



LEH VISION 2030

A Path to our Shared Happiness

INCLUSIVE

SUSTAINABLE

RESILIENT



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December 2020



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BORDA 



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LEH VISION 2030

A Path to our Shared Happiness

I N C L U S I V E

Beneficial to everyone

S U S T A I N A B L E

In harmony with nature and natural resources

R E S I L I E N T

Able to withstand change and recover from shocks

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ABBREVIATIONS

ALTOA	All Ladakh Tour Operators Association
BORDA	Bremen Overseas Research & Development Association
CEC	Chief Executive Councillor
DIHAR	Defense Institute of High Altitude Research
Dept. of R&B	Department of Roads and Bridges
Dept. of UD	Department of Urban Development
FSM	Faecal Sludge Management
FSTP	Faecal Sludge Treatment Plant
GIS	Geographic Information System
GoI	Government of India
ICPS	Integrated Child Protection Services
LAHDC	Ladakh Autonomous Hill Development Council
LAMO	Ladakh Arts and Media Organisation
LDA	Leh Development Authority
LEDeG	Ladakh Ecological Development Group
LEHO	Ladakh Environment & Health Organisation
MCL	Municipal Committee Leh
MoHUA	Ministry of Housing and Urban Affairs
MoUD	Ministry of Urban Development
PHED	Public Health Engineering Department
pph	persons per hectare
RFP	Request for Proposal
RTO	Regional Transport Office
SDGs	Sustainable Development Goals
SECMOL	Students' Educational and Cultural Movement of Ladakh
SPC	Strategic Planning Committee
STP	Sewage Treatment Plant
SWM	Solid Waste Management
UN	United Nations
UT	Union Territory of India

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FOREWORD

Chief Executive Councillor, LAHDC, Leh



Ever since Ladakh was opened to the outside world, it has witnessed tremendous change- culturally and climatically. Therefore, a sustainable change is always welcome if we are to preserve our heritage and culture without comprising on the development of the region. The people of Ladakh have always led a peaceful, harmonious and self-sufficient life. But in case we don't have a vision for our future, then all the stakeholders of the region would face undesired consequences.

Therefore, it gives me immense pleasure to see the Leh Vision Document-2030 in its final form. At a time when Leh is becoming the hub of all commercial activities, and there is a huge surge in rural to urban migration, we are witness to the negative effects of climate change, and also the multiplier effect of modernism. This is not only affecting the unique culture and tradition of Ladakh but is also altering the entire fragile ecosystem of the region. Dependency on outsiders and businesses has severely impacted the region- something which the aftermath of the COVID-19 pandemic has taught us.

This shows our lack of vision for the next decade to come. I am pleased that the European Union, BMZ, BORDA and LEDeG are helping LAHDC Leh in preparing a vision for the Leh town. All the eight themes included in Leh Vision-2030 addresses all the challenges faced by the people of Ladakh, particularly Leh town, such as economy, heritage, environment, and water and solid waste management. I am sure that

this vision document would resonate with the people of Leh town, especially after the mass public consultation meetings that LAHDC Leh conducted in almost all wards. I am thankful to both the upper and lower councillors for helping us in conducting the meetings. We have tried to leave no stones unturned and prepare a vision document that addresses both macro and micro problems of the people of the town.

Leh Vision-2030 is a living document. However, it must not merely remain a document, but the recommendations made in the document must be implemented. This is only possible through the support of the public and the key stakeholders of Leh town.

My predecessors, Late Dr Sonam Dawa, Late Dorjey Motup and Shri Gyal P Wangyal, have laid the framework for Leh Vision-2030 and it is a moment of great pride for me to take this document forward. As the chairman of LAHDC Leh, it is my dream to see this vision coming alive on the ground. I am sure that by 2030 we will see changes on the ground, and also a new carbon-neutral Ladakh.

A handwritten signature in black ink, appearing to read 'Tashi Gyalsen'. The signature is fluid and cursive, with a large loop at the end.

Tashi Gyalsen

Chief Executive Councillor,
LAHDC, Leh

Member of Parliament, Ladakh Parliamentary Constituency



The vision for the betterment of human life, keeping the values of kindness & compassion on the mind, has helped humans evolve over centuries by developing techniques and technologies as per their need. "Leh Vision 2030" is one such step in the direction of evolution of a better 'inclusive, sustainable, resilient and a liveable society'. Leh Vision 2030 is being developed with the generous inputs and support from the European Union, BMZ, BORDA and LEDeG led by prominent members of the society who have served as public servants in the administration as well in various sections of the community.

The people of Ladakh, particularly Leh town, are facing numerous challenges and require basic needs such as drinking water, infrastructure, medical care, education, connectivity to telecommunications. Leh town has played a pivotal role in meeting the aspirations of the youth, old, agriculturists, entrepreneurs and other sections of the society that is in harmony with the environment through sustainable practices.

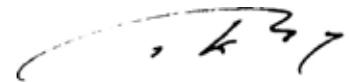
The world is witnessing the miracle of modern-day technologies. Although we have made rapid strides in the world of health, education and digital platforms, the people of Ladakh, primarily reliant on an agro-based economy, need to embrace sustainable practices, especially in the tourism sector as the region is witnessing a huge footfall of tourists in the peak season, to make it a plastic-free region.

We also need to learn the ways of solid waste management, use of eco-friendly methods to sustain the centuries-old culture and heritage of the region.

As envisioned by the Hon'ble Prime Minister of India Narendra Modi ji, Ladakh will soon be developed as the first carbon-neutral region of the country, and it shall also emerge as a centre of learning of sustainable living.

It gives me immense pleasure to see happiness as the central theme of the Leh Vision 2030. It couldn't have been more apt. Ladakh is often seen as an amazing destination, and its people are seen as kind-hearted and gently. Ladakhis greet each other and even strangers with 'Julley' which is a symbol of compassion and the kind-heartedness of the people of this region. The word julley has the potential to become a building block to create a compassionate, kind and happy society.

I extend my best wishes and support to everyone involved in the process of envisioning a vision for Leh town. This is a moment of reckoning, and I am sure the Leh Vision 2030 will create a roadmap for us. And I am hopeful that Kargil town will also come up with its own vision document soon.



Jamyang Tsering Namgyal

Member of Parliament
Ladakh Parliamentary Constituency

Vice Chancellor, University of Ladakh Advisor, Strategic Planning Committee (SPC)



In May 2019, I was asked by the LAHDC Leh about my availability to head an advisory team named 'Strategic Planning Committee' (SPC) to assist the European Union-BORDA-LEDeG consortium in preparing the Leh Vision Document-2030. I accepted the suggestion with alacrity as the subject matter had been of great importance in my scheme of things. A total of five meetings had already taken place when I joined as the advisor of the SPC. On November 9, 2019, I chaired the first meeting as the advisor of the SPC. Three more SPC meetings followed soon.

The last meeting was held on November 5, 2020, in the wake of the intensive month-long mass public consultation meetings carried out by LAHDC Leh and LEDeG despite the COVID-19 pandemic situation to enlist views and suggestions of citizens of Leh town which was also attended by the new chairman of LAHDC Leh.

The vision document of a socio-economic entity, like a city, is essentially a perspective plan for addressing problems that are endemic to it, and for comprehensive development of the entity in all the sectors. The first task undertaken by the SPC was a comprehensive study of the unique features of Leh town, particularly the socio-economic and environmental problems it was beset with, and the development imperative to this unique trans-Himalayan town in catching up with the advances taking place in other parts of the country and the world.

The pressing problems of Leh identified by SPC members are:

1. an alarming growth rate of population-from 9,000 in early-80s to about 45,000 in 2019, and rural-to-urban migration,
2. haphazard growth of the town without a long-term perspective for any sector,
3. adverse impact of climate change, such as the pace at which cryospheric water sources are depleting, and frequent flash floods along with droughts that the town had to endure in the recent past, etc.,
4. a worsening mismatch of creation of jobs and the number of job-seekers, leading to unrest among the youth, etc.

In the backdrop of deliberations by the SPC members were six vision documents – mainly captioned 'Leh Master Plan' – prepared between 1978 and 2018, that were left partially implemented or entirely unimplemented, and consigned to history, so to say. Many SPC members felt that the principal reason for the abandoning or partial implementation/non-implementation of these master plans was an apparent mismatch in the appreciation of issues and differing perceptions of the formulators and the implementers of these master plans. Consequently, these master plans remained on the shelf of the offices gathering dust before fading into oblivion with time.

In the foregoing context, the SPC decided to incorporate the principal macro

recommendations arising from the mass public consultation into the document under relevant themes. These include tables with objectives, strategies, target beneficiaries, implementing agencies, sources of funds, etc., to the extent possible. This shall compel the plan formulators to take notice and incorporate these in the perspective plan and the annual plan of the town with adequate funding. Of course, this is subject to their fitting into the broad objectives of the vision document for the realisation of the vision of a prosperous, happy, forward-looking and sustainable Leh city on the lines of the United Nation's goal of sustainable development by 2030. The remaining micro-demands, for the reference of the executors of planned programmes for a proper and elaborate understanding of the vision document, would be uploaded on the LVD website.

In its meeting held on November 5, 2020, the need for marrying 'LVD-2030' with 'Vision-2050 for the UT of Ladakh' was discussed in the presence of all the stakeholders for ensuring the attention of authorities- which is vital to the flow of adequate funds for the programmes under LVD-2030.



C Phunsog
IAS (Retired)
VC, University of Ladakh
Advisor, Strategic Planning Committee (SPC)

**Director, Urban Local Bodies, UT Ladakh
Convenor, Strategic Planning Committee (SPC)**



It gives me immense pleasure to be a part of the Strategic Planning Committee (SPC) that conceptualised the Leh Vision Document-2030. The role of the convenor was both challenging as well as eye-opening for me. It was challenging because Leh town is at a crucial juncture of time where unless critical and timely interventions are made, the rapid urbanisation taking place in this Himalayan town could prove to be disastrous.

It is heartening to see Leh town growing into one of the fastest-growing cities of the country, but we must not overlook the challenges that we might have to face in the coming years.

At the same time, my association with SPC was eye-opening because I came across vision documents of many other small towns around

the globe that could be replicated in Leh town. Yet, we restrained ourselves and tried to come up with the best possible solutions that could be implemented in Leh town.

A collective vision of the residents of Leh town was indeed the need of the hour. The tasks of conducting mass public consultation meetings and using social media as a medium to express the concerns of the public through the public opinion videos were carried to perfection by LAHDC, Leh with support from LEDeG.

I am sure that the vision document would act as a beacon of hope in our search for an inclusive, resilient and liveable town, and help us to put Leh town on the right track of development in the next one decade.

A handwritten signature in black ink, appearing to read 'Zahida'.

Dr Zahida Bano (KAS)
Director, Urban Local Bodies, UT Ladakh
Convenor, Strategic Planning Committee (SPC)

Ex-Chief Executive Councillor, LAHDC, Leh



Ladakhi society and traditions are centuries old. Even though the past 40 years have brought unimaginable changes to our region, the core desires of every Ladakhi remain the same as they always have been – to have a close-knit and caring community, to respect and protect the nature and environment that sustain us, and to build a deeper spiritual connection with ourselves. For centuries, this way of life helped Ladakhis to be peaceful, healthy and happy.

In the coming decades, this will become increasingly challenging. Our society has opened up to the world, and we are also experiencing the harmful aspects of consumerism and technology along with the benefits. Climate change is bringing unpredictable changes, which can easily become overwhelming and dangerous. And national and global forces – whether politics, tourism, or pandemics – will increasingly impact and shape our society. This is the right time for us to re-consider, re-imagine and re-plan our future. Over the past 30 years, development and growth have come to us without any holistic planning and with little inputs from Ladakhis. And we have seen pollution, water shortages, crowding, garbage, uncontrolled constructions and inequality with no clear plan on how to deal with these.

Therefore, 2020 should be the year we collectively awaken to our shared future. It is my pleasure to place this 'Leh Vision 2030' in your hands, which has been thoughtfully and sincerely developed by the 8-member Steering Committee led by Shri C Phunsog (Retd. IAS), the incumbent Vice-Chancellor of the University of Ladakh, with immense participation from residents of Leh town during one-month Mass

Public consultation meetings held in all the 13 Municipal wards of the town. The Vision is truly by Ladakhis, for Ladakhis, with consultations with over 1000 citizens under the supervision of both Hon'ble Councillors of Upper and Lower Leh and MCL ward members, and 20 experts, including consultants and coordinating theme experts.

I thank all those who have given their valuable time to create this roadmap for us. It is a truly integrated vision that touches every aspect of our life and government – from the infrastructure we will build, to how we will operate and deliver services, from how we will balance economic growth and environmental protection, and where we need new technologies and where we must bring back traditional practices and old wisdom. This Vision 2030 is not supposed to be a static goal that we revise once a decade, but a living concept that must be constantly debated and improved upon.

It is now the collective duty of all government departments, religious groups, NGOs, businesses, and citizens to put this vision into action. I invite every Ladakhi to contribute towards building a more sustainable, safer, compassionate and happier society for everyone who lives in, works in or visits Leh.

Happiness is the birthright of every person, and we must judge every decision based on whether it will make all of us and our children happier.

A handwritten signature in black ink, appearing to read 'Gyal P Wangyal', with a horizontal line extending to the right from the end of the signature.

Gyal P Wangyal

ex-Chief Executive Councillor,
LAHDC, Leh

Ex-Deputy CEC, LAHDC, Leh



The Liveable Leh project funded by the European Union has truly been a boon for the residents of Leh town. LAHDC, Leh is delighted to have signed a Memorandum of Understanding (MoU) with LEDeG in 2017 to implement this project in Leh town. Being a member of the Strategic Planning Committee since the start of the process for Leh Vision Document-2030, I would like to extend my gratitude and heartfelt thanks to everyone involved in the conceptualisation of the vision document for Leh town.

The EU-Liveable Leh project beautifully encapsulates the vision of LAHDC, Leh for its people. The Leh Vision Document-2030 is nothing short of icing on the cake. As we move forward on the path of development, we have to ensure that all the residents of Leh have access to drinking water, sanitation and hygiene, smooth-flowing traffic and safe pedestrian paths to walk on, and also public spaces where people can meet and talk. Until a few years back, these would have seemed like utopian dreams for a small place like ours. But not anymore. Thousands of residents of Leh also share the same dream and it is our duty and responsibility to fulfil these dreams.

As I said earlier, the EU-Liveable Leh project could not have come to Leh at a better time. As we are battling one urban challenge after the other, this project envisages a city that is resilient, inclusive and liveable ten years down the line. The capacity-building trainings, the all-weather public toilet at Zangsti, the treatment of faecal sludge at the FSTP near Bomb Garh, and the conceptualisation and implementation of the eco-cultural park in the centre of Leh town are some of the key components of this project.

I have closely observed the process of drafting the Leh Vision Document-2030 through multiple meetings of the Strategic Planning Committee headed by Shri C Phunsog (IAS Retd). I must say that everyone involved in this process have tried to produce a vision document that is practical as well as implementable. What makes this vision document unique is the mass public consultation meetings that were held across all the 13 municipal wards of Leh town, thereby taking the process of Leh Vision Document to a whole new level. All the micro and macro problems of the residents of Leh town were identified and analysed by the LEDeG team which took great pain and braved the COVID-19 situation to hold these meetings in different wards of the town. This vision document with eight different themes and happiness as its central theme would surely serve as commandments for the officials and residents of Leh town for years to come.

With this, I would also like to thank LEDeG and all its staff under the supervision of the former executive director Mr Nordan Otzer and the current executive director Shri Eshey Tondup for assisting LAHDC, Leh in helping us to prepare such a well-thought-out shared vision for the residents of Leh town.

We, at LAHDC Leh, are confident of preparing an exemplary vision document that would be used as a model by other Himalayan towns. Once again, I would like to take this opportunity to thank everyone involved in the process of drafting the vision document for Leh town.

A handwritten signature in black ink, appearing to read 'Tsering Sandup', written over a white background.

Tsering Sandup
ex-Deputy CEC
LAHDC, Leh



OVERVIEW

This report, Leh Vision 2030, is a significant milestone in a process that was started in 2017-18 by the Ladakh Autonomous Hill Development Council, Leh. The Strategic Planning Committee (SPC) that was formed to create a coherent, inclusive and actionable Vision for Leh's future, held extensive consultations with the people of Leh and took help of local and international experts over a period of two years, to create this report and roadmap.

This Vision, first and foremost, represents the aspirations and desires of the people of Leh, considering their material comforts, as well as social, emotional and spiritual needs. Diverse voices participated in public discussions, which helped shape the strategies and actions recommended herein.

A key objective is to balance the short-term needs and long-term priorities from the perspective of environmental sustainability and mitigating natural risks. Given its unique history, culture and location, Leh needs a unique vision and development plan.

Perhaps most importantly, the vision and goals set herein must be actionable and achievable. This consideration has been central to identifying the actions that can be taken to achieve the strategies.

This Vision is developed as a living guide to help make and act on decisions. By identifying Strategies, Actions and the role of key stakeholders, it starts to create a roadmap but this now must be detailed further and acted upon. Everyone has to play a role in fulfilling this Vision, which has been developed by the people of Leh, for the people of Leh.

BACKGROUND

This report, *Leh Vision 2030*, is a significant milestone in a process that was started in 2017-18 by the Ladakh Autonomous Hill Development Council, Leh. On 7th August 2018, this initiative was formalised through a Government Order, constituting an eight-member Special Committee headed by Mr C Phunsog, IAS (retired) to develop a strategic plan for the town of Leh.

The Special Committee, supported by experts from various fields related to urban planning and urban management, was given the mandate to understand the nature of problems with development in Leh and accordingly, identify and frame planning strategies and approaches suitable to the unique and distinctive climatic, physiographic and socio-cultural conditions of the mountain town.

