

# Annual Report Year 2021 - 22



Himalayan Institute of Alternatives, Ladakh  
(An Alternative Institute For Mountain Development)





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## **Vision**

“HIAL aims to develop Ladakh into a benchmark for sustainable living for the mountain world, where all the children receive a meaningful education that prepares them for a life of dignity in harmony with nature.”

## **Mission**

“Create a transformative educational experience for students by inculcating in them the practice of learning via practical application of knowledge. Foster an environment of responsible entrepreneurship. Establish centres of excellence to showcase innovative approaches to education and environment. Enable sustainable and locally embedded development in mountain societies.”

# EXECUTIVE SUMMARY

## Academics

HIAL conducted several internship-based courses like Eco-Responsive Building, Responsible Tourism, Organic Food Processing, Ecology, and Ice-Stupa with great success. It also conducted an Ice Stupa Workshop which had participants from various villages of Ladakh who learned about the fundamentals of Ice Stupa construction. HIAL successfully ran its first-ever Documentary Film making workshop in collaboration with the Auroville Film Institute (August - September 2021).

## Convocation Ceremony

HIAL held its first convocation ceremony on 26th October 2021 to celebrate the culmination of academic journeys of 66 students who were a part of different academic programs at HIAL since its inception.

## Campus

We are excited to see our campus shaping up slowly and steadily. Around 1,00,000 sq ft of campus space is in the process of being designed and executed like the Academic & Admin Block, Gymnasium, Staff Facility, VIP guest house, and amphitheater.

## Sheshyon Innovations

Sheshyon, the enterprise arm of HIAL executed three passive solar heated shelters for the army, both for the Jawans as well as senior officers. Students and interns worked on these projects as per the learning-by-doing pedagogy of HIAL.

## Kulum Rehabilitation

With each passing year, we see greater and much more enthusiastic participation from different villages across Ladakh. This year a total of 37 Ice Stupas were made across 28 locations in Ladakh and worldwide, conserving 119 million liters of water. In Kulum 1500 kgs of potatoes were harvested for the first time after 15 years!

## Visitors

Many dignitaries visited our campus, like ADG Army design bureau, Maj Gen KV Jauhar, and Sh. Ranjan Kumar Mohapatra, Director (HR), IOCL, Sh. Sujoy Choudhury, ED & SH (PSO) IOCL, AOC, J&K, Mr. Tejinder Singh, Sh. Hemant Priyadarshi IPS, ADG ITBP, and Sh. Lhari Dorjey IG ITBP, and the PMO team led by Deputy Secretary, Sh. Mangesh Ghildiyal.

*" Learning is not the product of teaching. Learning is the product of the activity of learners."*

*- John Holt.*





# Academics

HIAL encourages learner development through Live Learning Labs that supplement the traditional academic setting. These opportunities instill qualities of leadership, cultural awareness, and entrepreneurship.

Well-planned and uniquely assessed experiential learning programs stimulate intellectual curiosity, reflection, compassion, creativity, and skillfulness. Learners at all academic levels are encouraged to undertake creative research and creative entrepreneurial endeavors in collaboration with and mentored by facilitators.

# 1 Short Course: Eco Responsive Building (ERB)

HIAL's annual flagship program- Eco responsive Building (ERB) course commenced on 12th April 2021. It was a three-month long certificate course aimed at introducing students to earth architecture and passive solar technology. This internship focused curriculum represents a cornerstone of HIAL's commitment towards its core philosophy of solving problems using the 3Hs- Bright Head, Kind Heart and Skilled Hands. Students are encouraged to work on real life projects undertaken by HIAL at various locations across Ladakh. This course brings together participants from various backgrounds-architects, engineers, contractors etc from Ladakh, rest of India and Nepal.



# 2

## Short Course: Responsible Tourism (July - September)

The three-month long apprenticeship program on Responsible tourism was conducted between 7th July to 24th September 2021. Participants worked on diverse live projects such as upgrading Farmstays, mapping trek routes around the Phyang region and organizing cultural festivals. A few projects which were executed successfully are the Juniper festival and the Phyang village walk. The underlying theme of all these projects and activities was environmental and cultural sustainability. The apprenticeship program was conducted by Mr. Henk Thoma, a resident of the Ladakh region under the guidance of Ms. Gitanjali, Co-founder and Academic Dean, of HIAL.





Students of the Documentary Filmmaking workshop at Phyang village attended an interactive session with the Councillor, Sarpanch, and other esteemed heads.

# 3 Documentary Film Making Workshop (August - September)

HIAL conducted a six-week-long documentary film-making workshop In collaboration with Auroville Film Institute. There were a total of 27 participants, including 5 from Ladakh. This workshop aimed at equipping aspiring filmmakers with practical skills like location scouting, character study, shooting, editing, and publication. More than 20 films were made during the workshop Films were screened for public viewing in presence of Ladakh’s own popular filmmaker - Stanzin Dorjai (Gya), theatre personality Shri Mipham Otsal, the Sarpanch, Goba and villagers of Phyang



# 4

## Short course: Organic Food Processing (August - October)


The course on post-harvest produce processing was conducted between 2nd August 2021 and 23rd October 2021. Under the expert guidance of Chef Pankaj (owner of Syah), students learned to make various products from locally harvested apricots, apples, and sea buckthorn. In addition to product development, students learned the fundamentals of enterprise development such as developing business models, user research, costing and pricing, company registration, nutrition value testing, packaging design, etc.



# 5 Ecology and Ice Stupa Course

Towards the end of March 2022, the second batch of the Ecology and Ice stupa course concluded. The course started on 20th November 2021 with participants from Ladakh and across the world intending to train the youth of mountain regions to tackle pressing environmental issues faced by the mountain communities. The course consists of three major parts: Fieldwork, mentorship, and individual projects. As part of their fieldwork, the participants work and learn from the Ice Stupa team who act as mentors daily. Mr. Nishant Tikku and Ms. Tsetan Dolker conducted the course as lead faculty and teaching assistant respectively.



A large, multi-tiered ice formation, possibly a frozen waterfall or a large ice sculpture, stands prominently in a mountainous landscape. The ice is a vibrant blue-white color and has a jagged, crystalline appearance. Several people are gathered at the base of the formation, some standing on a snow-covered slope and others climbing a wooden ladder that leads up to the ice. The background features dark, rocky mountains with patches of snow under a clear blue sky.

