayas**

LEDeG is part of the network of NGOs in Ladakh and Himachal Pradesh on the project titled “Passive Solar Housing in the Western Himalayas. The project is being implemented by GERES with the help of local NGOs. LEDeG has been identified as the resource NGO for Trombe Wall considering its expertise with the technology over the years.

<b>Project Year:</b>	2008 -2011
<b>Status:</b>	Running
<b>Funding Agency:</b>	EU-GERES
<b>Project Area:</b>	Diggar, Tangyar, Khardong (Nubra Block), Chushul, Barma, Kherapullu, Sattoo, Chibra, Yarat, Chilam, Shachucul, Tharuk, Tangtse, Punpun, Lagga, Nimgo, Maan (Durbuk Block), Hannupatta, Ursi (Khaltsi Block)

### **Aims and Objectives:**

The project is aimed at improving the living conditions of the people in remote areas and facilitate their socio-economic development.

### **Activities:**

Under the PSH Project, the following activities took place in the year 2008:

1. Village meetings were held in the project areas to orient and introduce the Passive Solar Technology to the communities and to collect the list of interested promoters.
2. An investment study, aimed at an investigation into the skills, design choice and community mobilization, was conducted before the implementation.
3. A five day localized mason training was conducted.
4. Four villages from Durbuk and Khaltsi block were respectively selected for project implementation out of which 2 villages from each block have been selected for Demonstration Phase.



## Watershed Projects

In the early eighties, the watershed development program is a program of the central government aimed at treating waste and degraded land. The program was, then, characterized by top-down approach with least participation of local communities. In 1987, the objective of the program was revised and it broadened the aim of the program to include an improvement of the socio-economic condition of people inhabiting the program areas. These resulted in the integration of many stand-alone programs of the central government aiming at socio-economic development of rural areas. The integration and decentralization process continued, every change was followed by evaluation studies and the watershed program was revisited in 1995, 2000, 2001, gearing towards empowerment of local communities for planning and implementation of the program. Each watershed program is registered under the J&K Government and has a minimum of one SHG and User Group (UG).

### Activities in Watershed Programme – 7th and 8th batch – PIA LEDeG

S. No.	Activities
1	Construction of irrigation khul
2	Construction of water tank (Zing)
3	Construction of sheep shed
4	Construction of kitchen garden (per family)
5	Repairing and widening of existing irrigation khul
6	Construction of yak shed
7	Plantation of willow and poplar
8	Fruit plantation (apple)
9	Repairing of water tank (zing)
10	Construction of check dam for soil erosion
11	Construction of river band (Indus river)
12	Construction of compound walling for plantation (individual and community based)
13	Purchase of Chinling fencing (for kitchen garden)
14	Construction of cow shed
15	Construction of khul for pasture development
16	Construction of artificial glacier
17	Purchase of local seeds (peas)
18	Terracing for land development



**Details of Activities carried under the Community Organization by head of Watershed Development Programme  
7<sup>th</sup> and 8<sup>th</sup> Batch (from Jan 2004 to 31 March 2008) – PIA: LEDeG**

S. No.	No. of Days	No. of participants and their description	Activity/Purpose	Location	Remarks
1	28 days	166 males and 482 females from 14 Watershed project areas, including watershed Chairman and Secretary	Exposure visit to watershed work activities and SHG functioning out of block or district	Khaltse block and Kargil district	1 <sup>st</sup> group (7 days) 2 <sup>nd</sup> group (7 days) 3 <sup>rd</sup> group (7 days) 4 <sup>th</sup> group (7 days)
2	30 days	31 watershed Chairman and Secretaries from 14 watershed project areas	Exposure visit to other parts of the country where watershed projects are implemented	All India tour (Delhi, Maharashtra, Gujarat, Kerala, Tamil Nadu, Rajasthan)	
3	2 days	14 watershed project areas (2x14=28)	Conducted a baseline survey in PRA watershed action for work SHG	Rong area (watershed project area)	1 <sup>st</sup> phase (14 days) 2 <sup>nd</sup> phase (14 days)
4		14 watershed project areas	Granted Rs. 50,000 to 14 project E.P.A. under watershed guideline	Rong area (Nyoma block - Likkse to Mahey)	



**Details of Activities carried under Training of Watershed Development Programme  
7<sup>th</sup> and 8<sup>th</sup> Batches (from Jan 2004 to 31 March 2008) – PIA: LEDeG**