At the outset, the Special Committee acknowledged that the last decade has seen a vigorous programme of development in Leh, which has brought rapid transformations in its economic, physical, socio-cultural, and environmental spheres—and not all for the better. Due to lack of planning or any overarching strategy, the result was unorganised and haphazard physical growth—hotels and guesthouses mushrooming all over town, deterioration of natural resources like water bodies, greater air and water pollution, and congestion—which have brought Leh to a point where urgent action is required to prevent irreparable harm to the town and its ecology. Uncontrolled development simply must be stopped and a clear vision and plan is required to determine how.

After going through various meetings, discussions, trainings and exercises in its first few months, the Special Committee prepared a report titled "*Planning Leh's Future: The Case for a Strategic Plan to ensure Economic Growth, Sustainability, Resilience and Higher Quality of Life.*"

This report highlighted the various forms of transformations in Leh, studied the causes and impacts of these transformations, and discussed and evaluated various planning processes that are typically carried out for managing urban development. It recommended a

comprehensive and participatory **Strategic Planning Process** as the approach to be adopted for planning the future of Leh. To guide this planning process, the report recommended forming a formal **Strategic Planning Committee (SPC)** with three groups of members:

1. **Governing Members** who will oversee all the work and outputs of the committee
2. **Working Group Members:** Eminent individuals from various fields who are active in Leh, who can provide relevant inputs
3. A **Secretariat** with administrators who will coordinate the work between Governing Members, Working Committee Members, external advisors and citizens and other stakeholders

The SPC is chaired by Padmashri C Phunsog, IAS (Retd.), Vice-Chancellor, University of Ladakh and Former Chief Secretary of J&K and its members, who include key government officials, business leaders and representatives of various local organisations:

Mr C Phunsog, (Retd. IAS), VC, University of Ladakh;
Mr Tsering Sangdup, Deputy CEC, LAHDC, Leh;
Dr Ishey Namgyal, President, Municipal Committee Leh;
Dr Zahida Bano, ADC, District Administration, Leh;
Mr Rigzin Spalgon, ACR, District Administration, Leh;
Mr Sonam Chosjor, CEO, Leh Development Authority;
Mr Deleks Namgyal, General Secretary, ALTOA;
Mr Stanzin Norboo, Joint Secretary, ALTOA.

It may be noted that after the SPC was constituted, the Government of India designated the region of Ladakh as a Union Territory. There have been some changes in the administrative arrangements as a result and these have been incorporated into the vision for Leh.

VISIONING AND THE STRATEGIC PLANNING PROCESS

The Strategic Planning Committee conducted meetings with citizens, local businesses, religious groups and other stakeholders, and experts in urban development, water and sanitation, education, healthcare, heritage conservation, environmental protection, economic development and transportation, and collected relevant data to compile this Vision.

This report provides a comprehensive assessment of the situation and issues in Leh, and frames strategies and courses of action for the future. It is intended to be both the basis for discussion and debate amongst the various stakeholders in Leh, as well as a guide for future priorities and projects.

The next step is to develop detailed project proposals to implement the recommended Actions. Relevant government departments and agencies have to take the lead in this phase.

One important aspect is the boundary of the territory that must be considered while developing the detailed projects and actions. While the current consideration is the boundaries served by the Municipal Committee of Leh, there is an argument for expanding this boundary to include nearby areas that are, for all practical purposes, integrated into the economic and cultural fabric of Leh town. Planning for the metropolitan area holds benefits of ensuring consistent services, bye-laws and management systems, leading to a seamless living and working experience for residents.

The Strategic Planning Process is not a one-time activity. Rather, it is an on-going process of understanding the wishes and aspirations of the people of Leh, setting and adjusting goals, developing a path to reach those goals, constantly monitoring projects and initiatives, and taking corrective action as needed to ensure the goals are met.

STRUCTURE OF THIS DOCUMENT

This document starts with an introduction to Leh and the region of Ladakh in Chapter II. Chapter III examines liveability in Leh based on recent studies and also explores how liveability indices can be supplemented with measurements of happiness. Chapter IV sets out the philosophical underpinning of this Vision – the desire of the people it to make Leh a happy and compassionate town.

The Vision for Leh 2030 is then organised under eight themes, each of which are divided into sections:

Theme 1: A Thriving and Resilient Economy

Theme 2: Mobility of People and Goods

Theme 3: Water, Sanitation and Solid Waste Management

Theme 4: Social Infrastructure

Theme 5: Environment and Climate Change

Theme 6: Heritage Conservation

Theme 7: Spatial Planning and Urban Design

Theme 8: Urban Governance

These themes are not compartmentalised but are interconnected and hence, some repetition of actions in multiple themes is unavoidable. For examples, the strategies in mobility and heritage conservation are reflected in spatial planning and urban design and some of the proposals related to tourism in the section on economy are related to heritage conservation, infrastructure and mobility. The planning process is iterative across the themes.

Each theme includes the following sections:

1. Assessment (Where we are)

2. Vision 2030 (Where we want to go)

3. Strategies and Actions (How to get there)

The strategies are broadly defined ways to achieve the Vision, and Actions are specific but need to be further detailed into projects for implementation. The roles of various stakeholders must also be refined during the next phase.



AN INTRODUCTION TO LEH

Ladakh is unique in terms of terrain, climate, ecology and geopolitics. It is a cold mountain desert with a fragile ecology that can support only a certain amount and type of development and activity. The terrain is spectacular, but challenging, especially in winter. Till recently a part of the border state of Jammu & Kashmir, Ladakh is right on India's frontier with China, requiring a significant military presence and facilities to support it. Given its unique characteristics and strategic geopolitical location, Ladakh was recently separated from Jammu & Kashmir in 2019 and declared a Union Territory.

GEOGRAPHY AND CLIMATE

Leh town is located in the trans-Himalayas at coordinates 34.16°N 77.58°E, with an altitude of 3,310 m in the south and 3,915 m in the north. The average slope is 10.1 degrees from north to south. The Snemoling and Skampari wards of the municipality are settled on steeper slopes compared to the rest of the town.

Leh has a cold desert climate. During winter (November to April), average minimum temperatures drop as low as -15°C (record low of -28.3°C) and there is occasional snowfall, although it is sunny on most days. The weather in the remaining months is pleasant, with strong sunlight in the day and cool evenings and nights. Average annual rainfall is only 102mm, but in 2010 there were flash floods and mudslides that took over 100 lives and caused massive destruction.

Leh is connected via National Highway 1 to Srinagar in the southwest and to Manali in the south via the Leh-Manali Highway. These roads are open only from May-Nov, but local roads remain open throughout the year. Leh Kushok Bakula Rinpochee Airport has flights to Delhi, Srinagar, Jammu and Mumbai. Leh is not connected by rail.

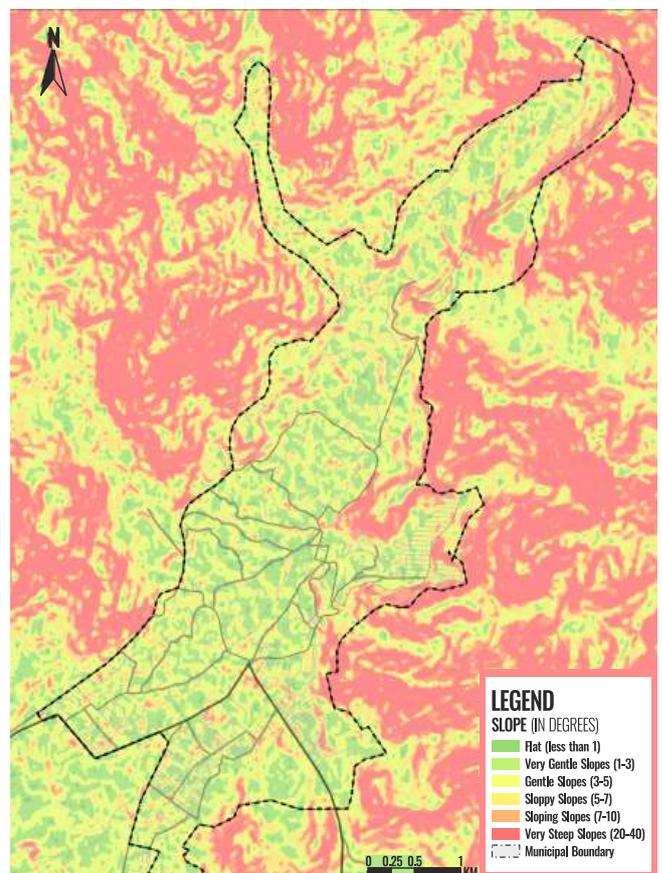


Figure 1 :
**Map shows the slope (in degree)
of Leh Town and nearby areas**

A BRIEF HISTORY

Archeological evidence shows that the Ladakh region has been populated since Neolithic times. Ladakh was part of Kushan Empire around the 1st century CE and by the 2nd century Buddhism appears to have travelled here from Kashmir. By early 8th century, the region of modern Ladakh was under Tibetan control, but the people belonged to non-Tibetan stock. In the late 9th century the first Ladakhi dynasty was founded by Nyima-Gon. From the 10th to the 19th century, Ladakh was ruled by the Namgyal dynasty. In the 17th century, Sengge Namgyal moved the royal headquarters to the Leh Palace. In the 19th century, Ladakh was incorporated into the Dogra state of Jammu and Kashmir.

The predominant religion is Buddhism, followed by Islam and in smaller numbers, Hinduism and Christianity. This region has historically been at the intersection of several trade routes – to Punjab, Kashmir, Tibet and Baltistan. The influences of these contacts can be seen in the architecture and culture of the region.

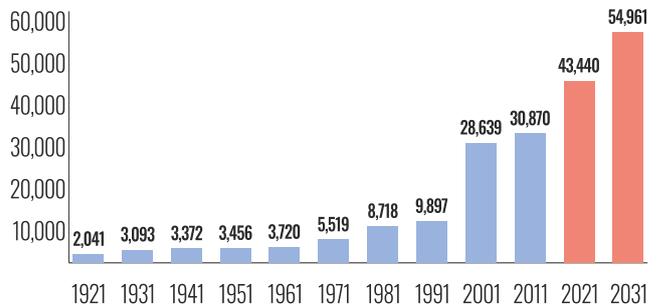
However, the town's location high up in the mountains also meant a certain level of isolation and insulation from many facets of culture, technology and development. It is said the first motorised wheeled vehicles seen here were the airplanes of the Indian Air Force soon after India's independence in 1947.

URBANISATION IN LEH

Leh's full-time resident population is estimated at 35,807 in 2018 and the total population, including floating population is estimated at 65,927. In the 1990s, Ladakhis moved to Leh town seeking better schools, hospitals and livelihoods. By 2011, the population reached 30,870, representing 34% of the district population. Since 2008, tourism has driven the town's growth, and the population is likely to cross 43,000 in 2021 and nearly 55,000 by 2031.

This growth has also resulted in the spatial growth of Leh town, and "townships" have emerged on the town's periphery. While India's urban population grew about 2.1 times from 1991 to 2018 (217 million to 460 million), Leh's has grown 3.4 times. The resident population drops down from summer to winter by 15-20% as many residents travel to warmer places.

Figure 2:
Decadal growth of population of Leh town

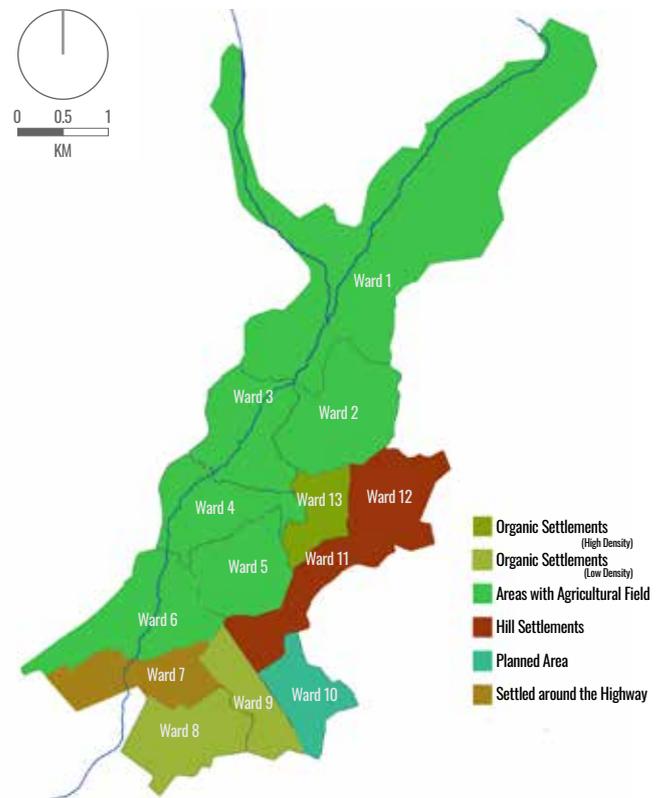


Source : Ladakh Autonomous Hill Development Council (LAHDC)

SETTLEMENT PATTERN

The settlement pattern and street network has been influenced by the availability of the developable land in the mountainous terrain.

Figure 3:
Settlement Pattern of Leh Town



Five types of areas are discernible (Refer Fig 3):

- Areas with agriculture fields:** 53% of land use is under agricultural land, predominantly in the northwestern part of the town. This part of the town also hosts the maximum number of hotels and guest houses, and serves as a major tourist area. Houses and other buildings are scattered along the agricultural fields and the population density is low compared to other areas.

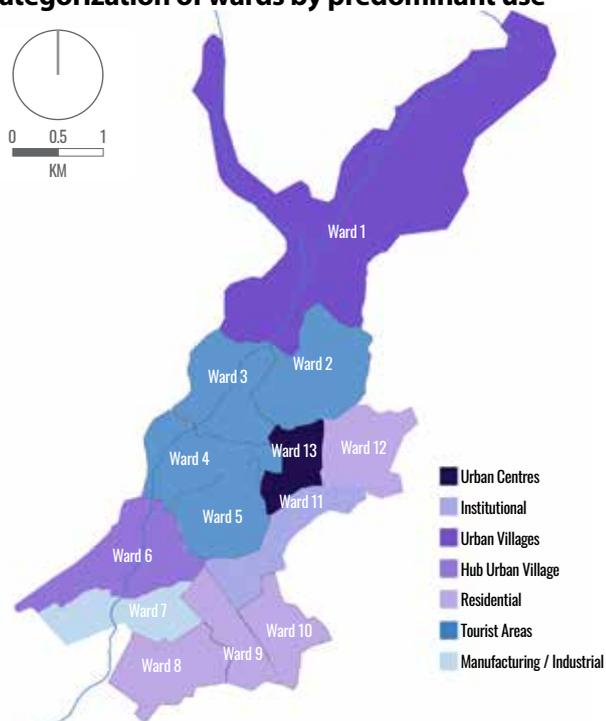
- b. "Planned area":** With its regular street network, the Housing Colony area gives the appearance of a planned area. However, the streets are narrow, don't have sidewalks, the population is dense, and the area has inadequate infrastructure.
- c. Hill settlements:** Snemoling or Ward 11 is settled on the western face of a hill. Accessibility to this area is limited and there is no infrastructure.
- d. High-density organic settlements:** The core town or the old town area and areas around it are the oldest parts of Leh, with a maze of narrow, winding streets. Parts of the old town are accessible only on foot.
- e. Areas settled around the highway:** The southern part of the town is developed along the main road or highway. All the major commercial areas and important facilities are located along the road, and the residential areas around it.

- 1. Urban centres:** Major commercial centres, with densest neighbourhoods, they act as the Town centre with diverse land uses, employment opportunity and major economic transactions take place in these areas.
- 2. Hub urban villages:** These areas offer a balance of housing and employment but are generally less dense than urban centres. Hub Urban Villages provide a mix of goods, services, and employment for their residents and surrounding neighbourhoods.
- 3. Residential areas:** Areas with predominantly residential land use, these are where 70% of the town resides.
- 4. Urban villages:** Areas with agricultural activities such as Ward No. 1 - Gonpa/ Gangles.
- 5. Tourist areas:** Hotels and guest houses are concentrated in these commercial areas, oriented towards tourist needs and mostly dependent on them.
- 6. Institutional areas:** Areas with major government or semi-government institutions.
- 7. Manufacturing/ service industry areas:** Areas with small-scale industrial units, workshops, automotive repair & service shops.