*“We never know the worth  
of water till the well is dry.”*

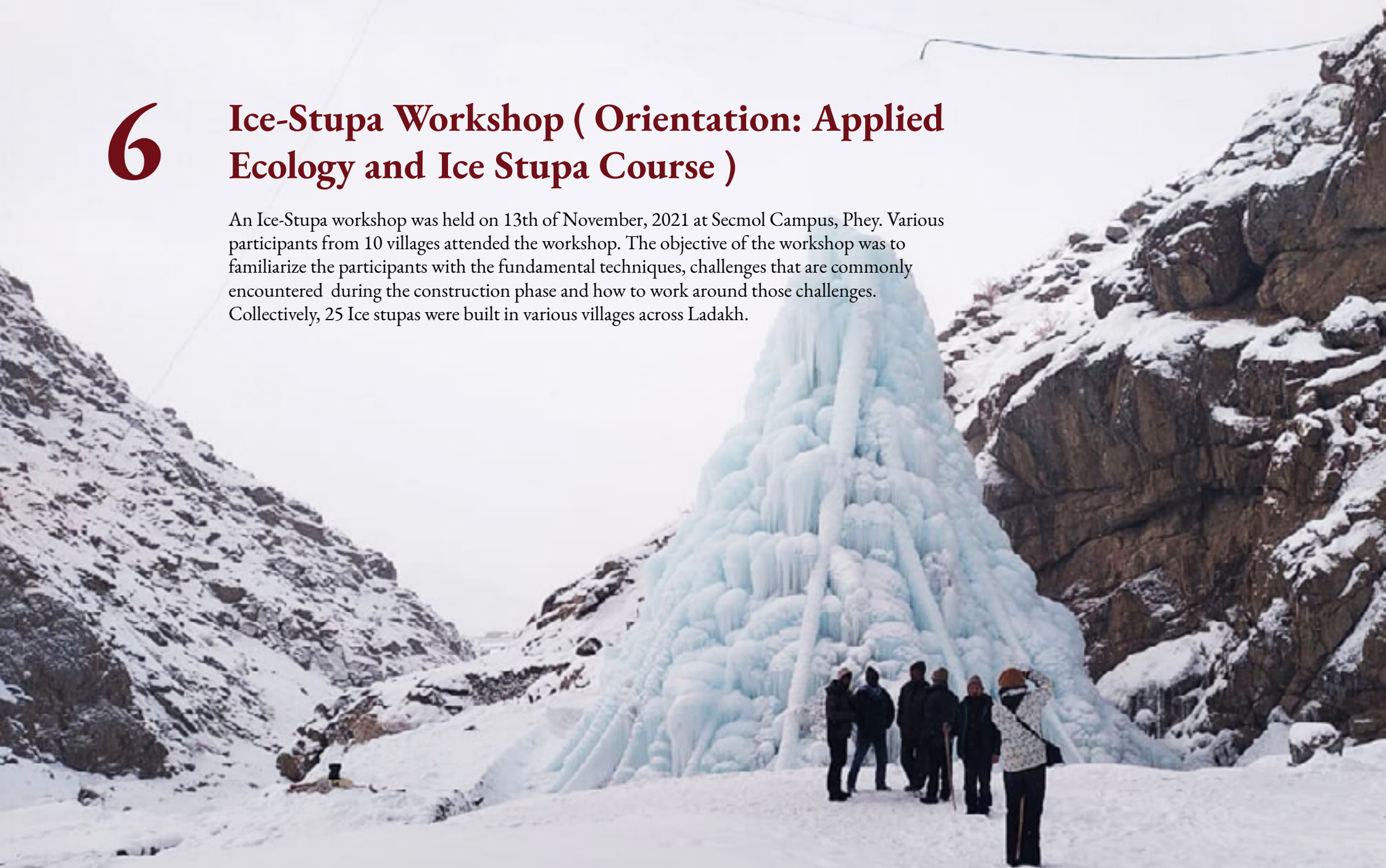
*– Thomas Fuller*



# 6

## Ice-Stupa Workshop ( Orientation: Applied Ecology and Ice Stupa Course )

An Ice-Stupa workshop was held on 13th of November, 2021 at Secmol Campus, Phey. Various participants from 10 villages attended the workshop. The objective of the workshop was to familiarize the participants with the fundamental techniques, challenges that are commonly encountered during the construction phase and how to work around those challenges. Collectively, 25 Ice stupas were built in various villages across Ladakh.



Ice-Stupa team at Kargil for a field visit



1st Annual Convocation Ceremony being celebrated on October 27th, 2021 at HIAL campus, Phyang.

# Convocation

"Convocation is not the last day of education,  
it is the first day of lifelong learning!"

- Gitanjali J. Angmo



1st Annual Convocation Ceremony being celebrated on October 27th, 2021 at HIAL campus, Phyang.

# 7


## Convocation :

HIAL held its first convocation ceremony on 26th October, 2021 to celebrate the culmination of academic journeys of students who were a part of different academic programs at HIAL since its inception. The event was honoured by Dr. Vandana Shiva as the Chief Guest. Professor S.K. Mehta, Vice Chancellor of University of Ladakh also graced the occasion as the Guest of Honour. During the ceremony, 70 students from various courses were awarded with their graduation certificates. The courses included the one year long HILLS fellowship, 3 months long certificate courses in Responsible tourism, Eco-Responsive Building, Organic Food Processing, HIAL Experiential Leadership Module (HELM) and Solar Builder Course. After graduating, many participants have decided to continue engaging and supporting HIAL's vision and mission as full time employees and interns.

Making this event more notable, the HIAL Alumni Community (HAC) was founded on the same day. HIAL is dedicated to adding value to the personal as well as professional lives of our alumni via this community. An engaged and supportive alumni network benefits the alumni as well as the institution. The current and prospective students can also gain a lot of practical support from the alumni network. HIAL's alumni community is our most dedicated supporter and our finest ambassador, therefore it is imperative to build and maintain this relationship to foster a lifelong learning environment.

Additionally, on the same day , the HIAL's incubation centre was launched where 5 ideas got supported by the centre. The support included both financial as well as non-financial aid.





“What the hand does,  
the mind remembers”

- Maria Montessori

# School of Eco Responsive Architecture (SERA)

All buildings at HIAL are passive solar heated (PSH) – which uses only sunlight as the source of heat.

Local natural materials are tested, experimented with, and then used in construction making it completely eco-friendly and sustainable.

# 1 Academic & Admin Block

This building aims to accommodate the core schools of HIAL viz. School of Energy Studies (SENSe), School of Eco-responsive Architecture (ERA). With a central auditorium of 150 capacity, this building will also constitute the Director's and CEO's office rooms, various design studios, classrooms, laboratories, staff rooms, meeting rooms, library, etc.

Once completed, it will be the first large-scale passive solar earthen building. It showcases HIAL's capability of designing and constructing model large-scale Passive solar heated buildings going beyond the general shelters that it is already known for. This can be replicated by the government agencies, military and paramilitary forces for their Headquarters. This academic and admin block is being constructed using straw-clay bricks as skin on the skeleton of a conventional RCC frame. We call it the "ex-fill technique". It conforms to the existing building by-laws and makes passive solar heating a possibility in the conventional construction system and hence, more acceptable to the governmental agencies.



Construction of academic block in full swing



# 2

## Gymnasium

The gymnasium will be around 790 sqm in area with large south facade glazing. It would facilitate activities such as High Bar, Rings, Pommel Horse, Balance beams, Vaults, Parallel bars etc. It will also have change and shower rooms with huge storage space for movable equipment. With a provision of ramps at the entrance, it will make the building universally accessible.

The whole building will be integrated with the passive solar heating technology, making it an all weather training and practice facility. It will be a huge dome structure with high ceiling height, a roof with a wooden member shell structure and an insulation layer on top.



Artist's impression of a gymnasium





Final touches being given to VIP guest house

# 3 VIP Guest House

With a Ground coverage of 2705 sq. ft., the VIP Guest House consists of two and half floors. The lower two floors are made with rammed earth technique, while the third level which is yet to be constructed is to be made with straw-clay bricks. The building consists of 6 bedrooms, a library-cum-home theatre and a recording studio apart from other common rooms and kitchen.

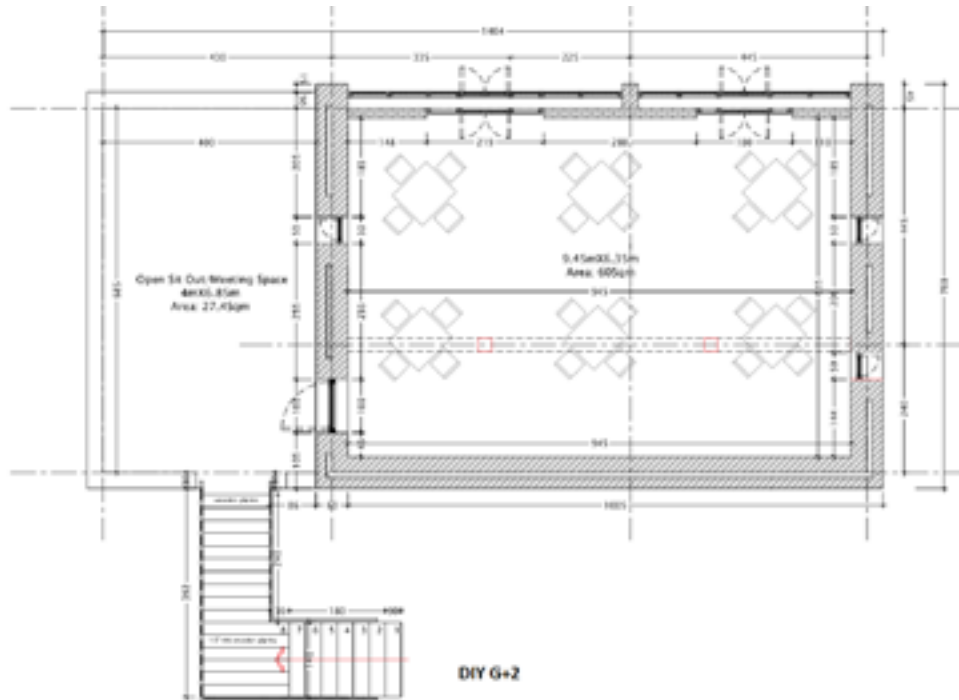


# Upcoming Projects

# 4

## DIY Building

The DIY Building is a G+2 structure and planned to be constructed with the Ex-fill technique. It will also use the confined masonry technique of construction, perhaps the first time in Ladakh to expedite the construction process and reduce water consumption in RCC buildings