S. No.	No. of Days	No. of trainees and their description	Trade/Vocation (Training)	Venue	Remarks
1	14 days	84 Watershed Chairman and Secretary, Volunteer and Panchayat members including Sarpanch, Panch, Nambardar, 14 V.E.C members from 14 project areas	Watershed Management, Book-keeping, basic civil engineering and Panchayat's role	LEDeG's Ribook Centre (Residential training – free boarding and lodging T.A. and D.A. were provided)	1 <sup>st</sup> Phase (7 days) 2 <sup>nd</sup> Phase (7 days)
2	45 days	37 ladies from 14 watershed project areas	Weaving and spinning on pedal charkha	LEDeG's Ribook Centre (Residential training)	1 <sup>st</sup> Phase (30 days) 2 <sup>nd</sup> Phase (16 days)
3	5 days	23 ladies from 14 watershed project areas	Natural dyeing	LEDeG's Ribook Centre (Residential training – free boarding and lodging)	5 days
4	30 days	22 ladies from 14 watershed project areas	Knitting, spinning (wool) on charkha and tie and dye	LEDeG's Ribook Centre	30 days

**Expenditure Details for 2004-2008:**

**Total Budget (7<sup>th</sup> Batch)** – Rs. 5, 10,000 x 10 projects = Rs. 51, 00,000  
 Rs. 4, 28,000 x 1 project = Rs. 4,28,000  
**Rs. 55,28,000**

**Total Budget (8<sup>th</sup> Batch)** – Rs. 5, 10,000 x 3 projects = **Rs. 15,30,000**



**Total Fund Received and Expenditure Incurred at PIA Level from April 2004 to March 2008  
7th Batch for Work Component**

S. No.	Name of Project	Project Cost (in lakhs)	Total funds received from DDA Leh up-to 31/03/08	Expenditure 2004 - 2005	Expenditure 2005 - 2006	Expenditure 2006 - 2007	Expenditure 2007 - 2008	Total Expenditure
1	Liktse	24	4.28	0.5	1.2		2.4	4.1
2	Tukla	24	5.1	1	3.1		0.9	5
3	Tarchit	24	5.1	0.9	3		1.1	5
4	Himya/Khapu	24	5.1	1	1.6		1.9	4.5
5	Kungam	24	5.1	0.3	1.2	1.1	2.2	4.8
6	Tire	24	5.1	1	2.6		1.4	5
7	Kumdog/Ge yak	24	5.1	1	2.3	0.8	0.8	4.9
8	Kairy/Akeley/Kathpa Thonpa	24	5.1	0.5	3.5		1	5
9	Nee/Shiyul	24	5.1	0.8	1.95	1.25	0.9	4.9
10	Skidmang	24	5.1	0.5	2.7		1.8	5
11	Chumathing	24	5.1	1.1	1.8		2.1	5
<b>T O T A L</b>		<b>264</b>	<b>55.28</b>	<b>8.6</b>	<b>24.95</b>	<b>3.15</b>	<b>16.5</b>	<b>53.2</b>





**Total Fund Received and Expenditure Incurred at PIA Level from April 2004 to March 2008**  
**7th Batch for Administrative Cost**

S.No.	Account Head	Total fund received from DDA up-to March 31, 2008	Expenditure incurred upto March 31, 2008
1	Administrative Head	13,06,800.00	11,18,164.00
2	Training Program	13,20,000.00	6,59,488.00
3	Community Organization	16,50,000.00	15,53,856.00
<b>TOTAL</b>		<b>42,76,800.00</b>	<b>33,31,508.00</b>

**Total Fund Received and Expenditure Incurred at PIA Level from October 2004 to March 2008**  
**8th Batch for Work Component**

S. No.	Name of Project	Project Cost (in lakhs)	Total funds received from DDA Leh upto 31/03/08	Expenditure 2004-2005	Expenditure 2005-2006	Expenditure 2006-2007	Expenditure 2007-2008	Total Expenditure
1	Tukla Phulak	24	5.1	0.5	1.1	1.4	1.95	<b>4.95</b>
2	Kesar & Mandel	24	5.1	0.7	0.8		2.9	<b>4.4</b>
3	Mahey & Raldong	24	5.1		0.8	0.5	3.6	<b>4.9</b>
<b>TOTAL</b>				<b>1.2</b>	<b>2.7</b>	<b>1.9</b>	<b>8.45</b>	<b>14.25</b>



**Total Fund Received and Expenditure Incurred at PIA Level from April 2004 to March 2008**  
**8th Batch for Administrative Cost**

S. No.	Account Head	Total fund received from DDA up-to March 31, 2008	Expenditure incurred up-to March 31, 2008
1	Administrative Head	3,52,800.00	2,37,650.00
2	Training Program	3,60,000.00	2,12,589.00
3	Community Organization	4,50,000.00	4,01,130.00
<b>TOTAL</b>		<b>11,62,800.00</b>	<b>8,51,369.00</b>