WARD-LEVEL CHARACTERISTICS

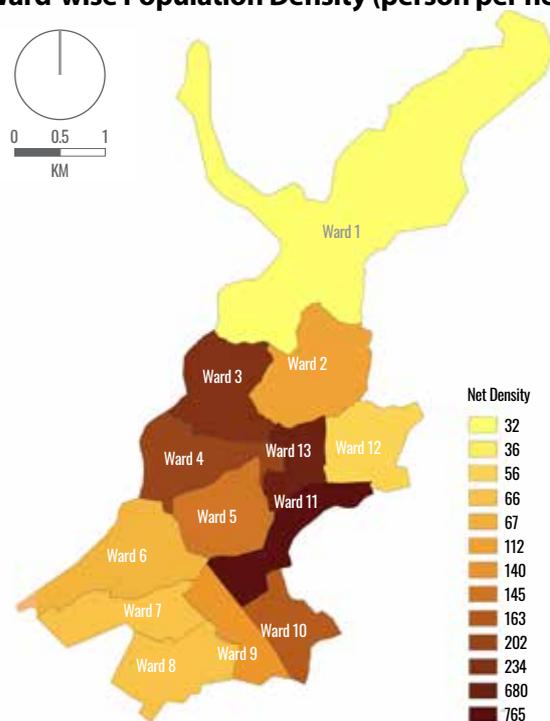
To capture the town characteristics, the town is divided into 7 uses or functions (Refer Fig. 4):

Figure 4:
Categorization of wards by predominant use



The net residential density of the town is 135 persons per hectare (pph). Ward 11 (Snemoling) has the highest density since it is settled on a hill with less developable area, followed by Ward 13 (Leh old town). Ward 1 has the lowest density. (Refer Figure 5)

Figure 5:
Ward-wise Population Density (person per hectare)

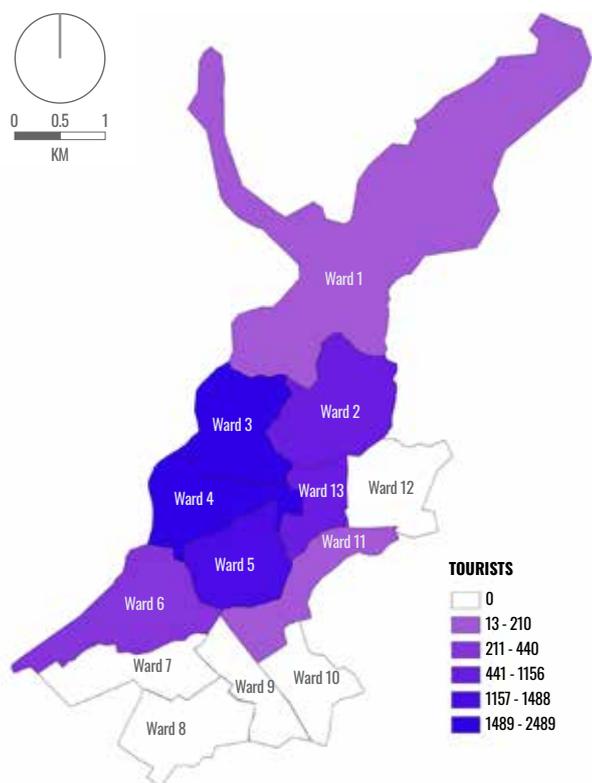


“Leh is a microcosm of all its neighbouring regions and people always treat it as a role model and for guidance”

TOURISM

The Ladakh region was opened to foreign tourists in 1974. Since then, the tourist traffic started increasing and now over 300,000 tourists visit Leh and stay for 7 days on average. The ward-wise distribution of tourists is shown in Figure 6. Almost 70% of the tourist population is concentrated in 4 wards – Ward 3 (Changspa), 4 (Tukcha) and 5 (Shenam) and Ward 13 (Leh Main market). These wards have the highest number of hotels and guesthouses. The distribution of tourists across wards is shown in Figure 6.

Figure 6:
Ward-wise Tourist Distribution



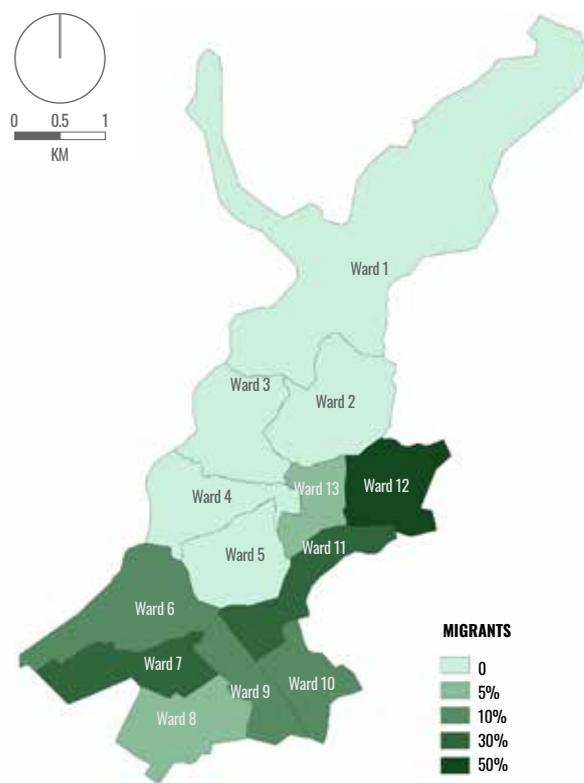
MIGRANT POPULATION

The shift in Leh Ladakh’s economy from primary sector to secondary and even more to tertiary sector has resulted in an inflow of migrants to the town during the warmer months. There are two main types of migrants – from outside Ladakh and those from villages across Ladakh.

Ladakh’s villagers come to Leh on a long-term basis for education, as Leh has good schools and colleges. The children either stay with family in Leh, or a parent moves to Leh along with the child. As discussed later, however, many youth move out of Ladakh as options for college education are limited. People from across Leh also come seasonally for jobs but these numbers are not large as most people find livelihoods in their village during the summer time, though many people from nearby villages commute to Leh for work daily. As Leh is the main market, centre for Government services, has good hospitals and other activities, many people from across Ladakh visit often and sometimes have a home in Leh though they do not live in the city on a full-time basis.

Migrant workers come from Bihar, Uttar Pradesh and other parts of India, as well as from Nepal, mainly for construction activities and

Figure 7:
Distribution of migrants across wards



services for the tourism industry. They live in areas with lower rents, particularly in Skampari or Ward 12. The distribution of migrant population across wards is shown above in Figure 7. It is estimated that up to 50,000 migrant workers arrived in Leh in 2019, and though this figure will be very low in 2020 due to lockdown situations related to the Corona virus, it has grown strongly over the years.

The Indian Army: Apart from the migrant population, on any given day about 20,000 to 25,000 army personnel are stationed in Leh or are in transit through Leh from other parts of Leh and Kargil districts. While they do not live in the civilian parts of town, they share common water and infrastructure resources, and must be included in certain discussions related to urban planning and resource management. During periods of border conflicts and tensions, like during the summer of 2020, this number increases with commensurate increase in natural resources extracted and pollution generated.

“If every citizen / resident of Leh is aware of their civic duties, then a lot of problems can be mitigated.”

– Representative, Police Station Leh







HAPPINESS, COMPASSION AND EASE OF LIVING IN LEH

Liveability has become an increasingly important consideration in the discourse around urbanisation. It is measured globally by various organisations and in 2017, the Ministry of Housing and Urban Affairs (MoHUA) of the Government of India (then called the Ministry of Urban Development) launched the “City Liveability Index,” and rated 116 major Indian cities.

While the concept of Liveability is now gaining traction in India, it has been common in many of the more developed countries and is measured by several factors relating to the quality of life including environment and pollution, public transit services and streets, water supply and waste management, safety, access to healthcare and education, culture and arts, public spaces and quality of governance.

Liveability scoring is a broad assessment of the quality of life a city offers, and are emerging as a tool to understand and plan development, as well as a branding technique for cities.

On the other hand, across modern society and even in many of the wealthiest countries, there are growing signs of unhappiness, isolation and stress. Liveability, as measured by various

indexes, is not always proxy for happiness. Happiness depends on the frame of mind and outlook of a person and while one can find happiness regardless of external conditions, external physical and social conditions have a significant impact on happiness.

Research shows that materialistic and competitive societies are less compassionate and this is likely to be one of the reasons why many in wealthy countries show increasing levels of stress and isolation, and lower happiness than people in seemingly worse-off conditions.

Therefore, while it is important to focus on improving material and economic well-being, it is not enough. The physical and economic conveniences afforded by a liveable city must be complemented with the emotional well-being that comes from deeper and better relationships amongst people, and between people and nature—which is very important in today’s fractured and aggressive society.

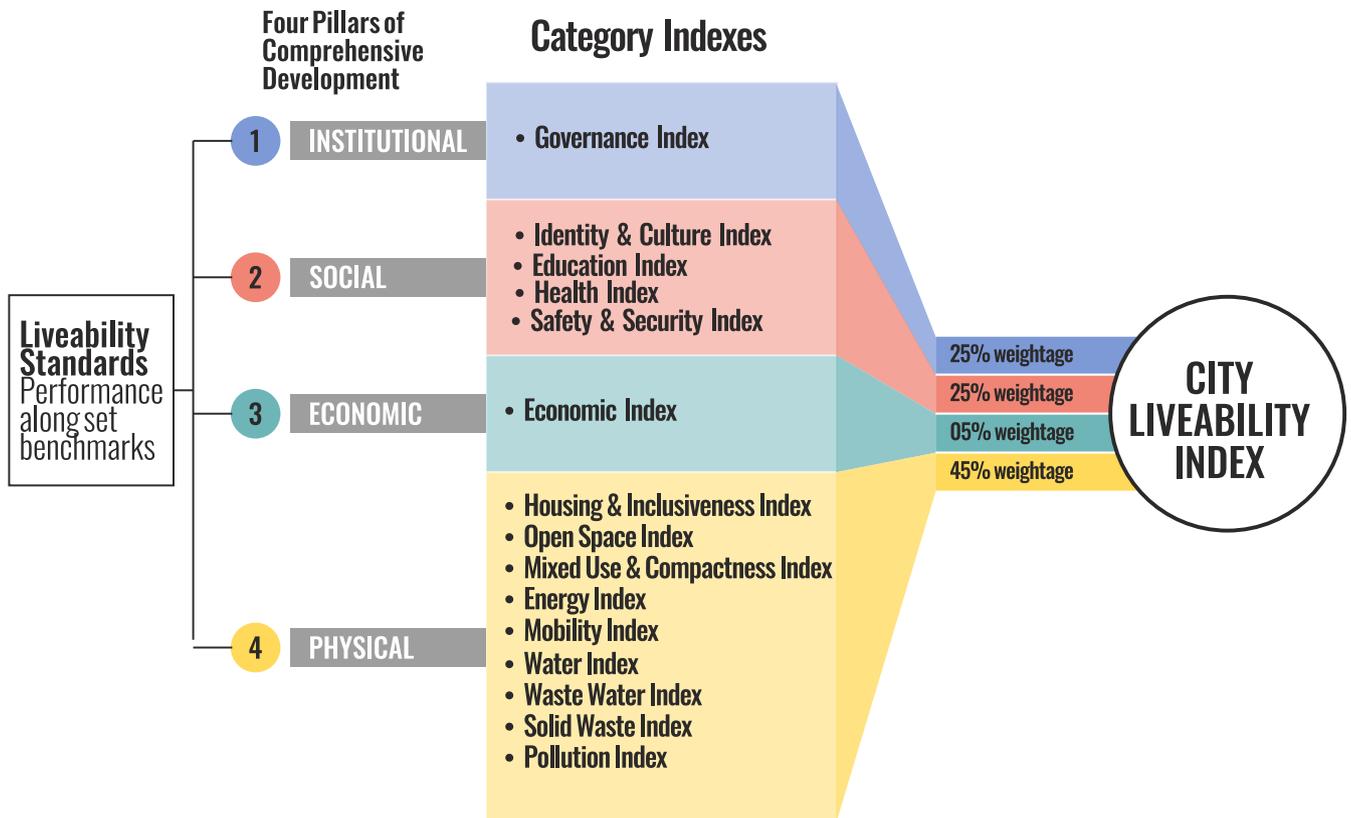
This chapter explores both Liveability and Happiness in the context of countries and cities.

A. THE CITY LIVEABILITY INDEX, INDIA



The City Liveability Index of the Government of India is a set of indicators to measure the quality of life in a city, or its liveability. On June 23, 2017, the Ministry of Housing and Urban Affairs (MoHUA), Government of India (GoI) launched the “City Liveability Index” or a set of ‘Liveability Standards in Cities’ to rate 116 major cities. These cities are assessed on 79 indicators (57 Core Indicators and 22 Supporting Indicators) covering physical infrastructure, economic opportunity, social services, and governance, as detailed in the graphic below.

Figure 8:
The model to compute the Liveability Score as per Government of India



In 2018-19, LEDeG undertook a study of liveability in Leh. Using the MoHUA's model, LEDeG collected data and calculated Leh's liveability scores. The results, extracted from the draft report, are presented in the charts and table below.

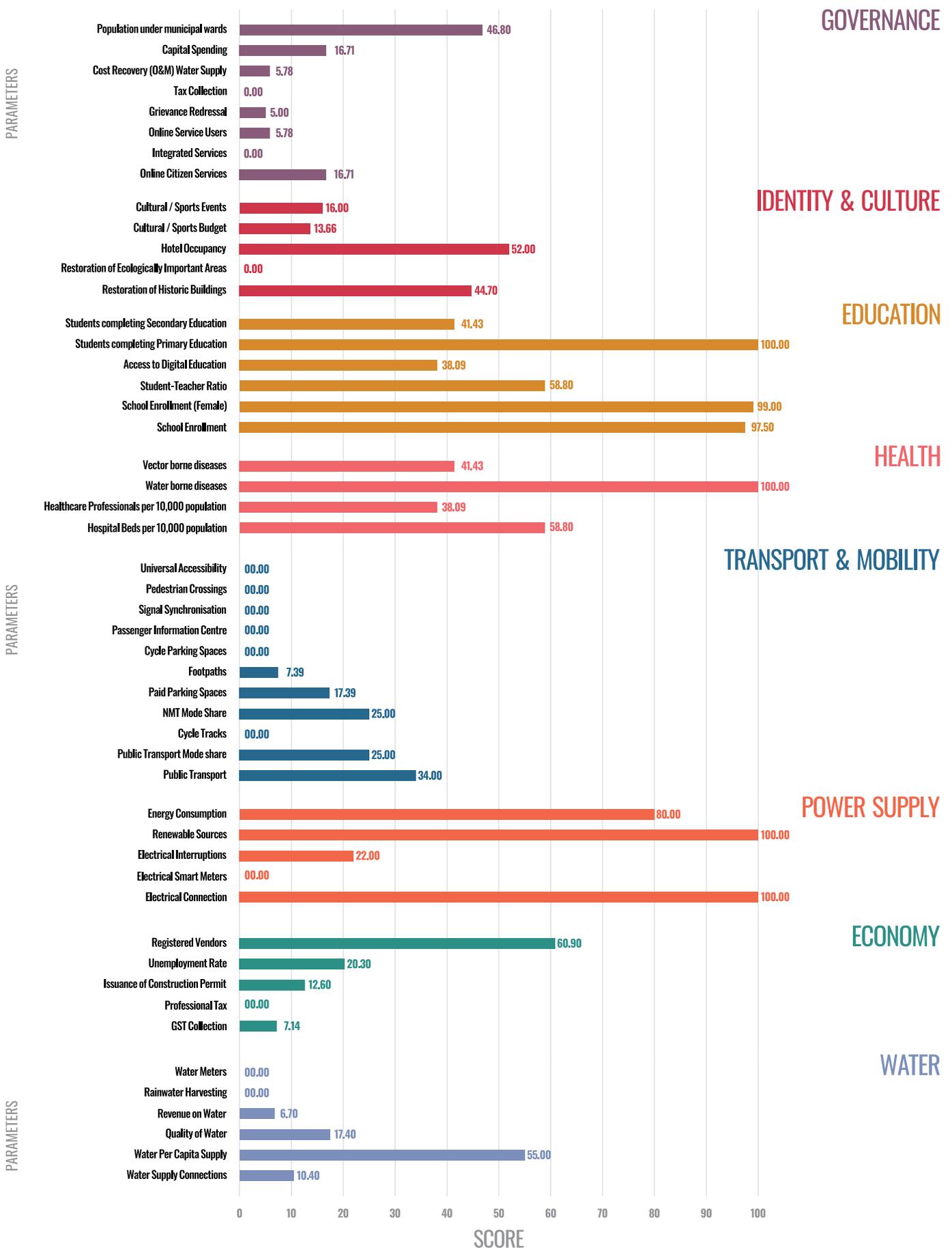


Table 1 :

Liveability index of Leh town

Pillar of Comprehensive Development	Category Index		Average Value and Weight Adjustment	City Liveability Index
Institutional (25% Weight)	Governance Index (A)	63.6	A = 63.6 T= A*25% = 15.9	City Liveability Index = T+U+V+W = 53.4
Social (25% Weight)	Identity and Culture Index (B)	27.0	R = (B+C+D+E)/4 = 50.02 U = R*25% = 12.5	
	Education Index (C)	74.0		
	Health Index (D)	15.0		
	Safety and Security Index (E)	84.1		
Economic (5% Weight)	Economic Index (F)	56.7	F = 56.7 V = F*5% = 2.8	
Physical (45% Weight)	Housing and Inclusiveness Index (G)	17.8	S = (G+H+J+K+L+M+N+P+Q)/ 9 = 49.3 W = S*45% = 22.2	
	Open Space Index (H)	2.4		
	Mixed Use and Compactness Index (J)	171.5		
	Energy Index (K)	130.0		
	Mobility Index (L)	6.1		
	Water Index (M)	33.8		
	Waste Water Index (N)	16.3		
	Solid Waste Index (P)	30.8		
	Pollution Index (Q)	35.6		

Based on the above calculation, the **Liveability Index of Leh Town is 53.4**. While the underlying data needs to be studied more carefully, this score compares favorably with India's top ranked cities which are shown below (Ease of Living Index, 2018 by the Ministry of Housing and Urban Affairs, Government of India).

In fact, **Leh would rank as the 5th Most Liveable City in India.**

There are also global indexes for Liveability of cities, on which Indian cities fare very poorly.

Table 2 :

Ease of Living Index 2018

2.1 Overall Rankings

INDIA'S MOST LIVEABLE CITIES IN 2018

The Ease of Living Index was formulated with the ultimate goal of being able to rank the cities on the quality of lives led by their citizens.