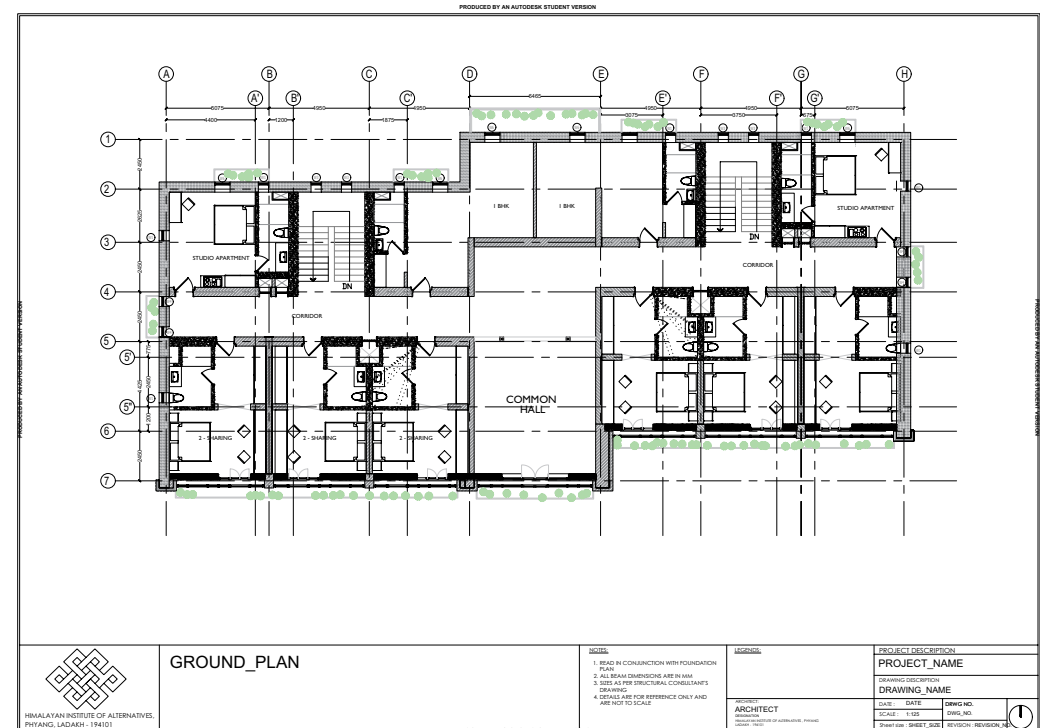


Note: All Dimensions are in centimeter

# 5

## Staff Facility

This building is meant for the accommodation of in-house staff members at HIAL. It is a B+G+1 load-bearing structure built using stone, adobe blocks, and straw-clay bricks and would accommodate around 60 staff members. The double-loaded corridors in the design will serve as a model for future passive solar-heated hotels. The south side of the building is heated by capturing the south sun, while the north side is heated using radiant floor pipes. It is expected to be completed by Oct 2023.



HIMALAYAN INSTITUTE OF ALTERNATIVES,  
BHYANG, LADAKH - 194101

GROUND\_PLAN

- NOTES
1. READ IN CONJUNCTION WITH FOUNDATION PLAN
  2. ALL BEAM DIMENSIONS ARE IN MM
  3. SEE AS PER STRUCTURAL CONSULTANT'S DRAWING
  4. DETAILS ARE FOR REFERENCE ONLY AND ARE NOT TO SCALE

ARCHITECT  
HIMALAYAN INSTITUTE OF ALTERNATIVES, BHYANG, LADAKH - 194101

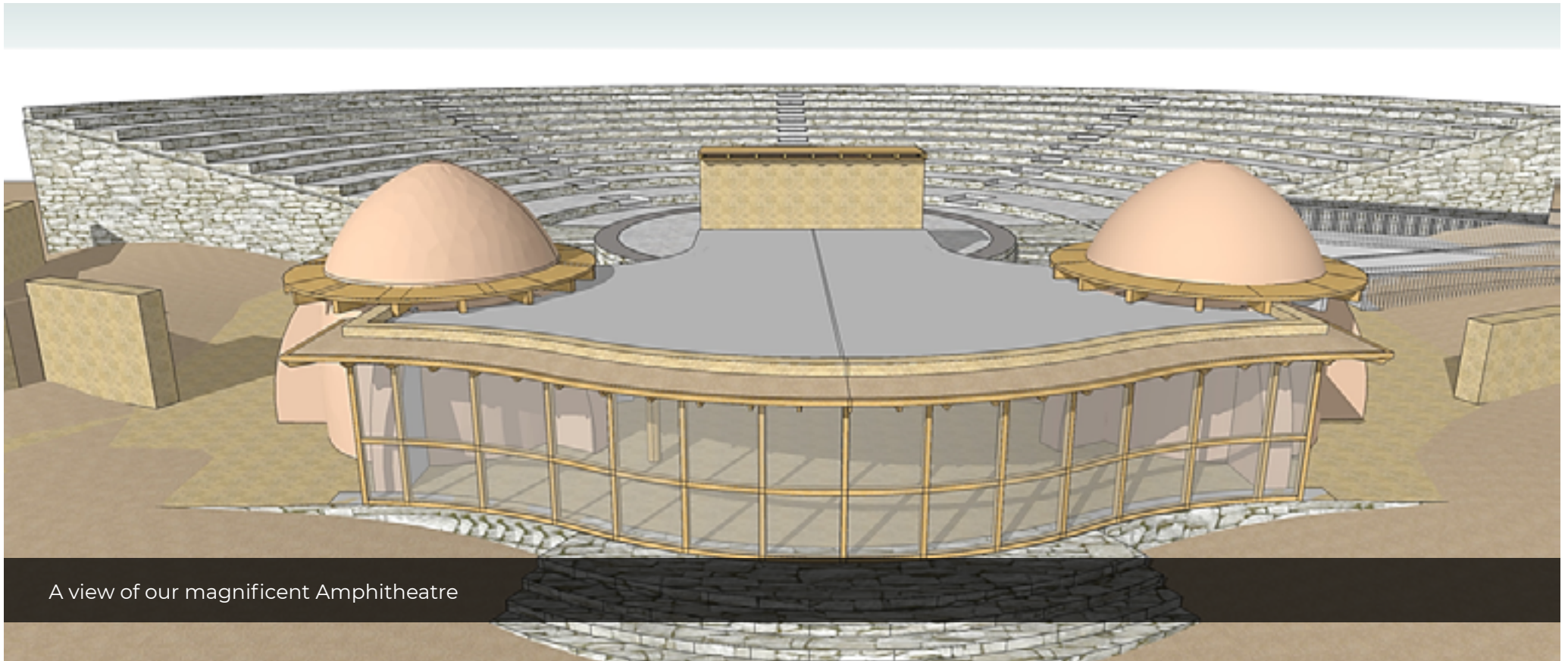
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# 6

## Amphitheatre Block

The Amphitheatre block is designed in a radial pattern to allow for the best possible viewing angle of 360 degrees from the centre stage. It can accommodate around 500 people and has two green rooms- East and West green rooms made of earthbag dome technique as a model of construction with local earth (and waste cement bags) in wood-scarce regions.

Internally, the construction is completely standardized and exposed with finished local stonework, allowing for a cost-effective, yet honest and striking environment. The mosaic finishing material for the stage and seating areas was done using discarded and broken tiles as a sink of waste from the local construction industry. Six distinct staircases allow the audience and performers to trickle into their respective zones, with a ramp for universal design. The theater takes on a truly unique appearance in the height of summer, as the overhead sky and the Zanskar mountain range are observed between the green rooms. The thrill of outdoor performance comes alive when the sun sets and the stage lights take over.



A view of our magnificent Amphitheatre



Mr. Sonam Wangchuk, our Founding Director inaugurating SHILA shelter at Hanle

# 7

## External Project: SHILA (Solar Heated Insulated Ladakhi Shelter)

Sheshyon, the enterprise arm of the School of Eco-Responsive Architecture (SERA) of HIAL pioneered the Solar Heated Insulated Ladakhi (SHILA) shelters for the armed forces living in these harsh terrains. These shelters are made of Straw-Clay bricks and rely on passive heating methods to provide a thermally comfortable indoor environment. In this financial year, 4 shelters were built at forward locations ranging from high-end shelters for generals to basic barracks for foot soldiers.