**Progress Report of Watershed Programme - 7th Batch - PIA LEDeG**  
**(from April 2004 to March 2008)**

S. No.	Name of Project	Land Resource Development (in kanal)	Water Resource Development (in kanal)	Afforestation and Pasture Development (in kanal)	Total area treatment (in kanal)	Total Men/Day
1	Liktse	190	190	190	210	2450
2	Tukla	220	180	200	220	3910
3	Tarchit	170	150	100	210	3110
4	Himya/ Khapu	175	90	65	154	2850
5	Kungam	160	110	120	160	2770
6	Tire	180	120	100	180	2850
7	Kumdog/ Geyak	285	160	110	310	5016
8	Kairy/ Akekey/ Kathpa Thonpa	150	150	150	130	3030
9	Nee/ Shiyul	130	125	90	165	3080
10	Skidman g	160	130	110	160	2950
11	Chumath ang	190	170	90	120	3450
	<b>TOTAL</b>	<b>2010</b>	<b>1575</b>	<b>1325</b>	<b>2019</b>	<b>35466</b>



**Progress Report of Watershed Programme - 8th Batch - PIA LEDeG  
( from April 2004 to March 2008)**

S. No.	Name of Project	Land Resource Development (in kanal)	Water Resource Development (in kanal)	Afforestation and Pasture Development (in kanal)	Total area treatment (in kanal)	Total Men/Day
1	Tukla Phulak	160	115	80	250	3890
2	Kesar & Mandel	130	120	50	140	2700
3	Mahey & Raldong	190	120	50	190	2650
	<b>TOTAL</b>	<b>480</b>	<b>355</b>	<b>180</b>	<b>580</b>	<b>9240</b>

**Outcomes:**

- a) The activities benefitted the locals as not only did they get to work as daily wagers but the entire sum of money earned was given to them.
- b) The productivity of the existing land increased and the land considered useless earlier, was also developed.
- c) Plantation of trees benefitted not only the environment but also the locals as it was now a source of income.
- d) The construction of work sheds resulted in the reduction of work load.
- e) Locals were able to continue working in their own village. In addition, they could work on these projects in the off-season and, hence, earn their livelihood.
- f) The activities conducted were in accordance with the Watershed Association who in turn took in the views and suggestions of the locals.



## Other Activities:

### **Ecological Sanitation Workshop: 11<sup>th</sup> May 2006**

Ladakh Ecological Development Group (LEDeG), in collaboration with Eco-Solutions, organised the workshop entitled “Ecological Sanitation” to encourage use of eco-friendly toilets in Ladakh. Students, agronomists, engineers, public health workers, guest house owners, property builders, water and sanitation engineers, and environmentalists were invited to participate in the workshop, which took place in Leh, Ladakh on 11 May 2006. Paul Calvert, the Director of Eco-Solutions, and Veena M., the course coordinator, presented the half day workshop, at LEDeG’s Karzoo Centre.

The aim of LEDeG’s Eco-solutions workshop was to educate both the urban and rural residents of Ladakh about the harmful and wasteful effects of conventional ‘water flush’ toilets, and the advantages of the eco-pan system.

The use and importance of Eco-Friendly Compost Toilets, or eco-pans was explained. The lecture was followed by a demonstration of the eco-pan installed at the Centre. At the conclusion of the workshop, participants were invited to complete feedback forms on their impressions of eco-pan technology.

### **Workshop: ‘Meeting Basic Need Services through Decentralization of Energy Supplies’:14<sup>th</sup> November 2008.**

Ladakh Ecological Development Group has been working in decentralized renewable energy services focussing on Micro Hydro Powers Units for providing basic need services (electricity) in-order to improve living conditions of the people in the Western Himalayas cold deserts (Ladakh Region) for past 25 years. As a part of a strategy to disseminate and expand its experiences, lessons learnt and expertise in Micro Hydro Power units beyond Ladakh region, a one day workshop was organized by Ladakh Ecological Development Group (LEDeG) at India Habitat Centre, New Delhi on November 14<sup>th</sup>, 2008 which was supported by BORDA, as a small initiative to achieve this long term goal.

The main aim of the workshop was to provide a platform for the grassroots Non-Governmental Organizations and other agencies, who are working or who are considering to work on micro-hydro power units, for sharing their experiences and difficulties faced in implementing community based Micro Hydro Power Units with other organizations, government agencies and research organizations. It was also aimed to formulate a networking group among the government agencies, research organizations and grassroots NGOs for all the possible knowledge, technologies



sharing and transfer for implementing the decentralized renewable energy services (DERES) in the near future.

The agenda of the workshop was also to disseminate the experiences, lessons learnt and expertise in implementing the Micro Hydro Power Units in the Ladakh region by Ladakh Ecological Development Group.