Ease of Living Index 2018			National Average : 35.64/100		
Top 10 Performers			Bottom 10 Performers		
Rank	City Name	Score	Rank	City Name	Score
1	Pune	58.11	102	Silvassa	22.71
2	Navi Mumbai	58.02	103	Saharanpur	22.21
3	Greater Mumbai	57.78	104	Kavaratti	21.04
4	Tirupati	57.52	105	Pasighat	20.83
5	Chandigarh	53.16	106	Itanagar	20.81
6	Thane	52.27	107	Bhagalpur	20.40
7	Raipur	50.58	108	Bihar Sharif	18.84
8	Indore	50.16	109	Patna	18.67
9	Vijayawada	49.27	110	Kohima	18.13
10	Bhopal	49.11	111	Rampur	17.00

B. THE OECD BETTER LIVING INDEX

(<https://www.oecdregionalwellbeing.org/>)

This framework for regional and local well-being starts with the consideration that making better policies for better lives means understanding what matters to people. This index focuses both on individuals and on place-based characteristics and concentrates on outcomes that provide direct information on people's lives rather than on inputs or outputs. It includes both material and non-material dimensions and takes account of complementarities and trade-offs among **eleven (11) well-being dimensions**:

**Table 3 :
OECD's 11 well being dimensions and regional level indicators**

	Topics	Regional Level Indicators
Material Conditions	Income	Household disposable income per capita (in real USD PPP)
	Jobs	Employment rate (%); Unemployment rate (%)
	Housing	Number of rooms per person (ratio)
Quality of Life	Health	Life expectancy at birth (years) Age adjusted mortality rate (per 1 000 people)
	Education	Share of labour force with at least secondary education (%)
	Environment	Estimated average exposure to air pollution in PM2.5 ($\mu\text{g}/\text{m}^3$)
	Safety	Homicide rate (per 100 000 people)
	Civic Engagement	Voter turnout (%)
	Accessibility of services	Share of households with broadband access (%)
Subjective Well-being	Community	% of people who have someone to rely on in case of need
	Life Satisfaction	Average self-evaluation of life satisfaction (scale of 0 to 10)

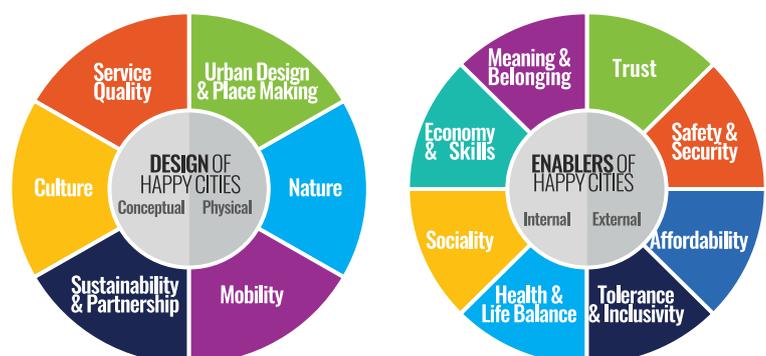
It is not sufficient to stop at the Liveability Index. There are indexes to measure happiness of people, but most are not very robust or holistic. Some of the frameworks that measure happiness are below.

C. THE HAPPY CITIES AGENDA BY THE HAPPINESS COUNCIL

This tool is part of the Global Happiness and Wellbeing Policy Report 2019 (www.happinesscouncil.org/) looks at how to create and maintain a happy city by considering two themes:

- Design of a Happy City:** Looks at how happiness is associated with the design of a city in terms of the physical systems and processes
- Enablers of a Happy City:** Considers factors that are associated with the outcomes of actions and policies.

**Figure 9 :
Design and Enablers of Happy Cities**



Note :
These themes have no intended hierarchy, and are not mutually exclusive. Many initiatives, such as those discussed, touch on several of these areas.

D. GROSS NATIONAL HAPPINESS (GNH) : BHUTAN

This was perhaps the earliest major attempt to prioritise and calculate happiness of people at a large scale like a country or city. While the term “Gross National Happiness” was first used by one

of the founding fathers of the European Union, Sizzo Mansholt, it was popularised by the fourth King of Bhutan, Jigme Singye Wangchuck, in the 1990s.

Table 4 :

Domain and Indicators for Gross National Happiness Index : Bhutan

Domain	Indicators
Psychological Well-being (quality of life, life satisfaction and spirituality)	Life satisfaction
	Positive emotion
	Negative emotion
	Spirituality
Health (physical and mental health)	Self-reported health status
	Number of healthy days
	Disability
	Mental health
Time-use (work-life balance)	Work
	Sleep
Education (types of knowledge, values and skills)	Literacy
	Schooling
	Knowledge
	Value
Cultural Diversity and Resilience (strength of cultural traditions and festivals)	Artisan Skills
	Cultural participation
	Speak native language
	Code of conduct
Good Governance (how people perceive government functions)	Political participation
	Services
	Governance performance
	Fundamental Rights
Community Vitality (relationships and interaction within)	Donation (Time and Money)
	Safety
	Community Relationship
	Family
Ecological Diversity and Resilience (peoples' perception on environment)	Wildlife damage
	Urban issues
	Responsibility to environment
	Ecological issues
Living Standard (material comforts measured by income, financial security, housing, asset ownership)	Income
	Assets
	Housing

The Centre for Bhutan Studies in Thimpu along with researchers from University of Oxford created a framework with nine (9) domains, 33 indicators and 148 questions to understand a person's level of happiness. The first GNH survey was conducted in 2008, and then in 2010 and 2015.

While it is based on Buddhist principles and the Middle Path, wherein happiness accrues from a balanced life rather than any single, extreme way of living, the philosophy is broad enough for GNH to be relevant and useable by most societies and nations, due to which it has

been lauded by the UN, and governments or organisations in Thailand, Brazil, Canada, UAE, US, UK and Philippines, but has not gained mainstream traction in a GDP-dominated global system.

The formula ultimately gives a single number ranging from zero to one, with zero being extreme unhappiness and one being very high happiness.

The GNH format is detailed and extensive, but gives a robust and holistic sense of people's quality of life but it does not directly ask the question, are you happy or not?

E. WORLD HAPPINESS INDEX

(<https://happiness-report.s3.amazonaws.com/2020/WHR20.pdf>)

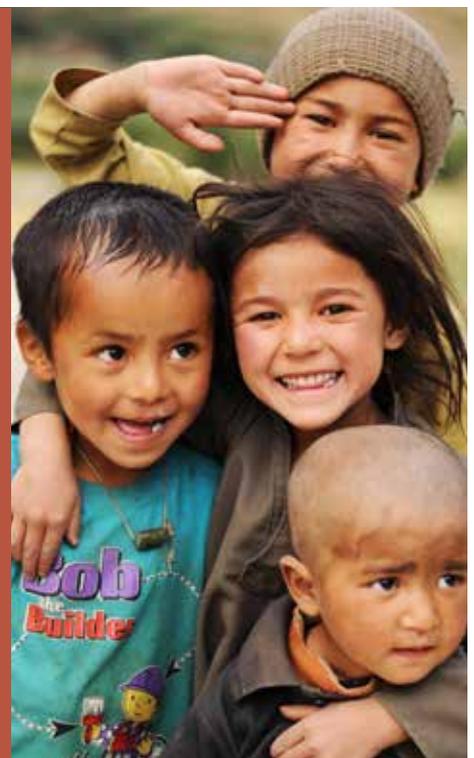
This report assesses global happiness by ranking 156 countries by how happy their citizens perceive themselves to be. It assesses how the social, urban and natural environments combine to affect our happiness, finding for example that a trusting social environment does most to raise the happiness of those in distress, and that the top countries tend to have high values for most of the key variables that have been found to support well-being, including income, healthy life expectancy, social support, freedom, trust, and generosity.

The study uses a Cantril ladder survey, asking respondents to rank on a scale of 1-10 (10 being the best possible life and 1 being the worst possible life for you) where they personally feel they stand at this time, and where they think they will stand about five years from now? Thus, this survey evaluates the current life and expected future life of people.

While the World Happiness Index directly asks about people's happiness, it does not indicate the reasons or causes for happiness or unhappiness and may not help formulate policies to improve happiness and well-being.

Thus, there are various ways in which happiness can be measured. But the most important consideration for Leh is to realise that **increasing happiness and compassion can and must be active goals that are pursued through every opportunity—**

policies and programmes of the government, the behavior of citizens towards each other and outsiders, design of infrastructure, delivery of services by government of private players, and information and communication campaigns—each action must be inspired and motivated by the desire to bring happiness and show compassion because as it has been discussed, **everyone benefits when such values become the driving force and intent of a society.**





OUR RESOURCE BASE

For centuries, the people of Ladakh thrived in the stark and fragile landscape of this region by developing an entire way of life that respected the terrain, climate and ecology of the region. Historically, it was the religious practices and beliefs of Ladakhi people that led to harmonious and self-sufficient relationships, expressed in the traditional settlement patterns, agricultural practices, water and waste management, architecture, art and culture.

In the modern context, these practices and beliefs can be separated from religion and even standing alone, are worth pursuing because they help us to achieve happiness through compassion, gratitude and wisdom.

Gradual change started from 1974 when the region was opened up to tourism and infrastructure development. In the last twenty years, the pace of change has accelerated. The rapid growth of tourism has increased incomes, energy use, consumer products, automobiles and all the paraphernalia of contemporary life.

The relationship of settlements in Ladakh with the landscape and its ecology has changed in complex ways. The material demands of normal life today far exceed what the landscape can support, thus increasing the region's dependency on connectivity with the rest of the country and the world. At the same time, the externalities of this lifestyle also far exceed what the environment can sustainably absorb, leading to landfills and water pollution. This

is further aggravated by high expectations but poor quality infrastructure and services (especially for water supply, sewage and waste management), and the local impacts of global climate change which is increasing incidents of flashfloods and landslides.

The economy is also unbalanced, heavily dependent on tourism which itself is a fragile and unpredictable industry, vulnerable to changes in the global economy, changes in local geopolitical situations and to emergencies such as the COVID-19 pandemic. More importantly, the success of tourism depends on how well the destination protects and enhances its natural and cultural base that form the key attractions. **It is in the nature of the industry to erode the very foundation on which it stands, unless the owners of this heritage and the business owners who operate the tourism industry take it upon themselves to continuously protect and enhance its resource base.**

Our Vision for Leh's future should strive to protect, sustain and enhance the natural and cultural heritage of the Ladakh region, building resilience to the impacts of global climate change and fluctuations in the global economy. At the same time, the vision for the town has to meet the aspirations of the citizens, especially the youth, to have access to the best opportunities for personal growth and advancement that any place can offer. This is the challenge that the visioning exercise takes on.

THE GOAL IS TO MAXIMIZE HAPPINESS, COMPASSION AND HARMONY

As discussed in Chapter III, the pursuit of happiness and avoidance of pain are the most important human endeavours. Compassion and gratitude are essential to build a strong society with deep relationships, which in turn is necessary to have a continuous sense of fulfillment and happiness.

Compassion helps us to empathize with each other and motivates us to help others. Gratitude helps to value the role of others in our life, leading to acceptance and harmony. Both are not only critical to build a society where people actively contribute to solve collective problems, but research shows that these emotions triggers bio-chemical reactions in the body, such as the release of the hormone oxytocin which builds trust and generosity, reduces fear and anxiety, has anti-depressant effects and reduces inflammation and improves health. Thus, the compassionate and grateful person benefits greatly from their own attitude. Further, compassion extends to animals, plants and nature as well, creating a responsibility to protecting the environment and a sustainable way of life.

Despite its remoteness high in the Himalayas, Ladakh has been at crossroads of important trade routes for 2,000 years or more. During this time, people from different religions and races mingled, and these principles helped create a largely peaceful, multi-cultural society. Perhaps more than any other part of India, Ladakhis have not only treasured, but actually practiced these values for centuries. Living in harmony, therefore, has been a hallmark of Ladakhi culture.

In recent decades, exposure to the outside world and economic growth have brought to Ladakh problems commonly faced in the modern world—people chasing status and wealth, competition, greed and selfishness, increasing busyness and worsening health, and breakdown of the individual's responsibility towards the community and environment.

This is most pronounced in Leh town as it is the primary economic centre of the region, and even as incomes rise and life becomes more

comfortable and safe, these developments are causing concern and dissatisfaction amongst Ladakhis.

The principal Vision for Leh therefore, is to restore and maintain a deep sense of happiness. It also requires balancing a lifestyle based on traditional philosophies and ways of life, and responsibly enjoying the comforts of modern science, economy and infrastructure. Every aspect of Leh's development must be done consciously to create this balance and communal responsibility.

Leh can be an example of how a modern, moderately prosperous society can also be deeply compassionate, peaceful, just and equitable. This will immeasurably improve the quality of life of Ladakhis, create a unique experience for visitors as well as migrants, and protect the fragile environment.

LEH CAN SET AND ACHIEVE THE GOAL OF BECOMING THE HAPPIEST CITY IN INDIA.

Even though wealthier and more developed nations may have sophisticated infrastructure and better administration systems that make their cities more liveable, there are important lessons that Ladakh can teach to the richest and poorest cities in the world. At this time, learning and practicing these lessons may mean the difference between survival or failure of societies and nations. This applies to Leh and Ladakh as well.

OUR VISION

When we, the residents of Leh imagine our town in 2030,
we visualise
the **Happiest**, most **Beautiful** and
most **Ecologically Sensitive** town in India.

Where we, her children, individually and collectively:

ཀ་

accept that **Compassion for All**
is a central way of life
and thus take care of
all our neighbours,
especially the most vulnerable;

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do our utmost to protect the fragile
ecology of the region
by being responsible, innovating
and pushing boundaries
of **eco-friendly action and policies**;

ག་

proudly **protect the enduring
cultural heritage** of Ladakh
and give it renewed expression
in our architecture, urbanism,
arts and lifestyle;

ང་

create opportunities for
all Ladakhis to acquire
world-class, relevant education,
and engage in **stimulating,
productive and responsible
enterprises**;

ཅ་

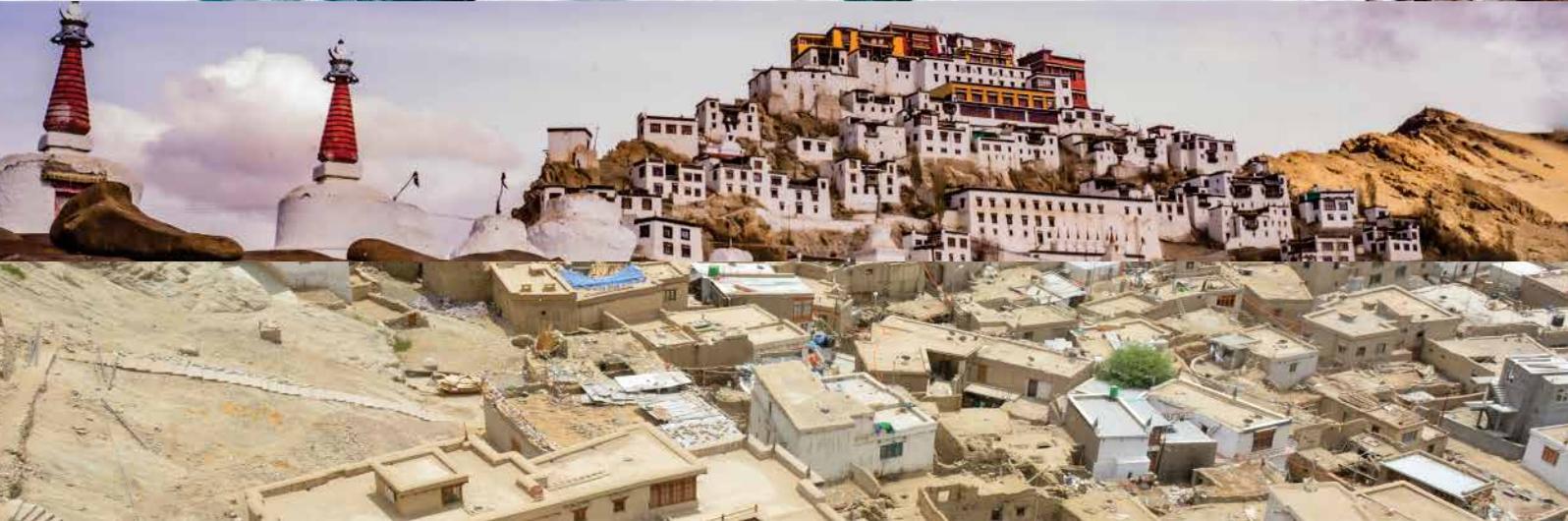
offer **heartwarming hospitality** and
a life-changing experience
to every tourist who seeks
the unique natural and cultural
experiences of Ladakh

ཆ་

have an unmatched **quality of life**
because
the collective pursuit of happiness,
and not merely
the acquisition of possessions,
is the central pursuit of our lives.

སྐྱེད་པོའི་སྤྱོད་ཆེན་སོ་མ།

To A New Happy Leh!