The team had completed three 12 bedded shelters for soldiers at Chushul, Hanley and DBO KM-120, using the similar PSH building techniques. A VVIP guest house shelter at Headquarters, 14-Corps, Leh was also built, which is a beautiful blend of tradition and technology. The team also completed and handed over ITBP's Guard house, Sentry post and solar heated septic tank. This puts HIAL on the journey of achieving financial self-sustainability. All surpluses in Sheshyon will be ploughed for funding students education in HIAL who intern in these projects and “learn-by-doing” which is the pedagogy at HIAL.



A SHILA shelter at Hanle

"If not now, when? Save water  
before you see it end. "

- Unknown





# School of High Altitude Desert Ecology (SHADE)

SHADE works on Ice-Stupa, Desert Greening, and Village Rehabilitation. Addressing the climate emergency is essential, but so is finding solutions to our growing environmental problems. The Ice Stupa Project has brought new hope to the people of Ladakh and the world.

Likewise, HIAL's plantation team has made significant efforts to green the campus with plants that are mostly native to Ladakh. HIAL covers an area of 135 acres, of which about 10 acres have been greened.

# 1

## Ice Stupa Project

The year started with the successful completion of the Ice Stupa project at Gangles Village on 10<sup>th</sup> January 2022. The project had started on the 1<sup>st</sup> of December 2021 with an aim to build five Ice Stupas in the Gangles valley. The Ice stupa team and ecology course participants began with the groundwork for the project like channelling repair, head work making, pipeline laying and dome structures design. Later, the team was joined by two participants from Chile in the first week of January 2022 who worked on the field to understand and execute the ice stupa building techniques and technologies.



# 2

## World Environmental Day

On the eve of “World Environmental Day 2021”, the plantation team at HIAL undertook an innovative mechanism to irrigate drought tolerant plants. It was noted that these plants were capable of self-sustaining themselves via capillary action from water tubes installed alongside the plants. This green drive was extended to Army, Phyang Monastery, and SEWA Group (Ama Tsogspa) with seedling support from HIAL. Moreover, 40 Willow, 300 Poplar and 135 Apple saplings were also planted in the campus and some of the cuttings of different plant species such as Rubinia, Siah, Wild Rose, Russian Olive saplings were transplanted from the greenhouse to the field.



Maj Gen K.V. JAUHAR visited HIAL campus. Our construction and Energy departments gave a detail presentation about the technological developments being made in passive solar heated buildings followed by a campus tour.



Our Director, Khanpo Rigzin and the monks of the Phyang Monastery planted trees on the occasion of World Environment Day to heal & restore the damaged ecosystem of Ladakh.

# 3

## Afforestation

Beginning 2022, the team started prepping for the upcoming Spring plantation season with nursery raising activities inside the greenhouse. Once the plant saplings and cuttings were ready for outside plantation, they were meticulously planted as a bio fencing around the campus. All these plants are being irrigated using drip irrigation which is ideal for areas facing water scarcity. At the same time, large scale composting is taking place which will be used as organic fertilizer at all plantation projects on the campus. The team has also started cultivating various medical plants after much research and analysis concerning the medical plants of Ladakh.



“Plant a memory, plant a tree,  
do it today for tomorrow.”

– Matz



# 4

## Greening HIAL Campus

The plantation team at HIAL mainly focuses on greening the 100 acre desert of the institute by planting native and drought tolerant plant species. In this quarter, the team undertook late autumn planting wherein about 5000 planting materials of different species, especially cuttings, and seeds were procured. Most of the seeds were sowed in the greenhouse whereas cuttings were planted in the greenhouse as well as in open field conditions to conduct research trials. Before the start of the experiment, rooting success was observed and irrigation planning was also performed. Since HIAL is barren and unfertile desert, prior to any plantation, the land has to be prepped using organic manure/ compost. In order to facilitate proper moisture and soil conditions during favourable plantation, a commercial compost preparation is undergoing. In this context, permission has already been granted for collection of leaves from the local government and Phyang monastery lands. Approximately, 25000 kg of dried leaves have already been collected from Phyang monastery lands and further collection is in process. Alongside, the team is simultaneously working on the documentation and paperwork to streamline the project. In the next quarter, the team is planning to raise a nursery of 25000 plants mainly of drought tolerant species which will be transplanted in an open field.



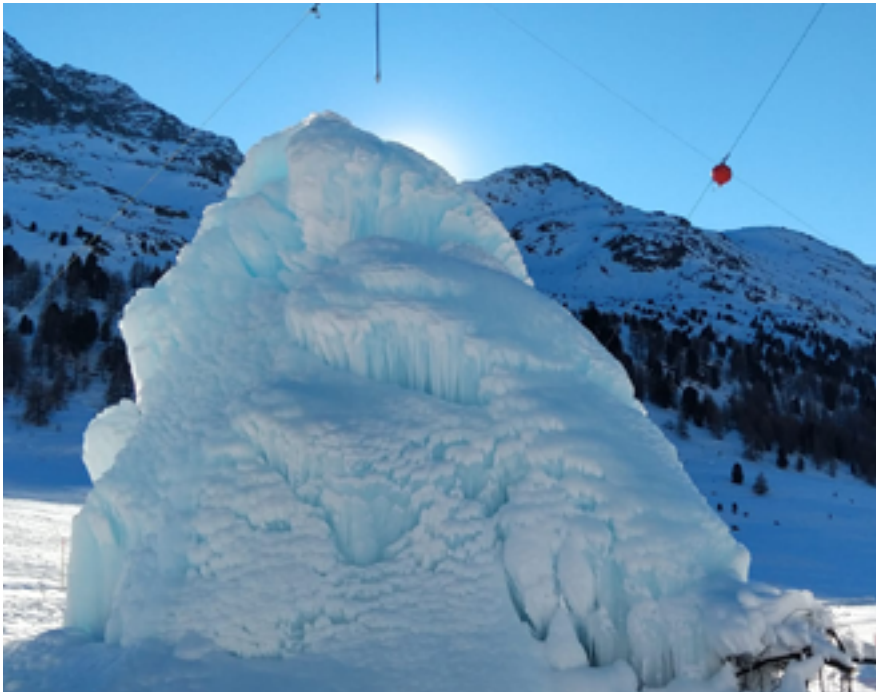
Plantation drive at HIAL campus



# 4

## HIAL - Academia Engadina, Switzerland

HIAL and Academia Engadine of Switzerland have been active collaborators for the last 6 years, working, experimenting, and improving the artificial glacier-making techniques. This collaboration also resulted in the formation of Glaciers Alive, an organization dedicated to understanding the melting glaciers and devising techniques for refreezing of the same. In 2022, 2 Ice Stupa Team members, Angchuk Norboo and Stanzin Tundup visited Switzerland to exchange and learn automation-based ice stupa-making techniques. The goal was to design and implement a new automatic and efficient ice stupa-making system with the help of components from Schneider Electric. The learnings from the exchange included an overall analysis of the artificial snow-making process. Various attributes of the process like the structure's shape, size, density, and weather conditions were tried and tested over the course of 2 months. An overall 3D structural analysis was done using a drone. This project is planned to be scaled up in various high-altitude geographic locations to test the automation technique to combat the impacts of climate change and global warming.