The workshop was attended by the representatives of central government departments mainly Ministry of New and Renewable Energies Supplies, State government departments and agencies like Science and technologies dept, Jammu and Kashmir Energy Development agency, Tata Energy Research Institute, supporting trusts, agencies and organizations like Shri Darobji Tata Trust, Swiss Development Cooperation , Federation of Micro Hydro Power Units, Nepal etc , and as well as grassroot non-government organizations and related agencies for all possible networking , promoting and transferring the services /technologies on DERES



## Annexure I

### Networks Linkages and partners

#### *Local*

Ladakh Autonomous Hill Development Council, Leh  
Ladakh Autonomous Hill Development Council, Kargil  
Jammu & Kashmir Renewable Energy Development Agency

#### *National*

Center for Environment & Education (CEE)  
Center for Scientific Research (CSR)  
Auroville Renewable Energy  
Solar Energy society of India  
AAROHI, Nainital  
Tata BP Solar India Limited  
IIT Roorkee, Alternative Hydro energy centre  
Solun University, Himachal Pradesh  
National Institute of Design, Ahmedabad  
S.P Jain Institute of Management & Research  
Institute of Rural Management, Anand  
Entrepreneurships Development Institute, Ahmedabad  
Indian Social Institute, Delhi  
G.B Pant Institute of Himalayan Environment Development , Almora  
Footwear Design Development Institute, Delhi  
Ministry of Non-Renewable Energy Sources (MNES)  
Ministry of Textiles, GoI

#### *International*

International Council for Integrated Mountain Development (ICIMOD), Nepal  
Bremen Overseas Research & Development Association (BORDA), Germany  
Dan Church Aid, Denmark  
Groupe Energies Renouveables Environmen et Solidarities (GERES), France  
Intermediate Technology Development Group (ITDG), UK  
International Society for Environmental & Culture (ISEC), UK  
Norwegian Agency for Development Cooperation (NORAD), Norway  
Swedish Society for Nature Conservation (SSNC), Sweden  
Future Earth, Sweden  
International Network for Sustainable Energy (INFORSE), Europe



India Canada Environmental Facility (ICEF)- Canada- India  
Hangzhou Regional Center for Small Hydro power (HRC), China  
Hydro Power Centre (HPC), Hanoi, Vietnam

## Annexure II

### *Auditors*

S.S Pathania & Co.  
Chartered Accountants  
Harbans Bhawan II  
Commercial Complex X  
Nangai Rai, New Delhi- 110046

## Annexure III

### *Bankers*

State Bank of India, Leh Branch, Leh, Ladakh- 194101  
Jammu & Kashmir Bank, Leh, Ladakh- 19410





## List of LEDeG Staff

S. No.	Name	Designation
1.	Dr Tondup Tsewang	Executive Director
2.	Mohammad Hasnain	Director
3.	K.A. Khan	Programme Coordinator, Kargil
4.	Tsering Chosphel	Programme Coordinator,Zanskar
5.	Pranai Thapa	Cordinator,BORDA
6.	Mibi Ete	Coordinator
7.	Tsering Dolma	Coordinator,Handicrafts
8.	Yangchen Dolma	Accounts Coordinator
9.	Tashi Namgial	Coordinator
10.	Rigzen Dorjey	Coordinator, PSH
11.	Rachel Nilza	Coordinator.
12.	Tsewang Dolama	Librarian
13.	Eshey Angmo	Accounts Assistant
14.	Motup Tsering	Accounts Assistant
15.	Tsering Motup	Store Keeper
16.	Rigzen Lamo	Shopkeeper,Crafts shop
17.	Dorjay Joldan	Agriculture Asistant
18.	Sonam Kunzes	Hostel Assistsnt
19.	Rigzen Namgial	Field Worker
20.	Tsewang Paldan	Watchman, Reebok centre
21.	Tsetan Morup	Watchman,Karzoo
22.	Sonam Motup	Field Worker
23.	Mohd Issa	Field worker
24.	Hajira Bano	Orderly
25.	Lobzang Tsering	Field Worker
26.	Mohd. Hussain C.	Technician
27.	Mohd. Hussain P.	Field Worker
28.	Nissar Hussain	Accountant, Kargil
29.	Tsering Paldan	Driver
30.	Baquir Ali	Driver
31.	Mohd.Ali	Watchman
32.	Padma Wangchen	Psh,Assistant
33.	Sonam Tsering	Driver
34.	Tsering Paldan	Driver
35.	Tashi Nurboo	Driver
36.	Urgain Dorjey	Filed-worker
37.	Sara Bano	
38.	Nilza Angmo	Watchwoman,Rural Building Center
39.	Tsering Yagdol	Orderly





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