1 A THRIVING AND RESILIENT ECONOMY

2 MOBILITY OF PEOPLE AND GOODS

3 WATER, SANITATION AND SOLID WASTE MANAGEMENT

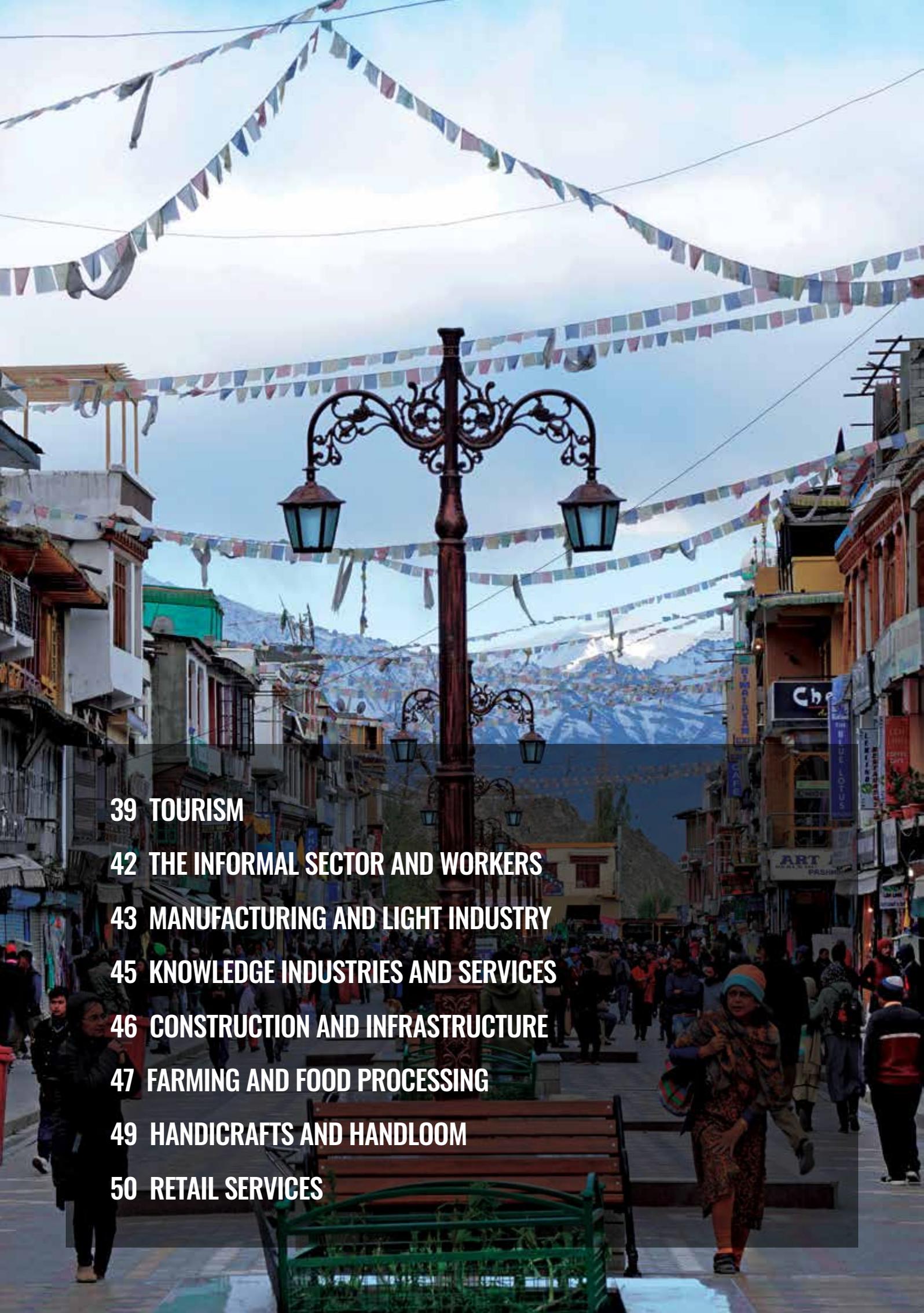
4 SOCIAL INFRASTRUCTURE

5 ENVIRONMENT AND CLIMATE CHANGE

6 HERITAGE CONSERVATION

7 SPATIAL PLANNING AND URBAN DESIGN

8 URBAN GOVERNANCE

A vibrant street scene in a mountain town, likely Leh, India. The street is lined with multi-story buildings and adorned with numerous strings of colorful prayer flags (blue, white, red, green, yellow) that stretch across the sky. In the foreground, a tall, ornate, dark metal street lamp with two glowing lanterns stands prominently. Below it, a wooden bench with a green metal frame is visible. The street is filled with people, including a woman in a patterned dress and a blue hat walking towards the camera. In the background, snow-capped mountains rise under a clear blue sky. The overall atmosphere is one of a bustling, culturally rich urban environment.

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THEME 1 | A THRIVING AND RESILIENT ECONOMY

Leh's economy has been growing and tourism, construction and government services are its key pillars today. The local economy must produce goods and services that residents of Leh and Ladakh require, while also providing interesting, challenging and remunerative jobs and entrepreneurial opportunities.



Local vegetable vendor, Leh main market

At the same time, economic development must protect the ecosystem and while improving the quality of life in Leh must be the top priority that guides all economic planning and development, development must add to and not detract from the happiness of the people of Leh—now and in the future.

TOURISM

People visit Ladakh for its natural beauty and unique culture. Leh town is the primary gateway to Leh and tourism has emerged as a significant driver for the local economy. Large investments have been made in hotels, guesthouses, restaurants, travel agencies and other tourism-related businesses, much of it fueled by land sale and loans.

While the Covid-19 pandemic has had a major impact on tourism in 2020, there was already a downturn in 2019. The Tourism Department reported 327,366 tourists in 2018, and 74,334 in 2008 — a 440% increase in the span of a decade. Growth will continue in the future though the exact trajectory is unpredictable due to climate, geo-political, general economic conditions and other reasons, as the past two years have demonstrated.

The tourism sector creates significant number of low-skill and medium-skill jobs along with some high-skill jobs and entrepreneurial opportunities for local residents, and attracts large number of migrant workers and businesspeople during the summer season.

So far, Leh's infrastructure, services, facilities and architecture have not been consciously developed to maximize the aesthetic, cultural and spiritual experience that Leh has to

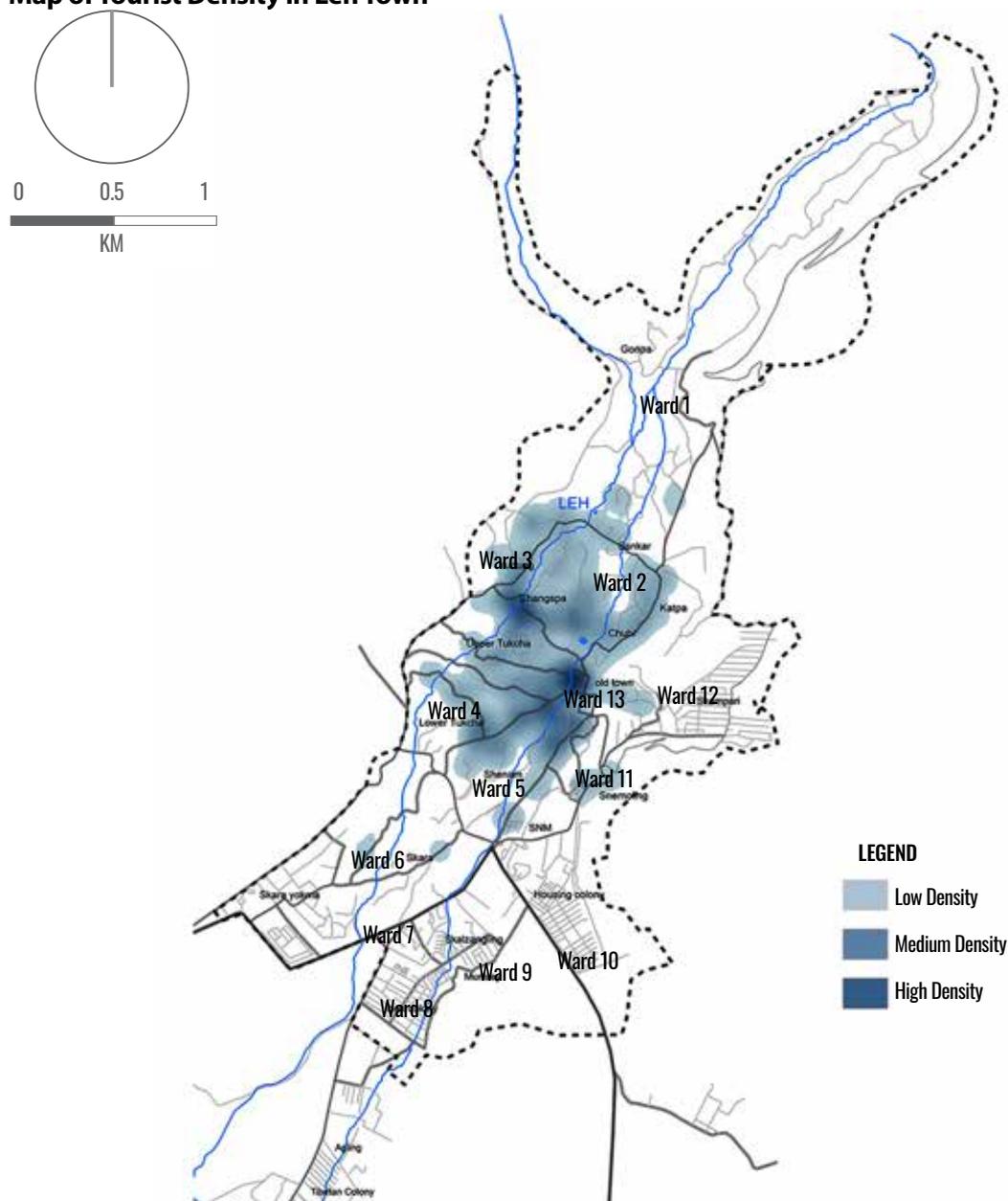
offer, or to strategically appeal to and attract discerning tourists. Tourists really visit Ladakh and therefore Leh is dependent on the rest of Ladakh and a holistic regional plan is needed to optimize the tourist experience, and bring benefits to the entire region. Similarly, tourism currently remains concentrated in the summer months (May-September), and there is tremendous potential to make it an all-season, year-round process with the right development works and promotion efforts.

Basic services such as water supply and waste management must also be adequately developed to keep pace with growing tourism. Neglecting this can have severe environmental and social repercussions in the future with a negative impact on tourism.

There is a need to focus on quality tourism instead of mass tourism, i.e. we must shift the attention to the quality of tourist experience. This will require regulation, planning and disciplined actions. Tourism touches nearly every aspect of the region and can have a profound positive or negative effect on Ladakh in the medium and long-term and therefore, it is important to choose the right direction.

Lessons can be learnt from countries like Japan that offer a uniformly high-quality experience—seamlessly combining a unique culture, aesthetic beauty in every detail, public spaces and attractions, and incredible landscapes, with state-of-the-art modern conveniences, green infrastructure and high-quality services.

Figure 10 :
Map of Tourist Density in Leh Town





TOURISM

- Profound and unique tourist experience with diversity of lifestyles, natural beauty, cultural heritage
- Tourist experience comparable with the world's best
- Tourism is regulated and environmentally responsible
- Good quality jobs; promotion of local culture and products



- Create a detailed roadmap for tourism development
- Allow only sustainable, eco-friendly tourism
- Develop world-class experiences and attractions
- Create good quality jobs
- Integrate with local culture and ecology



Tourist ascending towards Shanti Stupa

OUR VISION

1. Every visitor to Leh is touched in a profound way, as they experience a unique way of life that is different from anything else they have experienced before, and are enriched by its diversity of lifestyles, natural beauty, cultural heritage, art and history.
2. The tourist experience in Leh is comparable with the best experiences anywhere in the world, integrating technology to improve convenience and experiences.
3. Tourism is regulated and environmentally responsible, creating no negative effects on the local ecology or population.
4. The sector creates good quality jobs and promotes local culture and products.

in role model countries / regions, and evaluate critically to determine how they can be adapted to Ladakh.

- A.1.3 Create a detailed 10-year holistic roadmap detailing projects and required financing to create a best-in-the-world unique tourist experience.

STRATEGY 2

Allow only sustainable, eco-friendly tourism

- A.2.1 Study the environmental footprint of every aspect of the tourist experience and industry to identify eco-unfriendly actions.
- A.2.2 Create a detailed "Green Tourism Manual", identifying ways to address these activities by eliminating them or replacing with eco-friendly options.
- A.2.3 Build a strong monitoring and enforcement system across Ladakh to ensure compliance by all players, including registration of all tourism businesses.
- A.2.4 Identify financing requirements to make this transition and make suitable financial products available to businesses.

STRATEGIES & ACTIONS

STRATEGY 1

Create a detailed roadmap for tourism development

- A.1.1 Create a small team including world-class urban design consultants, tourism experts and advertising/PR visionaries who can help evolve and implement a vision and strategy (including a spatial plan) with focus on all-season tourism across Ladakh.
- A.1.2 Study the tourist experience and industry

STRATEGY 3

Develop world-class experiences and attractions

- A.3.1 Identify how existing attractions can be improved, and execute such plans.

A.3.2 Develop new attractions including cultural and sports events aligned with the overall tourism strategy.

A.3.3 Charge appropriate fees from visitors and ensure good maintenance.

STRATEGY 4

Create good quality jobs

A.4.1 Create high-quality vocational training programmes for every job profile in the sector.

A.4.2 Every employee working in the sector must undergo training and certification periodically.

A.4.3 Create and enforce business and employment norms so benefits flow down to industry workers.

STRATEGY 5

Integrate with local culture and ecology

A.5.1 Explore how tourism can enhance and enrich local culture, cuisine and practices.

A.5.2 Integrate rural areas into the tourism circuit, including through homestays.

A.5.3 Strengthen local handicraft, culture and art practices and products to tap into tourism infrastructure and spending.

A.5.4 Use technology to both improve the experience at monuments and around Leh, and to improve protection and maintenance of such locations.

A.5.5 Use digital technologies like Augmented Virtual Reality to create virtual 3D Town tours, 360° views of heritage and tourist places and educational experiences.

A.5.6 Ensure internet information and maps are accurate and easy to use.

A.5.7 Ensure ease of transactions through digital payment systems across Leh.



Monks heading towards the monastery, Stakna

THE INFORMAL SECTOR AND WORKERS

The informal sector includes all unincorporated private enterprises with less than ten workers (National Commission for Enterprises in the Unorganized Sector), including street vendors, small shops, labourers, rag pickers etc. Even though they perform important functions in society, these workers engage in low-paid and insecure jobs or daily wages, and do not have proper social security or safe working conditions.



Dry fruit vendors in Leh market

OUR VISION

1. Every informal sector worker has safe working conditions and financial safety nets including social security and insurance.
2. All small-scale businesses have safe, comfortable and aesthetically pleasing spaces for operations.

STRATEGIES & ACTIONS

STRATEGY 1

Provide social security and social services for informal workers

A.1.1 Set up a legal Association through which facilities and benefits can be channeled to informal workers.

A.1.2 Increase social security by offering insurance, pension and other financial products including asset and working capital loans by MFIs and banks.

A.1.3 Create skill enhancement opportunities through vocational training and internship/ experience-based skilling programmes especially for women, differently-abled and other disadvantaged persons.

A.1.4 Offer services such as identify cards, and protection services including shelters and sanitation facilities.

A.1.5 Constantly monitor unemployment and income trends and publish relevant data.

STRATEGY 2

Ensure safe and appropriate working spaces for all small businesses

A.2.1 Create and enforce “Workplace Safety and Comfort Guidelines” for all commercial and industrial locations.

A.2.2 Provide financial and technical support to improve working spaces of small businesses so that they have a common standard of safety and comfort, and if tourist-facing, then aesthetic design.



Space for street vendors, especially vegetable sellers



INFORMAL SECTOR

- Safe working conditions and financial safety nets – social security and insurance
- Safe, comfortable working spaces for small-scale businesses

MANUFACTURING AND LIGHT INDUSTRY

Currently, the town does not have much industry though there are light industries including metal and woodworking workshops in Choglamsar and some other nearby areas. Particularly while discussing industry, it is important to consider whether planning should extend beyond the boundaries of the town, as workshops are often located outside the town limits but need to be integrated closely for transportation, labour, electricity, water and other resources.

Local demand for products of local industries remains small and seasonal, and distance from larger markets has historically made it unviable to develop manufacturing industries in Leh, and consequently, nearly everything sold in Leh is brought in from Jammu, Delhi, Chandigarh and other places. There are plans to develop an industrial area in Phyang.

Industries in Ladakh must first and foremost cater to local demands and create local employment. Higher production costs due to lack of economies of scale can be offset by lower transportation, storage and obsolescence costs. Semi-knocked-down-kits, simple machines, 3D-printing and other technologies can be used where appropriate to make such ventures commercially competitive.

A sharp attention on controlling and monitoring pollution is absolutely essential to protect the environment and local communities. Industrial waste management services will have to evolve to address these risks.



Metal workshop in Leh

OUR VISION

1. Leh has vibrant secondary industries that produce goods required by the people Ladakh.
2. Local industries provide good quality employment to locals.
3. Industries adhere to the strictness norms for environment protection and ensure that natural resources are not negatively impacted.



STRATEGIES & ACTIONS

STRATEGY 1

Create an Industrial Plan/ Road Map

- A.1.1 The following industries should be developed in and around Leh:
- a. Metal fabrication
 - b. Wood work and construction materials (discussed separately)
 - c. Assembly of consumer durables and light electronics
 - d. Handicraft and Handloom (discussed separately)
 - e. Food Processing (discussed separately)
- A.1.2 Develop strict pollution control and employment norms for each industry.
- A.1.3 Identify suitable zones for industries in and near Leh, with access to requisite infrastructure including space, roads, electricity, water, public transport etc at affordable costs.

- A.1.4 Ensure maximum use of renewable energy, waste water treatment and reuse, and solid waste management and recycling to promote a circular economy.

STRATEGY 2

Support local ventures

- A.2.1 Create a local committee (including banks) to promote and oversee industries, and coordinate their requirements with various authorities.
- A.2.2 Consider support and incentives to specific industries for limited periods during the build-out phase.
- A.2.3 Provide benefits for training workers, or free vocational training for employable persons.
- A.2.4 Encourage customers to buy from local units through promotion and financial / tax benefits.

“Industrial areas should be relocated to other less-inhabited areas.”

– Ward No. 4 during public consultation.



MANUFACTURING

- Vibrant secondary industries that produce goods required by the people Ladakh
- Good quality employment to locals.
- Industries adhere to environment protection norms



- Creating an Industrial Plan/ Road Map
- Support local ventures

KNOWLEDGE INDUSTRIES AND SERVICES

Even though Leh is well-suited for developing knowledge industries such as software, BPO/ KPOs, and media and internet services, it is held back by two factors:

1. Poor telecom infrastructure
2. Lack of a diverse base of knowledge workers and managers

Ladakh has a young, well-educated population but does not have enough people with deep management or entrepreneurial experiences at the national or international level. Most Indians find the cold winters difficult to live in and therefore, migration to Leh can be challenging. However, this can be overcome by developing incentives attracting the Ladakhi diaspora from across India and globally back to Leh, which will bring skills, market relationships and investment capital.