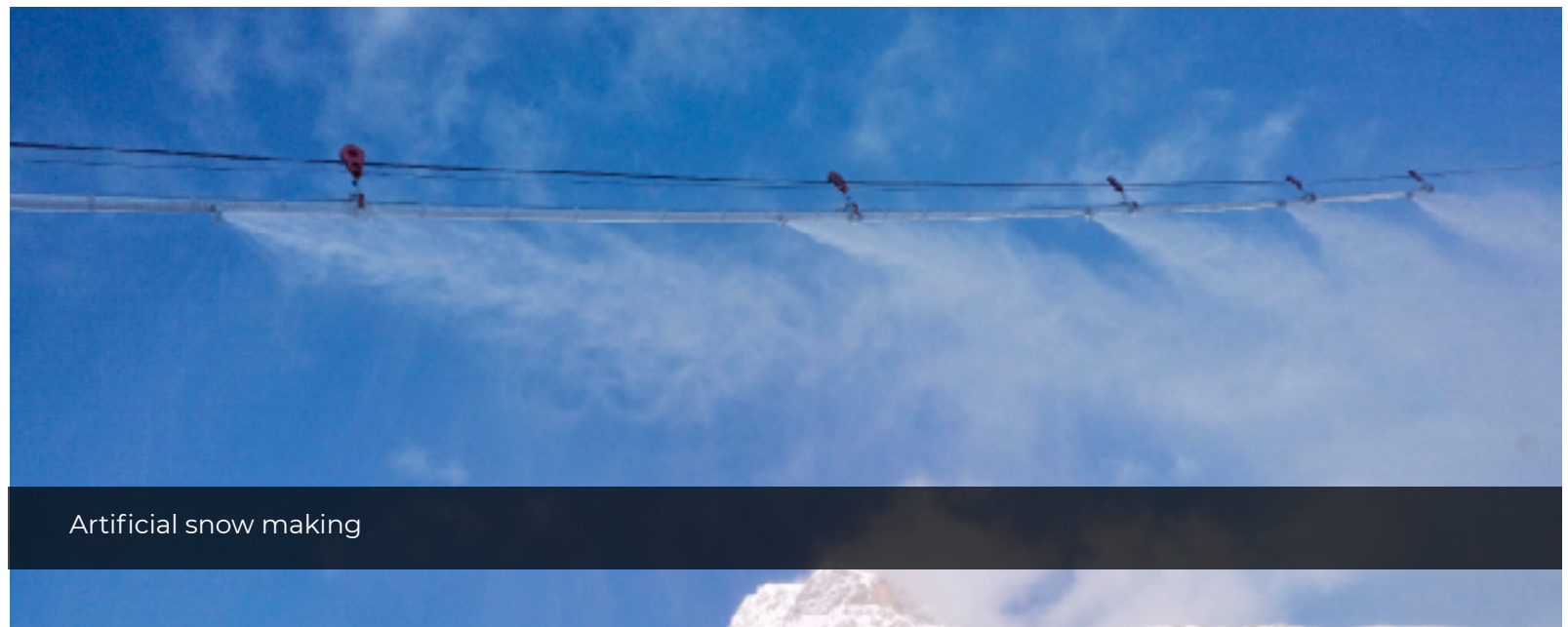
Angchuk Norboo and Stanzin with the Academia Engadina team



# 5

## Making of Artificial Snow

To make artificial snow, we need high-pressure water. Besides this, we have to check the weather and wind speed to spray the water properly. The main purpose for making this is to rebuild the glaciers at Morteratsch glacier and help other countries facing similar problems because of global warming. During Angchuk Nurboo's (Field Specialist) previous year's visit, he helped them in measuring the snow value with the help of a drone. And this time he helped them in measuring the thickness of ice at St Moritz lake so that horse racing could happen on the frozen lake.



Artificial snow making

# 6

## Ice-Stupa Competition

The Ice Stupa team at HIAL collaborated with the local stakeholders to scale up the Ice Stupa-making technique in the trans-Himalayan region. For the last 4 years, the Ice Stupa competition has become a means to conserve surface water and recharge groundwater in the process for the downstream cultivators in various villages, and for residents of Leh town. The competition starts with an awareness and training workshop for participating villages in October of 2021. The training and awareness workshop is an open invitation to all the villages across Ladakh that are interested in building Ice Stupas and are given technical know-how by the Ice Stupa team members. The workshop is also used to spread awareness regarding global warming, climate change, glacial retreat, etc.,. This year a total of 37 Ice Stupa were made across 28 locations in Ladakh and worldwide, conserving 119 million litres of water.



Participants of the Ice Stupa competition pose for a group photo with our founder Mr. Sonam Wangchuck

# 7

## HIAL - Astral Foundation, India

HIAL has collaborated with Astral Foundation, India in 2021. This endeavour addressed the water scarcity in the spring/sowing season caused by irrational winter precipitation. The current climate trends of the region apply excess stress to the agrarian lifestyle of Ladakh. The scarcity of water forces people to migrate from their ancestral lands and finally abandon their villages. With Astral Foundation, the Ice Stupa project was able to make 9 Ice Stupas across Ladakh to conserve and provide water for farming and other related activities in the region. The project complemented the water conservation practice by planting 4000 indigenous plant species consisting of sea buckthorn, wild rose, kikar, and Russian olive to boost the local ecology and aid as a high-altitude carbon sink.





Harvesting of potatoes in Kulum village by the villagers.

# 7 Kulum Rehabilitation

HIAL has collaborated with the Ministry of Tribal Affairs (MoTA), the Government of India. The project is to rehabilitate the abandoned village of Kulum by inducing a sustainable circular economy model in the village. The model includes major solutions like the building artificial glaciers, restarting agriculture, passive solar retrofitting of traditional Ladakhi houses, and inducing eco-tourism among others.

Kulum is located 70 km from Leh, town. Kulum was abandoned in 2010 due to no availability of surface water for agriculture and drinking purposes. The residents of Kulum moved into the nearby town centre of Upshi for their survival. The residents have left their traditional agrarian practices and are working as daily wage labourers or running utility shops to make ends meet. Last year, a total of 3 Ice-Stupa and 5 horizontal glaciers were made in Kulum upper valley. These structures helped in conserving about 12 million litres of water. Using the same water, the stream flow of Kulum was calculated. The stream flow had doubled during the spring/sowing season which enabled the villagers to restart agriculture on their ancestral lands. A total of 1300 kgs of potatoes were harvested from the field of Kulum. Next year, the project is scaling up in Kulum and anticipated cultivation of all of the village lands is expected.



Harvesting of potatoes in Kulum village by the villagers and HIAL team.

# 8

## Ice-Climbing Festival

HIAL partnered with Ladakh Mountain Guide Association (LMGA) to promote adventure tourism across the region and ignite the spirit of adventure amongst the youth. The idea brings forth the aim to promote winter tourism in Ladakh and the need for nurturing more young talents from Ladakh in winter adventure sports. This interesting collaboration works in tandem with water conservation by making artificial ice-fall glaciers (frozen waterfalls) and then conducting workshops and festivals around ice climbing in Ladakh. This year, HIAL and LMGA built 5 Artificial Glaciers and Ice-wall Glaciers made in Gangle's valley and conducted the 3rd Ladakh Ice Climbing festival. This festival was attended by more than 500 people who understood the importance of water conservation and tried their hands at ice climbing.



Participants enjoying Ice climbing at Gangles valley



# 9

## HIAL - University of Aberdeen, Scotland

HIAL and the University of Aberdeen partnered last year in building an ice stupa in Phyang, Ladakh. Continuing the effort this year, a presentation on Ice Stupa artificial glacier was made by our partners from Aberdeen in COP26 Glasgow to the world. Various aspects of the project were discussed during the conference and experts from all around the world came together to develop a comprehensive pathway for the way forward. In the latter part of the collaboration, 2 members of the University of Aberdeen visited Ladakh to test the self-designed sleeve-type insulation system on Ice Stupa making pipes.



Indian Tricolour hoisted on the Ice Stupa by HIAL and University of Aberdeen team

“Energy is essential for development,  
and sustainable energy is essential for  
sustainable development.”

— Tim Wirth





# School of Energy Studies (SENSe)

The SENSe team has been actively working on research and innovation in the field of Passive solar heating techniques to address the various issues faced by the cold desert region of Ladakh.

# 1 Thermal Comfort Survey

The SENSE team at HIAL undertook a Thermal Comfort Survey targeting around 20 buildings and around 1000 forms. The survey evinced that the indoor comfortable temperature for Ladakhis in winter is around 18°C with two layers of clothing insulation. The team also analyzed the performance of PSH buildings against conventionally heated buildings in Ladakh. It was found that the conventionally heated rooms gained a temperature of 15°C when heated and the temperature fell to -5°C when the heat was turned off. Whereas the PSH buildings averaged between 18 to 25°C in January, which is the coldest month of the winter season.

# 2 Solar Panels Installation

Another important project that the team worked on was installing solar panels over the PreFREB buildings. The important aspect of these panels is that besides producing solar energy to meet the electrical needs of the building, they also aid in waterproofing the roof of the building it is installed upon. The team has also initiated research and analysis to calculate the carbon offset from our PSH buildings. Furthermore, an international student project focussing on the performance of PSH buildings, their simulation, and cost compared to conventional buildings was also done.



Solar panels installed by the team on PreFREB building

# 3

## Ground Temperature Study

A new study was initiated by HIAL's SENSE team to measure different temperatures at different locations in Ladakh based on altitude as well as terrain. This study will help acquire an understanding of the frost line at different altitudes and terrain. It will also help in understanding the potential of using underground temperatures for temperature modulations in buildings in the future. Currently, the team has installed sensors at HIAL and Gangles village at different depths and has found interesting results. However, a detailed study will follow in the upcoming season. The data received from the study will also help the UT Administration in its Jal Jeevan Mission.



A sensor HOBO Ambient installed at HIAL

## Thermal Simulation of PSH Buildings in FHNW Switzerland

SENSE team member Rohit Ranjan visited FHNW (Fachhochschule Nordwestschweiz or University of Applied Sciences and Arts Northwestern Switzerland) Muttenz, Switzerland as a part of the ongoing Project “Mainstreaming PSH in Ladakh” . The project is being carried out in collaboration with FHNW, TERI and funded in part by the SDC. He worked alongside the university’s expert team and received the requisite training to perform such simulations for HIAL in the future.



Rohit Ranjan with Monika at FHNW

# 4 Carbon Neutral Leh Airport

In November 2021, HIAL's founding director called for a mid-course correction of the Leh Airport New Terminal. The pre-existing design was bound to be carbon intensive and not in line with the vision of Carbon Neutral Ladakh as declared by our PM. The request was well received and HIAL's International Committee of Experts, for energy efficient and solar heated buildings for Carbon Neutral Ladakh was requested to suggest design changes.

## Changes HIAL proposed:

Broadly speaking we have proposed eliminating diesel boiler and DG sets (except one stand by), to replace with passive solar heating/cooling through:

- Enhancement of insulation in walls, roof, and flooring,
- Using the roughly 4 MWh solar gain from the south façade of the airport,
- Using the Geo-thermal heat gain from the 100 Cu M of groundwater pumped daily,
- Using efficient Heat Pumps instead of diesel boilers,
- Using waste heat recovery from the standby diesel generator (in conjunction with heat pumps), in times of simultaneous cloudy weather and grid failure.

The new concept will make the Leh airport completely carbon neutral and will save the exchequer foreign reserves to the tune of 10 crores per year and of course carbon emissions to the tune of 10 tons per day. If executed well, this airport could become a glorious example for the whole country and the world.



Mr. Sonam Wangchuk and Ms. Gitanjali J Angmo holding discussions with the visiting PMO team





Responsible tourism students along with Mr. Sonam Wangchuk on their visit to Saspol fort for a session on “the evolution of earth architecture” in Ladakh.

# School of Responsible Tourism (SoRT)

“Travelling signifies a union of two sets of people who usually belong from different places, cultures, and traditions. It is not only about sightseeing or driving through beautiful landscapes.

It is about the blend of two identities and experiencing the authenticity of that exchange. That is the kind of involvement on which Himalayan Farmstays’ are built.”

# 1 Tourism

Students in the School of Responsible Tourism (SoRT) initiated an organic kitchen garden to engage farmstay 'Amalays' (village mothers). The main objective of the event was to highlight Phyang as a tourist destination offering distinctive experiences, to economically empower the locals, and finally to introduce tourists to locally and organically grown vegetables. HIAL also sourced organic vegetables from this organic kitchen garden for its on-campus residents. A variety of vegetables were grown in these organic kitchen gardens most common being cauliflowers, lettuce, onion, broccoli, etc.

The team also carried out research in collaboration with the Ministry of Tribal Affairs (MoTA) to understand the reason behind urban migration within Ladakh and to find out a possible solution to mitigate such moves, especially amongst the youth. The team jointly conducted surveys in different villages of Ladakh- Liker, Yangthang, Ang, Hemisshukpachan, Tia, Tingmosgang, Markha, Sumdha, Rumbak, Zingchen, Chilling, SKyu, Kaya, Korzok and Tsokar.

On the 3rd of September 2021, our Responsible Tourism Apprenticeship course participants prepared a fantastic tourist event in Phyang village. The well attended event covered a guided heritage walk, a farmers' market featuring local flavors like organic products, local cuisine, food stalls and handicrafts, Ladakhi music & dance, and high tea with snacks. Pick-up and drop services from Leh to Phyang and back were also arranged for the convenience of all attendees.



The tourism team with Mr. Sonam Wangchuk



# 2

## Galdan Namchot festival

Galdan Namchot festival was celebrated from 28th December 2021 to 1st January 2022 with much fervor and gaiety. The festival of Galdan Namchot signifies the victory of light over darkness. It also marks the beginning of the new year celebrations in Ladakh. We welcomed participants from different parts of India to celebrate this auspicious festival with us.

The experience revolved around the following major activities and themes:

- Light festival in the Mystical Mountains of Phyang where the mountains were beautifully illuminated to highlight the majestic mountains and immerse in the incredible beauty of mother nature.
- Night of light at SECMOL- filled with fortunes, introspections, wishes & resolutions.
- Local village hosts (Himalayan Farmstays) for an authentic Ladakhi cultural experience.
- Ancient stories from thousand year old caves and paintings.
- Sacred spaces accompanied by guided meditations to re-discover inner light.
- Surviving sustainably in sub-zero temperatures.
- Ice stupas reflect the natural convergence of art & science to tackle climate change.
- Pledges to live simply, and
- Lots of love and laughter



# WOMEN TRANSFORMING INDIA 2021

Co-founder and CEO Gitanjali J. Angmo honored by 'The Women Transforming India 2021 Award' by NITI AAYOG, Government of India in Delhi on 22nd March 22'

# Awards

"The reward for work well done  
is the opportunity to do more"

-Jonas Salk



Ms. Gitanjali J. Angmo and Rohit Ranjan receiving the prize for PSH building on behalf of HIAL

## National Energy Efficiency Innovations Award 2021

Himalayan Institute of Alternatives, Ladakh (HIAL) was awarded the first prize for its “Passive Solar Heated (PSH) Buildings” under the buildings category in the first National Energy Efficiency Innovation Awards on 14th December 2021 from the chief guest Shri R.K Singh Union Minister of Power and MNRE. The function was organized to celebrate National Energy Conservation Day by the Bureau of Energy Efficiency, Ministry of Power, GoI at Vigyan Bhawan, New Delhi. The award was received by Ms. Gitanjali JB, Co-founder and CEO of, HIAL, and Mr. Rohit Ranjan, EA to CEO and Energy Research Engineer on behalf of Team HIAL and Mr. Sonam Wangchuk, Founder and Director.

## Women Transforming India Award

Our Institute's Co-founder and CEO Gitanjali J. Angmo was awarded the Women Transforming India Awards 2021' in Delhi on 22nd March 2022. The Women Transforming India 2021 is an annual contest supported by the United Nations in India, the Indian government website MyGov, and NITI Aayog (the National Institution for Transforming India). They honor "exceptional women entrepreneurs, who are breaking the glass ceiling and challenging stereotypes".



Ms. Gitanjali J. Angmo being accorded the women transforming India award in Delhi



Mr. Sonam Wangchuk receiving a gift from Mr. Adishaa Shirnenbanid (Member of Parliament of Mongolia)

# International Visits & Collaborations

"Collaboration is a key part of the success of any organization, executed through a clearly defined vision and mission and based on transparency and constant communication."

Dinesh Paliwal

# Mongolia visit and collaboration

## (Ice Stupa in Mongolia)

Mr. Sonam Wangchuk and his team visited Mongolia to discuss the possibilities of Ice Stupa in the Mongolian Mountains with Ambassador MP Singh and Mongolian Member of the parliament Mr. Adishaa Shirnenbanid. They had a substantive discussion on the matter and discussed future collaboration on the Ice Stupa Water conservation project in the Khovd Province of Mongolia.