While Ladakh need not seek large-scale in-migration which will also create other challenges, Leh can actively try to attract small numbers of talented people necessary for the development of a vibrant service sector industry.

Leh, and Ladakh more generally, can take inspiration from cold countries like in Europe and Canada, to develop high-quality knowledge-driven businesses. However, these require long-term and consistent policies and action to reach the desired maturity, quality and impact.



Food and Craft Institute, Leh

OUR VISION

1. Develop a small but world-class knowledge and create services sector capable of serving world-class customers.
2. Create innovative and high quality jobs.

STRATEGIES AND ACTION

STRATEGY 1

Develop infrastructure for knowledge and creative businesses

- A.1.1 Create an advisory council of experienced entrepreneurs and professionals to assess the potential and develop a roadmap for these sectors.
- A.1.2 Ensure reliable, high bandwidth internet access for Leh.
- A.1.3 Build customized office buildings with the requisite infrastructure specifically for such businesses.

STRATEGY 2

Encourage locals to start and work in knowledge businesses

- A.2.1 Simplify process of starting and managing such businesses.
- A.2.2 Create relevant vocational and training programmes for identified jobs.
- A.2.3 Provide incentives for companies to employ local workers and use local resources and products.



KNOWLEDGE INDUSTRIES

- Small but world-class knowledge and creative services sector that creates innovative and high quality jobs.



- Develop infrastructure for knowledge and creative businesses
- Encourage locals to start and work in knowledge businesses

CONSTRUCTION AND INFRASTRUCTURE

Leh is growing rapidly and construction activity is mostly for new hotels and guesthouses, and roads and infrastructure. The labour force is almost entirely from other places like UP, Bihar and Nepal, and therefore practices and standards are not reflective of Ladakhi aesthetics and traditions.

Brick and cement are commonly used for buildings today instead of local materials and techniques. Most construction materials like cement, steel, tiles and fixtures are not produced in Leh, while raw materials like sand, stone, bricks and wood are locally available but not extensively used.

Building codes in Leh are being updated to reflect the changing character of the town, but it is important to maintain traditional sensibilities, so that Leh does not lose its uniqueness. Proper codes will improve aesthetics across Leh and ensure all services that people need are conveniently available.

Further, it is important to pursue green construction norms to make buildings more energy efficient—using less electricity and requiring less heating in winter. Proper design and using the right materials will help reduce the environmental footprint of buildings, and save residents money and discomfort. Saving water, wastewater treatment and re-use, and on-site waste management will make the city cleaner and greener. Suitable techniques and technologies must urgently be adopted as needed.

Technical support to contractors and financial incentives for builders, is essential.



A traditional house in Upper Leh

OUR VISION

1. Every building in Leh is designed and built using the most sustainable and eco-friendly materials and techniques that minimise the environmental footprint of the structure and reflect Ladakhi aesthetics and traditional practices.
2. Every building must be resilient to floods and natural disasters.

STRATEGIES & ACTIONS

STRATEGY 1

Adopt aspirational and appropriate Green Building Codes and By-Laws

- A.1.1 Prepare and adopt suitable green construction norms and codes for the climate and requirements of Leh.
- A.1.2 Enforce the use of energy and water saving fixtures and appliances.
- A.1.3 Create guidelines for the aesthetics of the exterior of buildings for a cohesive look.
- A.1.4 Build MCL's institutional capacity to enforce codes and by-laws.
- A.1.5 Rate every building on sustainability and resource efficiency, and reward high performers.

STRATEGY 2

Blend local and eco-friendly materials, traditional building techniques and modern construction technologies

- A.2.1 Adopt stringent norms for construction materials so that recyclable, non-polluting, durable, recycled and effective materials are used.
- A.2.2 Setting up a research centre to conduct and co-ordinate research to improve construction materials and techniques in Leh, in partnership with NGOs and Government agencies.
- A.2.3 Ensure that the preferred materials are easily available at the right prices.



Trombe wall — a passive solar housing technique used in Leh

STRATEGY 3

Training and certification

- A.3.1 Require all construction workers, architects and contractors to be trained and certified on updated building codes, materials and techniques.



CONSTRUCTION

- Sustainable and eco-friendly materials and techniques of building design that reflect Ladakhi aesthetics and traditional practices



- Adopt aspirational and appropriate Green Building Codes and By-Laws
- Blend local and eco-friendly materials, traditional building techniques and modern construction technologies
- Training and certification

FARMING AND FOOD PROCESSING

Small-scale agriculture was practiced by most families until quite recently, when people started selling their land, or building hotels and guesthouses on it. Today, most households have less than 1 hectare of cultivable land. Single-cropping is dominant (double-cropping is possible only in a limited area below an altitude of 3000m), and most farms are irrigated by natural springs or underground water from borewells.

In the 1960s, only five types of vegetables were grown in the region while today, it is feasible to grow 101 types. Ladakhi farmers are growing over 23 types of vegetable on commercial scale and supplying through the Farmers' Cooperative Marketing Society. The region produces broccoli, cabbage, cauliflower and peas but due to poor market linkage, large-scale production of vegetable as off-season crops has not gained momentum. Apricot and apple are the two major fruits, prized for their quality and recently, high quality melons are also being grown organically. High value herbs and medicinal plants can also be grown in and around Leh as cash crops sold across India and exported. Thus, potential is significant.

While there are few instances of insect, pests and diseases, the main challenges are the long and cold winter, and water scarcity. Greenhouses are common, but mostly used in winter for small-scale production for the family rather than for commercial scale. New technologies for growing crops and post-harvest processing are not common. Food processing industries are in infancy and should be expanded.

In recent years, Leh has become dependent on food supplies from other places, during summer and winter. This results in unreliable availability when roads are closed, and high prices.

LAHDC has accorded high priority to agriculture development in the district, next to education, and this should include testing and introducing new techniques that are suitable for local conditions and can improve production, storage and processing, food security, resources efficiency and affordability through the year.

OUR VISION

1. Leh achieves self-sufficiency with over 80% of the food consumed through the year grown in and around Leh town.
2. Leh becomes recognized as an example for water sensitive, high-altitude urban farming.



Apricot farmer in a nearby village

STRATEGIES & ACTIONS

STRATEGY 1

Increase food production by investing in improved organic farming practices and new technologies

- A.1.1 Test and pilot agricultural innovations and technologies to identify those that are suitable for Leh.
- A.1.2 Make capital available to farmers for investment in suitable technologies.
- A.1.3 Maintain genetic diversity by promoting indigenous crops and varieties, with focus on improving health, food security and sustainability.
- A.1.4 Value addition of animal-based products like pashmina and A2 milk, practiced in humane ways without animal cruelty.
- A.1.5 Green certification programmes for growing safe and healthy food.

STRATEGY 2

Develop food processing sectors

- A.2.1 Identify new crop value chains that can be developed locally, with inputs from local farmers, researchers, NGOs and government laboratories.

- A.2.2 Support investment in processing units through soft loans and grants.

- A.2.3 Create a long-term, holistic plan including building requisite infrastructure and market linkages.

STRATEGY 3

Improve the commercial development of local agriculture

- A.3.1 Develop distinctive food brands which are promoted locally, nationally and internationally.
- A.3.2 Support formation of organization structures like Farmer Producer Companies (FPC) to bring transparent management, entrepreneurial energy and capital to local agriculture.

“The economy of Leh should not be solely dependent on Tourism. This pandemic situation has proved that during the time of crisis land-based economy is the best alternative one could focus on to achieve a stable economy.”

– Th Dorjay, 30

FARMING & FOOD PROCESSING



- Food self-sufficiency with over 80% of annual consumption grown in and around
- Set an example for water sensitive, high-altitude urban farming



- Increase food production by investing in improved organic farming practices and new technologies
- Develop food processing sectors
- Improve the commercial development of local agriculture

HANDICRAFTS AND HANDLOOM

Ladakh has a rich cultural tradition of handmade crafts and products but their commercial presence has declined over time. Leh and its surrounding areas have very few small-scale workshops that make clothes, tapestry, household items and other products—most of these items sold across Ladakh are made in Kashmir, Tibet, Nepal and other places. In recent years, a few organisations, mainly Non-Profit Organisations, are trying to scale up such work and are training locals to become artisans.

There is some support from the Government for these units but there is no strong programme to promote such crafts and provide market linkages to these producers. These traditional activities need to be revived across Ladakh as much of the talent and knowledge lies in various areas that have their own unique styles and traditions. Nonetheless, Leh can be a focal point to start building the sector in a targeting manner.

OUR VISION

1. The handicrafts sector is vibrant and thriving, providing reliable livelihoods to local communities.
2. Ladakhi handicrafts are recognized as a responsible and ethical brand that is available globally and spreads the culture and ideals of Ladakh.



A coppersmith in Chilling village

STRATEGIES AND ACTION

STRATEGY 1

Provide financial, technical and market access support to handicraft organisations

- A.1.1 Create partnerships with training institutes and marketing organisations to assist handicraft organisations and businesses.
- A.1.2 Develop Handicraft Parks in and around Leh where organisations can rent space at subsidized rates and set up production units.
- A.1.3 Provide funds to organisations for machinery, training, product development and business development / marketing through loans and grants.

STRATEGY 2

Create standards for product quality and a branding campaign to build trust with customers

- A.2.1 Engage a reputed quality assurance firm to create appropriate standards for Ladakhi handicrafts suitable for domestic and international markets, and provide training to craftpersons and entrepreneurs / managers.
- A.2.2 Undertake a long-term global branding exercise for Ladakhi handicrafts and handlooms (alongside the tourism campaign).

HANDICRAFTS & HANDLOOM



- Vibrant and thriving handicrafts sector providing livelihoods to local communities
- Recognition for Ladakhi handicrafts as a responsible and ethical global brand



- Provide financial, technical and market access support to handicraft organisations
- Create standards for product quality and a branding campaign to build trust with customers

RETAIL SERVICES

Leh has a thriving retail sector dominated by small shops, outdoor/covered markets and street vendors. Clothes, Ladakhi, Kashmiri and Tibetan Arts/Artifacts, and souvenirs are popular in the main market and tourist areas, alongside food, general supplies, household products, books etc. Construction products, household appliances and non-daily use goods are easily available, but mostly in markets further from the centre of town. There are no large retail outlets, organised retail or malls in Leh town.

The range of products available is largely similar to what one can buy in other towns. A mix of locally-produced and national brand products are easily available and consequently, plastic is commonly used in packaging for electronic products, packaged food and drinks, clothing etc. There is no standardisation in terms of shop frontage design or signage, which creates variety but can also create a sense of disharmony or chaos.



A person purchasing pulses from a cooperative store

OUR VISION

1. Retailers sell environmentally and socially responsible products that resident and tourists need, with a culture of honesty and respect.
2. To the extent possible, locally produced goods are promoted and sold in Leh.

STRATEGIES & ACTIONS

STRATEGY 1

Support the adoption of environmentally and socially responsible products and services, and discourage those with negative environmental and social effects

- A.1.1 Encourage the sale of environmentally responsible products and services by supporting retailers and other businesses with promotion support, subsidies and technology, while discouraging harmful and damaging products through restrictive rules, fines and media campaigns.
- A.1.2 Encourage and provide incentives to promote responsible, locally produced goods.
- A.1.3 Educate consumers so they can make better choices.

STRATEGY 2

Create an aesthetically pleasing and pleasant shopping experience

- A.2.1 Create certain common design standards for shopping areas to create a visually unique and pleasing experience.
- A.2.2 Train and encourage shopkeepers to treat all shoppers with respect, honesty and fairness.
- A.2.3 Encourage experiential retail, including experiential retail zones like craft villages near Leh.
- A.2.4 Ensure that all shopping areas are clean, properly built, safe, and accessible to differently abled people.



RETAIL SERVICES

- Environmentally and socially responsible products
- Promotion and sale of locally produced goods



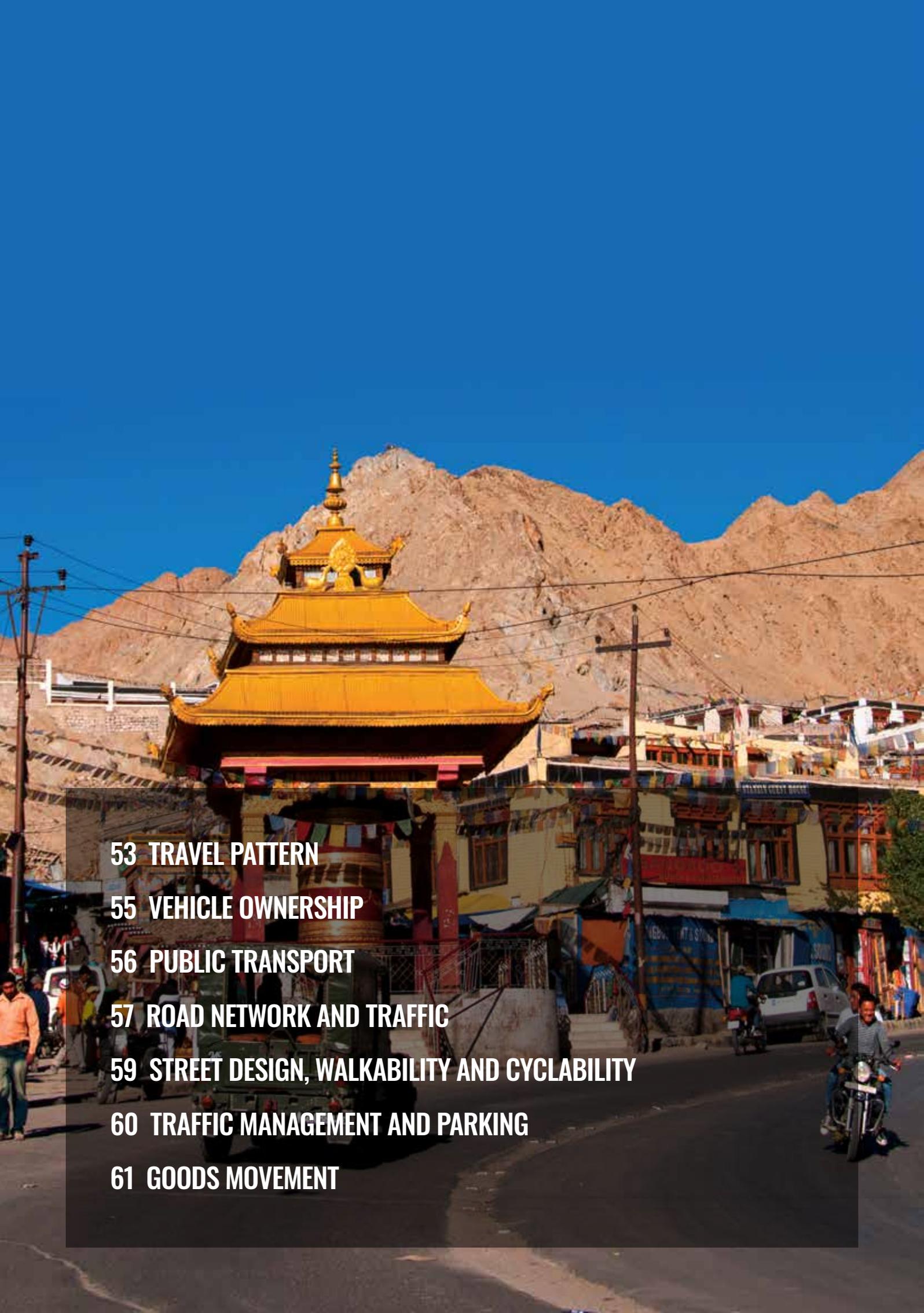
- Support the adoption of environmentally and socially responsible products and services, and discourage those with negative environmental and social effects.
- Create an aesthetically pleasing and pleasant shopping experience

THEME 1 : ACTIONABLE RECOMMENDATIONS

NOTE:

The Potential Projects listed below are preliminary recommendations and will be finalised after detailed discussions amongst relevant Government authorities and departments, consultants and experts. Some Projects may be mentioned or detailed in other related Themes.

NO.	POTENTIAL PROJECT	TIME FRAME	DEPARTMENT RESPONSIBLE
STUDIES AND PLANNING			
1	Develop a 10-year roadmap for developing and promoting tourism to Leh	2021	Tourism Department
2	Prepare a holistic restoration plan for Old Leh and Palace Area, including identifying roles for potential implementation partners	2021-2024	Tourism Department
3	Create a “Green Tourism Manual” for Leh	2021-2022	Tourism Department
4	Develop an industrial plan for the Leh region to set up planned, light industry estates	2021-2025	Department of Industry
5	Create a plan for promoting knowledge and creative sectors, and design suitable Knowledge Parks	2021-2024	LAHDC
6	Create a roadmap and plan for the agriculture and food processing sector	2021-2022	LAHDC
POLICY, REGULATIONS AND INSTITUTIONS			
7	Set up a team to plan and manage campaigns to promote Ladakh Tourism	2021	Tourism Department
8	Create a labour agency to register migrant workers and provide social security and services	2021-2022	Labour Department
9	Adopt, publicize and enforce appropriate “Green Building” codes for new construction and to retrofit existing buildings	2021	MCL
10	Re-vitalize an apex Handicrafts Promotion Body and develop a roadmap to promote the sector	2021-2025	Department of Handicrafts
CAPITAL PROJECTS AND THEIR OPERATIONS AND MAINTENANCE			
11	Implement the Old Town restoration plan in Phases with the right partners and experts	2022-2026	Tourism Department
12	Offer appropriate Job Training Programmes for youth and adults developed and delivered in partnership with local businesses	2021-2024	JKEDI
13	Establish industrial parks as per the plan developed above (and relocate existing industries as needed)	2022-2026	Department of Industry
14	Test and implement food production, storage and processing technologies to improve local food sufficiency and exports	2021-2023	Agriculture / Industry Department
15	Build Knowledge Parks as per the plan developed above, and undertake all supporting activities to ensure their success	2021-2024	LAHDC
16	Set-up agriculture and food processing parks in and around Leh	2020-2023	Agriculture / Industry Department
17	Establish a dedicated farm market in Leh for organic and healthy produces including dairy products	2021	MCL



53 TRAVEL PATTERN

55 VEHICLE OWNERSHIP

56 PUBLIC TRANSPORT

57 ROAD NETWORK AND TRAFFIC

59 STREET DESIGN, WALKABILITY AND CYCLABILITY

60 TRAFFIC MANAGEMENT AND PARKING

61 GOODS MOVEMENT

THEME 2 | MOBILITY OF PEOPLE AND GOODS

TRAVEL PATTERN

The expansion in tourism and consequent growth in permanent and seasonal resident population, hotels and other commercial establishments have boosted travel demand.

At present this demand is met mainly by private vehicles and paratransit such as private taxis. An Origin-Destination Survey was recently conducted by LEDeG.



Aerial view of Leh town; maximum number of passenger trips are made to this area

Figure 11 shows the travel pattern on a map and Figure 12 shows a matrix of ward-wise percentages of origins and destinations. A large proportion of trips are made to Ward no. 13 where the Main Market, major commercial areas and many government offices are located. People from Ward no. 6 (Lower Skara) and Ward no. 8 (Ibex Colony) travel to Ward no. 7

(Skalzangling) for shopping, as it is a major market street in the south of the town. There is movement from Ward no. 12 (Skampari) to almost every ward of the town as it has the highest concentration of daily wage laborers. High traffic routes make public transportation more viable.

Figure 11:
Travel Patterns

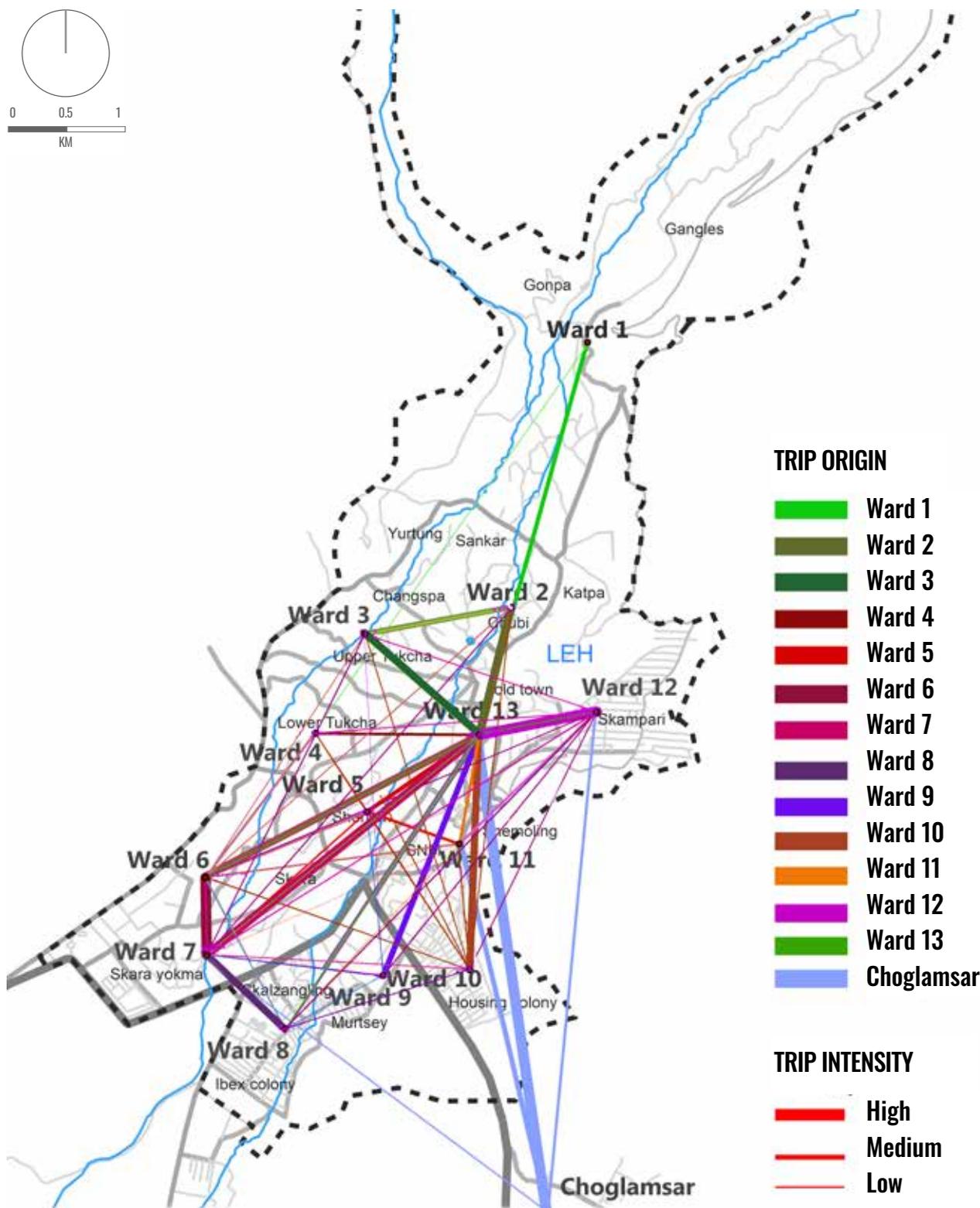
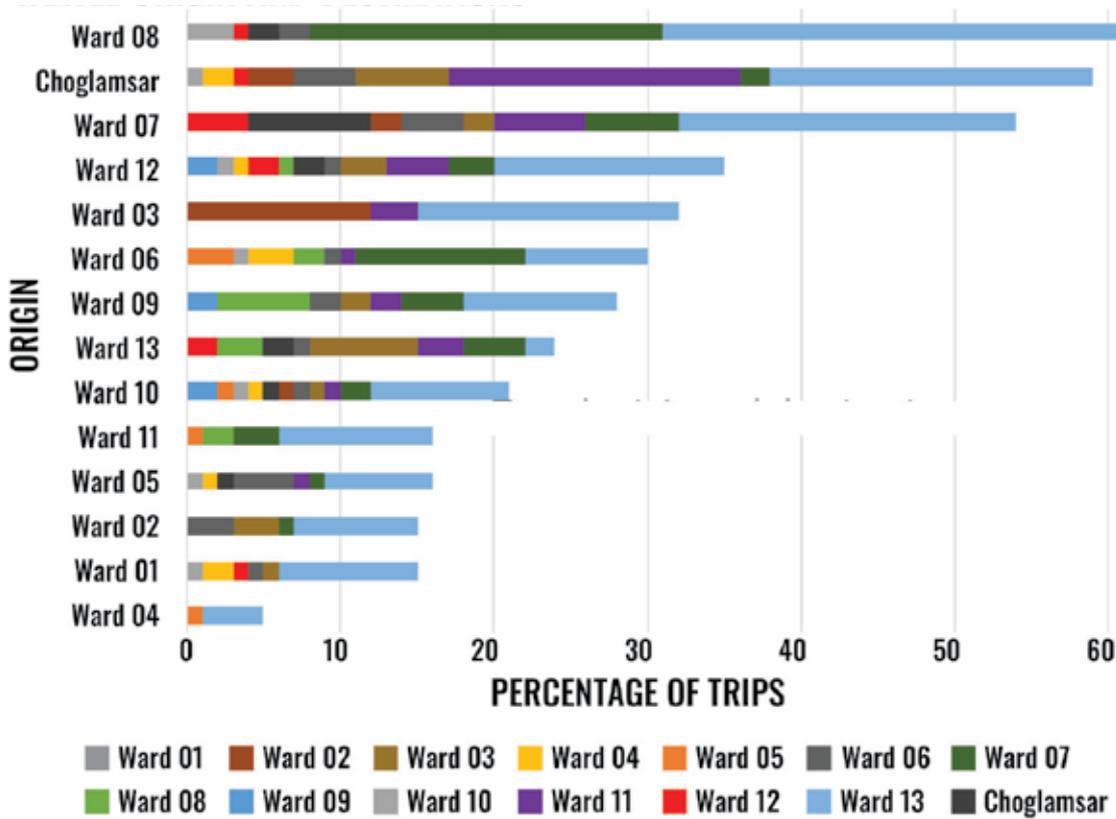


Figure 12:
Graph showing ward-wise origins and destinations w.r.t. percentage of trips



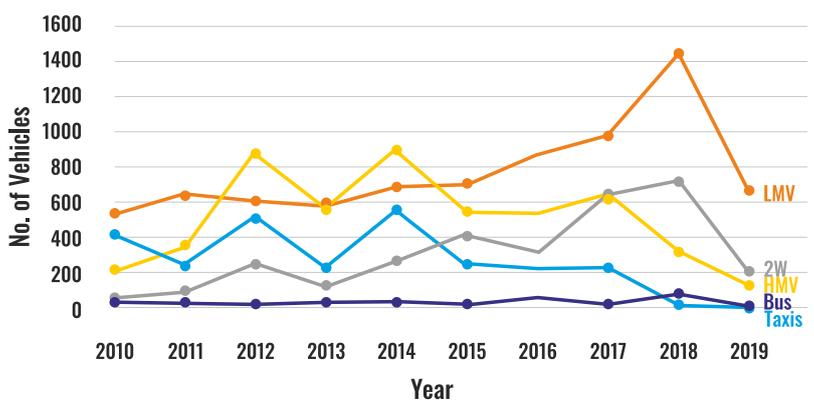
High traffic routes make public transportation more viable.

VEHICLE OWNERSHIP

There are 26,200 vehicles registered in Leh. In 2010, 218 new cars were registered - this figure increased gradually to 967 in 2017 and 1,439 in 2018. The total number of private cars is 9,014 till 2019. The number of 2-wheelers have also increased gradually.

Figure 13 shows vehicle registrations at RTO Leh. In addition, it is estimated that about 10,000 cars registered outside Leh (Kargil, Srinagar, Jammu, Delhi and Chandigarh) operate extensively in the Town. There are 4,454 registered taxis in the RTO as of 2019 but at least 5,000 taxis bring tourists to Leh from outside regions and stay in Leh for the tourist season from May to October. 16 buses were registered in 2010 and 62 in 2018. There is no accurate count of the outside vehicles that operate in Leh.

Figure 13:
Graph of yearly vehicles registrations



PUBLIC TRANSPORT

The public transport system carries approximately 2,800 passengers every day in over 60 buses covering nearly 250 km of

bus routes. Table 3 gives a detailed though incomplete picture of buses to and from small villages and town near Leh, terminating at or originating from the new bus stand.

Table 5 :
Bus transport to and from Leh

DESTINATION	Kms	Frequency	No. of Buses	Total Capacity	Passengers per Day
Phyang	19	2/day	1	50	32
Saboo	8	2/day	1	64	34
Spituk	14	6/day	2	150	212
Phey	13	2/day	1	50	40
Choglamsar	5	Every 5 mins	45	1125	2026
Chuchot Gongma	28	2/day	1	50	30
Chuchot Shama	12	2/day	1	50	28
Chuchot Yokma	7	2/day	1	50	38
Matho	21	2/day	1	50	27
Stakna	22	2/day	1	50	32
Stok	14	2/day	1	50	28
Taru	23	2/day	1	50	38
Umla	27		0	0	0
Nang	27		0	0	0
Ranbirpur	20	4/day	2	100	89
Shey	13	4/day	2	100	92
Thiksay	18	4/day	2	100	78
Total	291		63	2089	2824

Public transport services in Leh town and fringe areas are catered by private minibuses at regular intervals. Currently Mazda Union with 120 minibuses operates buses on two fixed routes on rotation basis. Before 2018 there was no bus service in the Town, as private taxis were the only mode of public transportation. The rise in number of taxis and the private vehicles started creating traffic management and safety issues, so minibus-based public transport was started in 2018.



City public bus — locally called 'Mazda bus'

The Urban Public Transport system functions at three levels:

Level 1:

Direct and frequent bus services to nearby areas (Choglamsar and Skalzangling) every 5 minutes as there is heavy traffic and these areas are nearly integrated into Leh's urban area and society.

Level 2:

Buses to nearby villages like Spituk, Agling and Saboo Thang run every 30 minutes.

Level 3:

To peripheral villages such as Shey, Thiksay, Stok, Matho and Chuchot which are about 20 to 25km from Leh, the less frequent bus services may not be direct connections to Leh's centre.

A major issue is that only 13.5% of the town area is covered under the current public transport network, and public bus services to outlying areas is not frequent or convenient enough, which increases dependency and convenience of private vehicles.

ROAD NETWORK AND TRAFFIC

Leh has about 133 km of roads in the municipal area with a road density of 10.2 km/sq.km. The national highway 1D and other important state highways provide the basic structure. Figure 14 shows the road network and its classification. Table 4 shows the road length by category.

Pathways constitute an important component of the mobility infrastructure in Leh. There is a total of 40.7 km of pathways in the town. These pathways connect with the road network thus enabling the roads to function as collectors.

Figure 14:
Classification of Roads

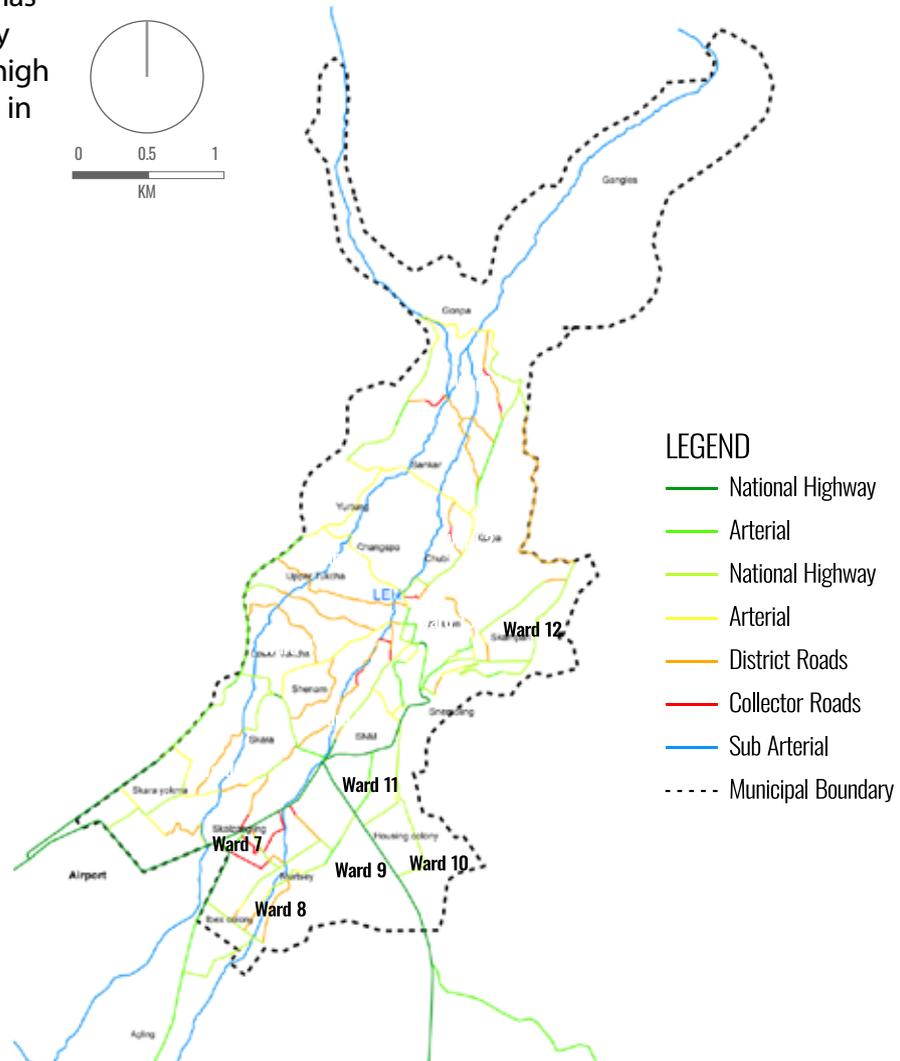


Table 6:
Road Length by Category

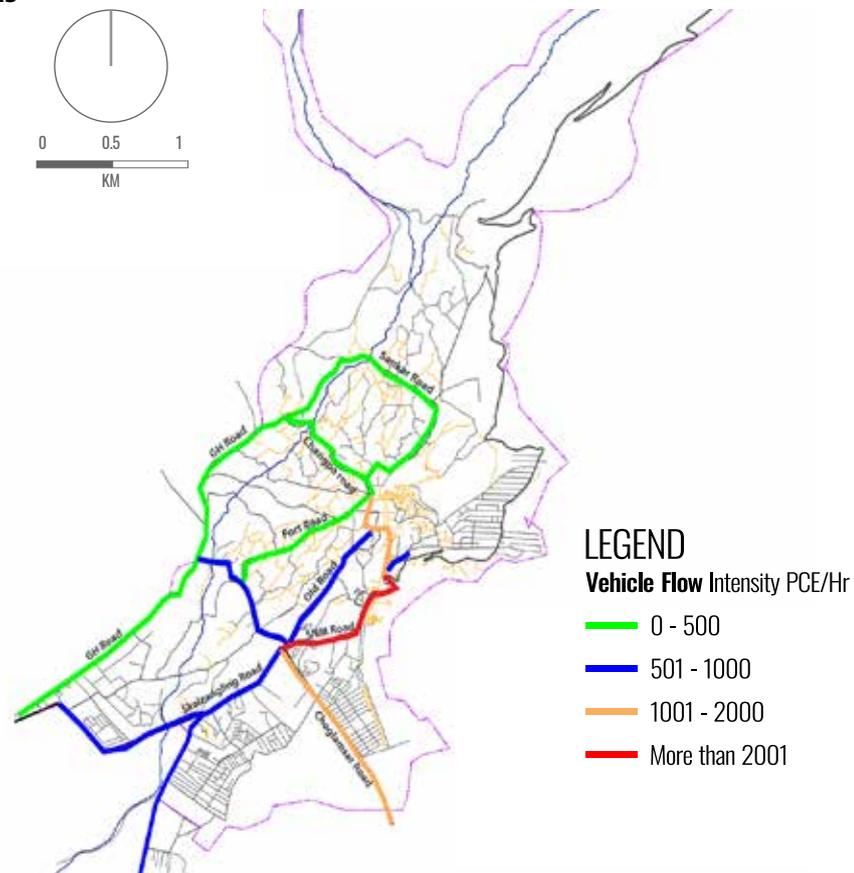
Category of Road	Road Length
National highway	5.9 km
Arterial roads	20.8 km
Sub-arterial roads	17.3 km
Collector roads	78.2 km
District roads	10.9 km
Pathways	40.7 km

The existing road network has limitations of width in many segments that experience high intensity of traffic as shown in Figures 15 and 16.