Mr. Sonam Wangchuk with dignitaries in Mongolia



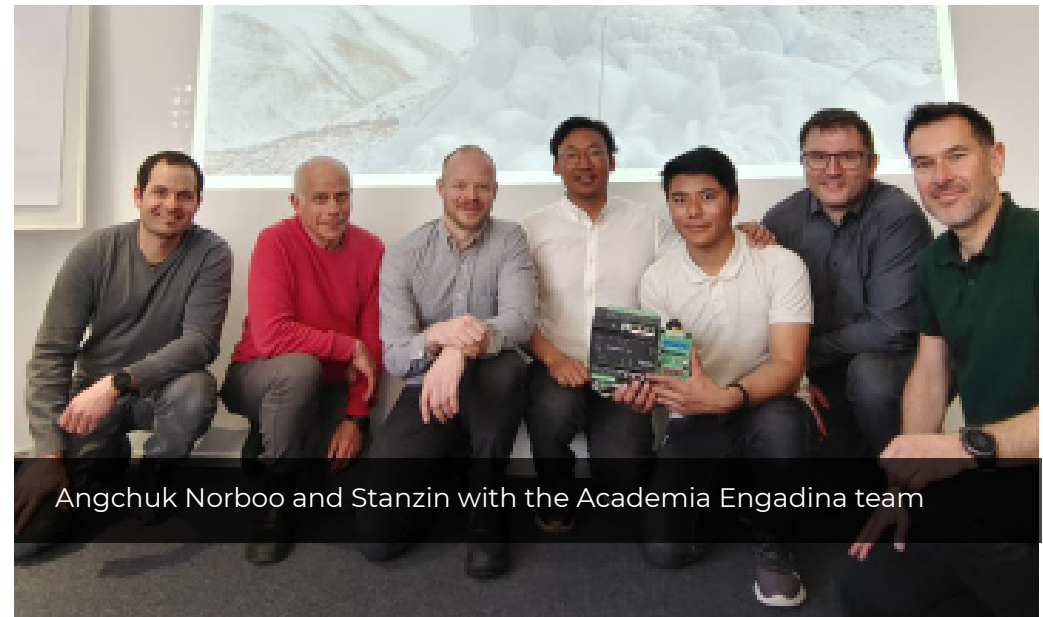


## Switzerland (Angchuk Nurboo and Stanzin Tundup)

For many years, the Himalayan Institute of Alternatives, Ladakh (HIAL) exchanged various programs with Switzerland. This year, Angchuk Nurboo (Field Specialist) visited Samedan, Switzerland to help Dr. Felix and his team built Ice-Stupa there. Some of the significant learnings from his visit were:

- 1) Automatic system (PLC).
- 2) Measuring artificial snow thickness with the help of a drone.
- 3) Measuring the Albedo of artificial snow and natural snow.

As we are aware of the adverse effects of global warming, it has led to the depletion of glaciers at a very high rate. Talking about his experience, Dr. Felix mentioned how the Morteratsch glacier has been depleted ever since his childhood by 45%. Seeing these, he raised his voice to the government and spread awareness among the people, especially the younger generations. He even worked on making artificial snow along with his friends to tackle the issues of global warming's impact on receding glaciers. However, they are still in their experiential stage.



Angchuk Norboo and Stanzin with the Academia Engadina team



ADG Army design bureau, Maj Gen KV Jauhar visited our campus at Phyang. Our construction and Energy departments presented a detailed presentation about the technological developments being made in passive solar heating buildings followed by a campus tour.

# Visitors

"I live in a world all my own, but  
visitors are always welcome."

- Ashleigh Brilliant



Sh. Ranjan Kumar Mohapatra, Director (HR), IOCL, Sh. Sujoy Choudhury, ED & SH (PSO) IOCL and various other dignitaries of IOCL at HIAL campus.



Our Founding CEO & Dean Gitanjali JB and Founding Director Sonam Wangchuk welcomed our guests and guided them through HIAL's vision and mission, along with a campus tour.



PMO team visited HIAL campus, lead by Deputy Secretary, Sh. Mangesh Ghildiyal to discuss and find answers to carbon neutral Ladakh. We would also like to express our gratitude to the Airports Authority of India, the Civil Aviation Ministry and most especially the Prime Minister of India for the attention and support they've given to our humble appeal to rescue the New airport terminal at Leh and transform it from a carbon intensive airport to a Carbon Neutral Airport.



We were happy to host AOC, J&K, Mr. Tejinder Singh at HIAL campus. Our Founding Director, Sonam Wangchuk gave a detailed presentation about the technological developments being made at HIAL, in the field of passive solar heated buildings followed by a campus tour.



Sh. Hemant Priyadarshi IPS, ADG ITBP and Sh. Lhari Dorjey IC ITBP recently visited HIAL campus. Discussions were centered around the possibilities and options for Passive Solar Heated buildings at forward locations on the Indo China Border. HIAL's hot spring design was extensively discussed for future applications. It is always a pleasure to receive and host individuals who share our passion for sustainable living.



# HIAL Staff



# HIAL Family

“The memories we make with  
our family is everything.”

– Candace Cameron Bure



## Chief Patron

His Holiness Drikung Kyabgon Chetsang  
Rinpoche



## Advisory Board

Padma Shri Tsewang Norphel

Padma Shri Morup Namgyal

Ven Khenpo Rigzin

Shri. E.S. Gergan

Shri. Tashi Wangial

Shri Mipham Otsal

Shri. Sonam Dorje

## Board of Directors



**Sonam Wangchuk**  
Founding Director



**Ven Khenpo Rigzin**



**Mr. Tashi Motup**  
Sarpanch Phyang

## Senior Management



**Sonam Wangchuk**  
Founding Director



**Gitanjali J. Angmo**  
Co-Founder & CEO

## Academics



**Gitanjali J. Angmo**  
Academic Head



**Varada Kulkarni**  
Academics Facilitator



**Chamba Tsetan**  
Academics Co-ordinator



**Chuskit Angmo**  
Assistant Academics  
Facilitator and Assistant  
HR Coordinator

## Energy



**Rohit Ranjan**  
Energy Research  
Engineer



**Yashvi Malhotra**  
Energy Research  
Assistant



**Intakhab Alam Khan**  
Site & Research Assistant

## Plantation



**Phunchok Dolker**  
Plantation Head



**Tsering Chuszom**  
Gardner



**Tsering Dolkar**  
Gardner

## Construction



**Phunchok Namgyal**  
Technical Support on Site



**Aditi Patel**  
Architect



**Akhileshwar Reddy**  
Junior Architect



**Skalzang Phunchok**  
Construction Supervisor



**Tsewang Stanzin**  
Construction Supervisor



**Kavya Trivedi**  
Junior Architect

## Finance & Administration



**Michelle Pavri**  
Executive Assistant



**Stanzin Gonbo**  
Executive Assistant



**Tsetan Dolker**  
Accountant



**Mohd. Ahsan**  
Driver & Office Assistant



**Anil Kumar**  
Purchase Incharge &  
Delhi Liasoning



**Lekhraj Sharma**  
Cook & Housekeeping



**Manoj Kumar**  
Cook & Housekeeping

## Communication



**Sonam Dorje**  
Media Executive



**Tashi Gyalsen**  
Graphic Designer



**Lundup Dorjay**  
IT Executive

## Ice Stupa



**Nishant Tiku**  
Ice Stupa Head



**Mohd Aslam**  
Ice Stupa Co ordinator



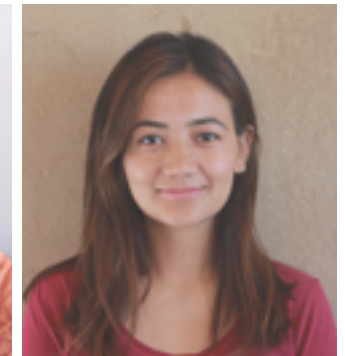
**Thupstan Dawa**  
Technical Executive



**Angchuk Nurboo**  
Technical Executive



**Yasin Ahmad**  
Technical Executive



**Tsetan Dolker**  
Teaching Assistant

# HIAL in the Media

**Outlook**



*Scroll.in*



**INDIA  
TODAY**

THE NEW INDIAN EXPRESS



**NDTV**



THE ECONOMIC TIMES



Business Standard



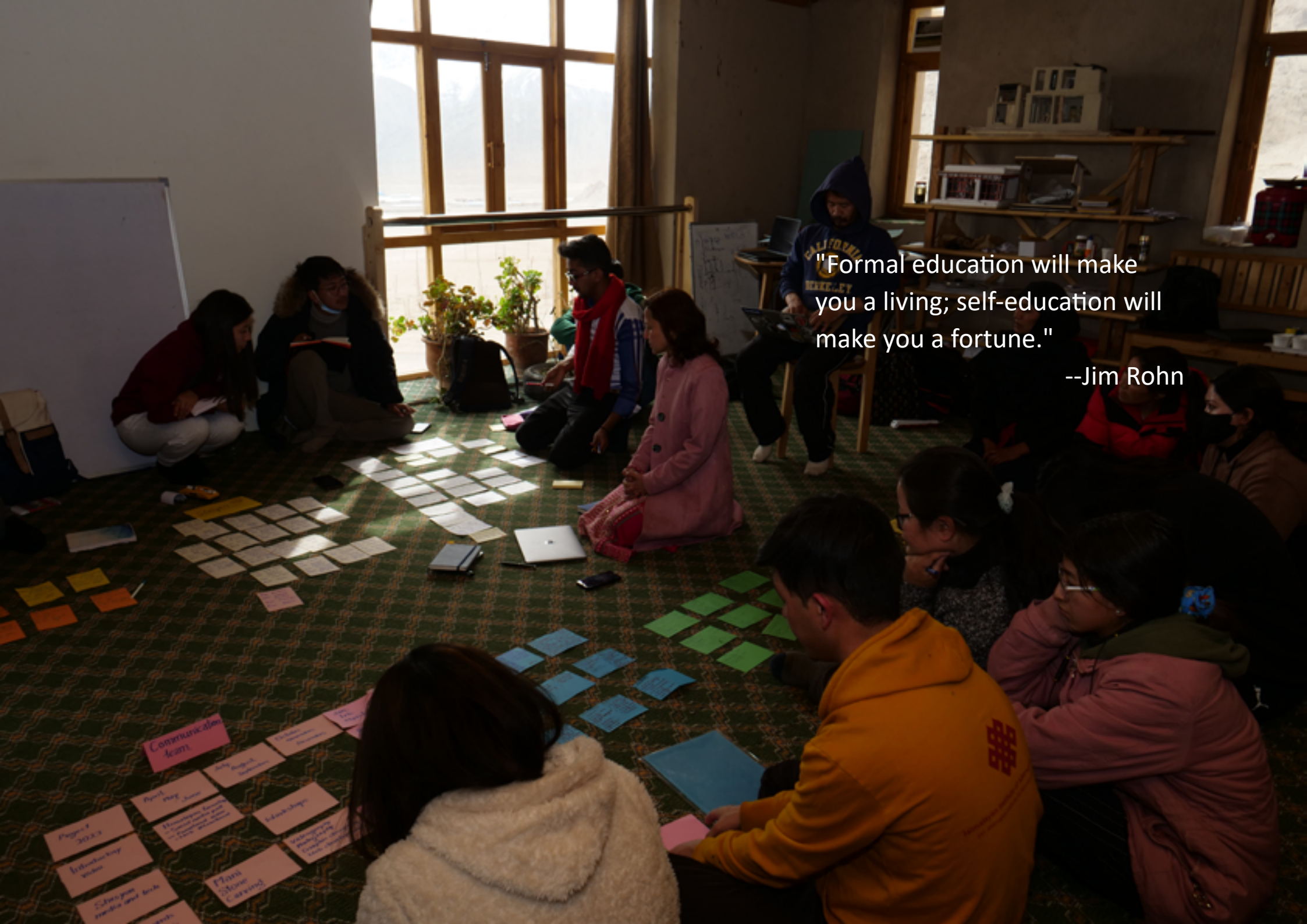
DECCAN  
**Chronicle**



# Supported by

We can only achieve our vision with the support of passionate individuals and organisations that help us by contributing in various ways. We sincerely thank our Chief Patron, HH Chetsang Rinpoche, Ladakh Autonomous Hill Development Council, Leh, our Advisory Board, Phyang Village and all our supporters to believe in our ideology and support us consistently.





"Formal education will make you a living; self-education will make you a fortune."

--Jim Rohn

Communication team

Project 2023.3

Workshop notes

Subsequent meeting and work

Project May 2023

Workshop notes

Plans (sketches)

Workshop notes

Workshop notes

Workshop notes

Workshop notes

Workshop notes

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Workshop notes

# Financials

“You cannot escape the responsibility of tomorrow by evading it today.”

-Abraham Lincoln

**HIMALAYAN INSTITUTE OF ALTERNATIVE LADAKH**  
C.I.N.:U80902LH2017NPL009999  
**Balance Sheet as at 31st March, 2022.**

(Amount in `)



Particulars	Note No.	As at 31/03/2022	As at 31/03/2021
<b><u>Equity and Liabilities</u></b>			
<b><u>Shareholders' Funds</u></b>			
(a) Share Capital	1	100,000	100,000
(b) Reserves and Surplus			
General Reserves	2	56,522,696	58,610,809
Specific Reserves (Donation with Specific Instruction)	3	27,255,000	136,397
		<b>83,877,696</b>	<b>58,847,206</b>
<b>Non-Current Liabilities</b>			
Financial Liabilities			
Lease Liabilities		-	-
Provisions		-	-
<b>Current Liabilities</b>			
Financial Liabilities			
Trade payables			
a.) Total outstanding dues of creditors Micro and small enterprises	4	-	-
b.) Total outstanding dues of creditors other than micro and small enterprises			
(b) Other Current Liabilities	5	1,645,759	1,691,074
(c) Short-term provisions	6	-	-
<b>Total Current Liabilities</b>		<b>1,645,759</b>	<b>1,691,074</b>
<b>Total Liabilities</b>		<b>83,877,696</b>	<b>58,847,206</b>
<b>Total Equity and Liabilities</b>		<b>85,523,455</b>	<b>60,538,280</b>
<b><u>Assets</u></b>			
<b><u>Non-current assets</u></b>			
(a) Property, Plant and Equipment and Intangible Assets			
(i) Property, Plant and Equipment	7	8,173,192	-
(ii) Capital Work in Progress	7	63,068,131	31,414,556
(b) Other Non Current Assets	8	-	-
		<b>71,241,323</b>	<b>31,414,556</b>
<b><u>Current Assets</u></b>			
<b><u>Financial Assets</u></b>			
(a) Cash and cash equivalents	9	12,832,378	18,382,859
(c) Short-term loans and advances	10	1,449,755	9,036
(d) Other Current Assets	11	-	10,731,829
<b>Total Current Assets</b>		<b>14,282,133</b>	<b>29,123,724</b>
<b>Total Non-Current Assets</b>		<b>71,241,323</b>	<b>31,414,556</b>
<b>Total Assets</b>		<b>85,523,455</b>	<b>60,538,280</b>

The notes form an integral part of these financial statements

"As Per Our Report of Even Date Attached"

For and on behalf of

A S Mahatawat & Associates  
Chartered Accountants  
Firm Registration No. : 530520  
  
Ashu  
Partner  
Membership No.: 530520  
U/DIN: 225005200CJASD9645

  
Sonam Wangchuk  
Director  
DIN - 07662456  
  
Dipshi Dorje  
Director  
DIN - 07770547

HIMALAYAN INSTITUTE OF ALTERNATIVE LADAKH

C.I.N.:U80902LH2017NPL009999

**Income & Expenditure Account for the year ended 31st March, 2022**

(Amount in `)

Particulars	Note No.	For the Year ended 31st March, 2022	For the Year ended 31st March, 2021
<i>Income</i>			
(a) Revenue from operations	12	13,305,571	41,913,457
(b) Other Income	13	3,559,641	-
<b>Total Income</b>		<b>16,865,212</b>	<b>41,913,457</b>
<i>Expenses</i>			
(a) Cost of Material Consumed	14	-	1,160,911
(b) Employee benefits expense	15	8,843,968	4,970,306
(c) Depreciation and Amortization Expenses	7	1,095,969	-
(d) Other expenses	16	9,027,808	7,187,190
<b>Total Expenses</b>		<b>18,967,745</b>	<b>13,318,407</b>
Profit before tax		(2,102,533)	28,595,050
Less :- Current Tax		-	-
<b>Excess of Expenditure over Income</b>		<b>(2,102,533)</b>	<b>28,595,050</b>
Earning per equity share (of ` 100 /- each)			
(1) Basic & Diluted		(2,103)	28,595
The notes form an integral part of these financial statements			

"As Per Our Report of Even Date Attached"

For and on behalf of

**A S Mahalawat & Associates**

Chartered Accountants

Firm Registration No. : 530520

  
Ashu  
Partner

Membership No.: 530520

UDIN: 22530520BCJASD9685

  
Sonam Wangchuk

Director

DIN - 07662456

  
Lashi Dorje

Director

DIN - 07770547







## Contact Us

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[contactus@hial.edu.in](mailto:contactus@hial.edu.in)

Himalayan Institute of Alternatives,  
Ladakh Phyang Leh, Ladakh, India



Himalayan Institute of Alternatives, Ladakh

(An Alternative Institute For Mountain Development)