**Figure 15:
Road Widths**



**Figure 16:
Traffic Intensity on Major Roads**



*“Leh’s streets
used to be serene
when I first came here
in 2002.
Now its chaotic.”*
– a tourist

STREET DESIGN, WALKABILITY AND CYCLABILITY

Streets in Leh have shortcomings in design and construction. Many do not have footpaths, lighting or even a properly built carriageway. The town has only 10.5km of road with footpath (7.8% of the total road length) and only 22km of road have streetlights – limited to the main roads and highways. Figure 17 shows the streets with footpaths and streetlights. There are no dedicated bicycle paths or lanes.

Figure 17:
Roads with streetlight and footpath



Although walking is very common, absence of sidewalks and street lighting make it a difficult and potentially hazardous experience especially for elderly people, children, or those with disabilities. Tourists who are looking at shop windows also find it inconvenient. While there are very few accidents, it does lead to increased honking, impatience and stress. Bicycles move in mixed traffic. A recent initiative on street design is the redevelopment of Changspa Road, incorporating the features of complete streets.

“It would be great if we have pedestrianised pathways along the water canals.”

– Ajang Riyaz, a Merchant



Images above show some places in Leh with improper or no streetlights and footpaths

TRAFFIC MANAGEMENT AND PARKING



Irregular and informal parking in Leh main market

One-way streets are used to manage and improve traffic flow in some areas, but the streets around the Main Market still see lot of traffic during summer evenings. There are three on-street parking areas under MCL and they collect rent from private entities which run them. Roadside parking is common, and open spaces and even sidewalks are commonly used for parking.



Roadside parking is common, and open spaces and even sidewalks are commonly used for parking.

Table 7:

Parking designated under MCL and its details

Parking under MCL	No. of bays	Yearly Rental Earned (INR)
Yebhi	30	230,000
Softy Corner- Axis Bank - JK Bank	60	305,000
Zangsti	25	155,000
TOTAL	115	690,000

GOODS MOVEMENT

Within the town, small commercial vehicles are used to deliver goods to shops, restaurants, hotels and institutions. Truck union, mini-truck union and pick-up truck union are responsible for goods movement.

The heavy truck union is located at Agling (Ward no. 8) and the other two (mini-truck and pick-up truck) unions are located near Bombgarh in Housing Colony (Ward no. 10).

There are few limitations or restrictions on movement of larger vehicles, nor are their pollution norms tightly monitored or enforced.



“I wish we have public transport so I can sell my vegetables in the market.”

– vegetable vendor

“I worry about my children’s health and safety, what will become of their future?”

– a mother

OUR VISION

1. Leh has a sustainable urban mobility plan¹.
2. Leh has a well-planned, integrated, multi-modal transportation system that promotes a pedestrian and cycle friendly environment, and brings together a public transport system with para-transit, walking, cycling and other non-motorized modes of transport in a seamless network, addressing the needs of residents, local workforce, people coming from nearby villages for work and business, and tourists.
3. Public spaces and streets in Leh offer a level of convenience, safety and attractiveness to pedestrians that encourage walking and cycling and improve access to public transportation.

STRATEGIES & ACTIONS

STRATEGY 1

Plan and implement a public transport system that promotes a pedestrian and cycle friendly environment within Leh, and connecting Leh to nearby areas in a 20 km radius

A 1.1: Prepare a comprehensive sustainable urban mobility plan for Leh.

A 1.2: Study all vehicle options for public transportation, including buses, electric trams, three-wheelers and motorcycles / scooters / bicycles, keeping in mind factors such as safe speeds, quick entry and exit,



Pedestrian-friendly street, Changspa

¹ LEDeG has prepared a sustainable urban public transport plan that focuses on walkability, cyclability and public transport.



MOBILITY

- Sustainable urban mobility plan
- Well-planned, integrated, multi-modal transportation system
- Pedestrian and cycle friendly environment,
- Public transport system with para-transit, walking, cycling and other non-motorized modes of transport in a seamless network
- Pedestrian-friendly streets and public spaces

convenient access for all including the elderly and differently-abled, the emissions and noise pollution generated, and the nature of demand during summer and winters.

A 1.3: Design and implement an extensive public transport network catering to the needs of regular commuters and tourists.

A 1.4: Ensure equitable access to public transport for all sections of society.

A 1.5: Integrate intelligent transportation systems that combine information and communication technology with digital payment systems that improve the safety, efficiency and financial sustainability while reducing traffic congestion and enhancing the drivers' and passengers' experiences.

STRATEGY 2

Improve the road network and develop complete streets and pathways

A 2.1: Design the road network with complete street design such that it can support public transport, other vehicular movement, and safe movement for pedestrians and non-motorized vehicles. Upgrade existing roads using the concept of Smart Roads.

A 2.2: Plan for an arterial road network that with a clear hierarchy, provides connectivity to all parts of the town as well as movement in and out of the town. The network should integrate different land uses such as work, living, shopping and recreation areas to arrive at well-connected and balanced developments. Implement the plan in a phased manner.



Street Design for Changspa Road, Leh Town



Pedestrianized space, Leh main market

A 2.3: Prioritize the development and improvement of walkable pathways that reduce distance and time for pedestrians and beautify and maintain these pathways well.

A 2.4: Categorize all streets and pathways by width and function and develop a street and pathway design manual with standard specifications for each category.

A 2.5: Formulate a programme for incremental improvement of the streets and pathways in a phased manner based on demand and resource availability.

STRATEGY 3

Develop a traffic management system that increases order and safety

A 3.1: Design and develop a traffic management system consisting of both hardware (street design, traffic lights, signage, street markings) and software (human resources, awareness and training) to address both routine traffic and specific situations requiring more intense engagement.

A 3.2: Ensure enough traffic management personnel are deployed to implement rules.

A 3.3: Consider innovative ways to reduce vehicular traffic (including for goods movement) across the town but particularly in central and busy areas, such as congestion

fees in the market area, restricted hours and permits for motorized vehicle on certain roads, and incentives for people who limit and reduce the usage of their vehicles (e.g. linking an insurance surcharge to distance driven or introducing fuel surcharges).

STRATEGY 4

Manage goods movement

A 4.1: Study and document the patterns and challenges of goods movement in and around Leh, and update this study every 2 years.

A 4.2: Implement stringent air and noise pollution standards for commercial vehicles.

STRATEGY 5

Ensure that commuting in Leh is sustainable, efficient and reliable through multiple initiatives

A 5.1: Connect peri-urban areas and nearby villages such as Shey, Thiksey, Stakna, Spituk, Sabu, and Phyang with comfortable and frequent buses, reducing the need for commuters to use private vehicles.

A 5.2: Introduce regulations for “maximum permissible parking” (as opposed to current practice of “minimum required parking”), thus restricting private vehicle use and creating a push towards public transport.



Changspa street

A 5.3: Promote green mobility for Leh’s different workplaces through such initiatives as (a) facilities for bicycle users like good bicycle parking, shelters and lockers, (b) subsidised public transport passes and (c) restrict free motor vehicle parking — paid parking only.

A 5.4: Introduce eco-friendly and convenient modes of transportation such as electric buses and electric cycles (for bicycle sharing systems) to improve the environment and reduce dependency on carbon-fuel vehicles.

STRATEGY 6

Establish institutional framework for mobility

A 6.1: Establish a specialized organization or government body to manage and oversee urban mobility in Leh town.

“This chaos is frightening; I wish these streets were calmer.”

– a student



MOBILITY

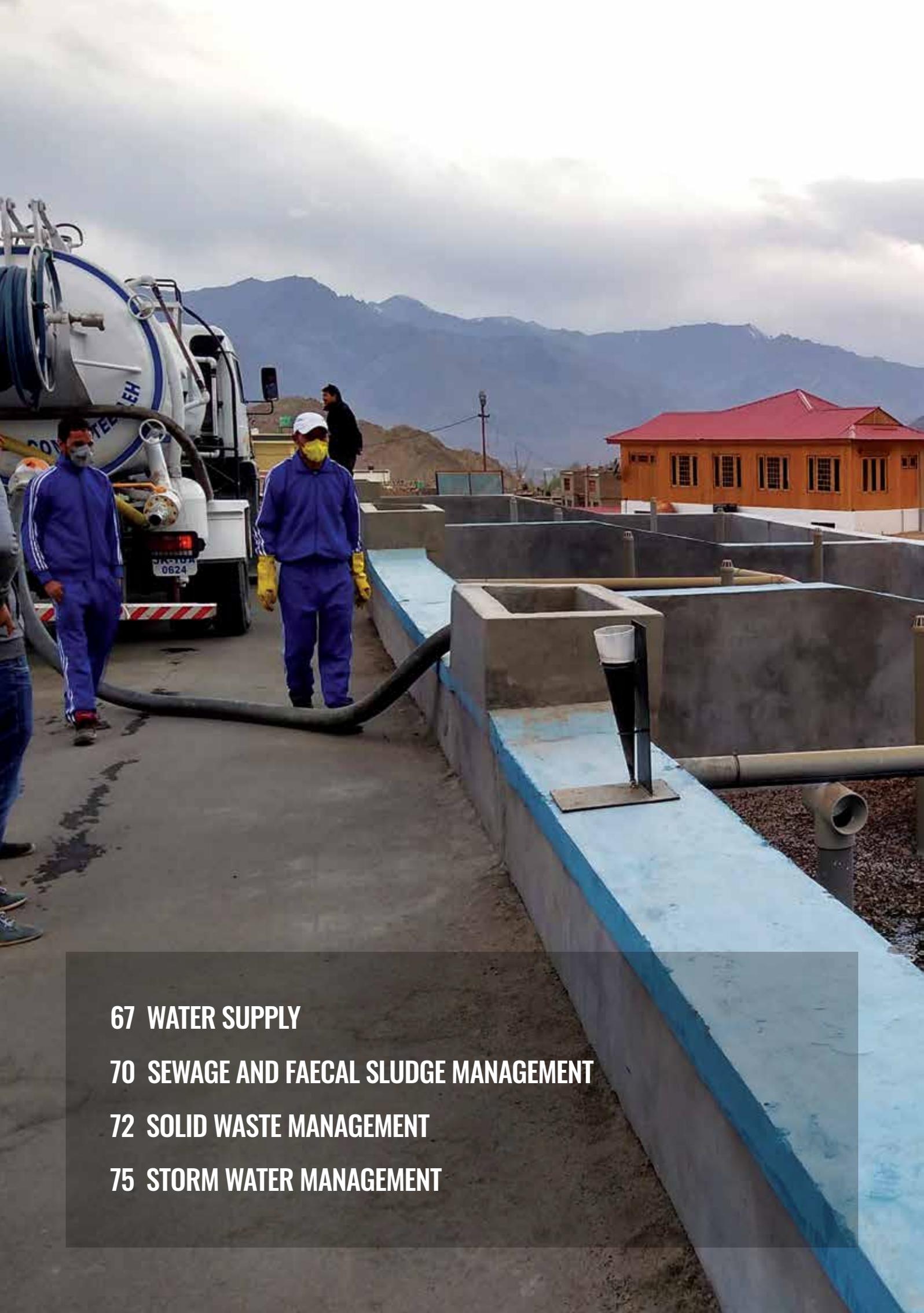
- Plan and implement a public transport system that promotes a pedestrian and cycle friendly environment within Leh, and connecting Leh to nearby areas in a 20 km radius
- Improve the road network and develop complete streets and pathways
- Develop a Traffic Management system that increases order and safety
- Manage goods movement
- Ensure that commuting in Leh is sustainable, efficient and reliable through multiple initiatives
- Establish institutional framework for mobility

THEME 2 : ACTIONABLE RECOMMENDATIONS

NOTE:

The Potential Projects listed below are preliminary recommendations and will be finalised after detailed discussions amongst relevant Government authorities and departments, consultants and experts. Some Projects may be mentioned or detailed in other related Themes.

NO.	POTENTIAL PROJECT	TIME FRAME	DEPARTMENT RESPONSIBLE
STUDIES AND PLANNING			
1	Prepare a detailed mobility plan for the Leh region including public transportation, para-transit, pedestrian and bicycle movement, traffic management and parking (especially park-and-ride systems)	2021–2022	MCL /Transport Dept
2	Prepare town-wide smart parking management plan	2021–2022	MCL
POLICY, REGULATIONS AND INSTITUTIONS			
3	Create strict pollution inspection protocols for all vehicles	2022–2023	MCL
4	Prepare street design guidelines	2021–2022	MCL
CAPITAL PROJECTS AND THEIR OPERATIONS AND MAINTENANCE			
5	Vastly expand and improve bus services in and around Leh (esp. Upper and Western Leh) including upgraded, winter-friendly bus terminal and bus stops	2021	MCL/Transport Dept
6	Upgrade all major streets to “complete roads” including appropriate pedestrian crossings and upgrading intersections	2022–2026	MCL/LAHDC
7	Implement streetscaping projects for all streets, pedestrian paths and public areas including footpaths, pavements, berms or verges, signage, smart lighting and CCTV security (as needed)	2022–2025	MCL/LAHDC
8	Implement street signage and street marking for entire road network	2022–2023	MCL
9	Upgrade major market areas with all-weather safety and universal accessibility features, waste management systems, and multi-modal transportation links	2021–2024	MCL
10	Build paid-parking facilities at identified locations with park-and-ride services; enforce fines against unauthorised street parking	2022–2024	MCL
11	Introduce motorized cycle rickshaws	2021–2022	MCL/LAHDC
12	Launch shared public cycle system	2022–2024	MCL



67 WATER SUPPLY

70 SEWAGE AND FAECAL SLUDGE MANAGEMENT

72 SOLID WASTE MANAGEMENT

75 STORM WATER MANAGEMENT

THEME 3 | WATER, SANITATION AND SOLID WASTE MANAGEMENT

WATER SUPPLY

Reliable and safe water supply is perhaps the greatest concern for people of Leh. While there have been supply disruptions in the past, the Public Health Engineering Department which manages the entire water supply system has nearly finished building a new water supply system at a cost of Rs 70.5 Crores that can lift enough water from the Indus river at Choglamsar to supply the town. It is estimated that there are 1,500-2,500 private borewells that are unregistered and unregulated, many of which may remain in use by households unable to connect to the new water distribution network, or as backup sources. Ground water is contaminated in many parts and needs to be monitored.

It is estimated that while some households and hotels use up to 100 liters of water per person



Drinking water being ferried to the residents of Zangsti

per day (LPCD), migrant workers and those who live in under-served parts of town like Skampari, Nimoling and Old Leh get as little as 25-30 LPCD either from public water stands or water tankers, which can be unreliable.

About 25-40% of water is wasted due to leaks in water pipes and overflowing water taps and tanks that people use to store water, as water is supplied for only 2 hours per day. The new

distribution system should reduce these losses but its O&M costs may increase to Rs 3.94 Crores per year once it is fully operational, after 2021 and it has 3 shortcomings:

a. Intermittent and not Continuous

Supply: 24x7 water supply reduces losses and can reduce overall O&M costs.

b. No meters: Without customer water meters, water charges are fixed. There is no fair way to charge based on water actually used, nor any incentive to save water. The cost of water supply is another important factor for local government budgets.

c. Insulation and water supply in winters:

The pipes are not insulated and water freezes and pipes burst in the winter. The entire system has to be drained of water every day, leading to huge wastage and making 24x7 supply difficult.



Water being supplied from the Skara-e-Spang SR

Thus, while the new water supply system will improve convenience for many people, more can be done to improve safe and convenient water supply for everyone. Leh will also become more dependent on the Indus river for water, and any risks—climatic, natural or geopolitical—need to always be considered.

Traditional water management practices like appointing the Chirpon to manage spring water, should also be revived and integrated into the current water management practices.

*“'Big gulp, little sip' is
a good way to manage water.”*

– Dorjee Angchuk, 51

OUR VISION

1. All water resources are used responsibly and protected from pollution, and water security is assured future generations.
2. Everyone in Leh receives adequate piped and quality drinking water supply, 24-hours a day, to meet all health, hygiene and commercial requirements.
3. Water tariffs are affordable to all sections of the society and charged based on quantity of water used, such that total tariffs exceed the total cost of supplying water.

STRATEGIES & ACTIONS

STRATEGY 1

Improve understanding of local natural water systems

- A.1.1: Conduct a detailed hydrogeochemical study and natural baseline study of Leh's groundwater.
- A 1.2: Create a detailed GIS map with underground aquifers, surface water channels and bodies, water distribution and sewerage pipelines, borewells, septic tanks and all other related infrastructure, which is updated annually.
- A.1.3: Establish a water testing laboratory to continuously monitor water quality from various sources.

STRATEGY 2

Create a management structure and plan for water and wastewater management, including responsible financial management

- A.2.1: Create a Water Management Committee with 12 members, including members from MCL, Government of the Union Territory, LAHDC, PHED, residents, and technical and management experts, who will plan and oversee all activities, investments and services related to water, wastewater and Faecal Sludge Management in Leh, including evaluating services contracts and PPPs, creating regulations, and setting tariffs and fines.

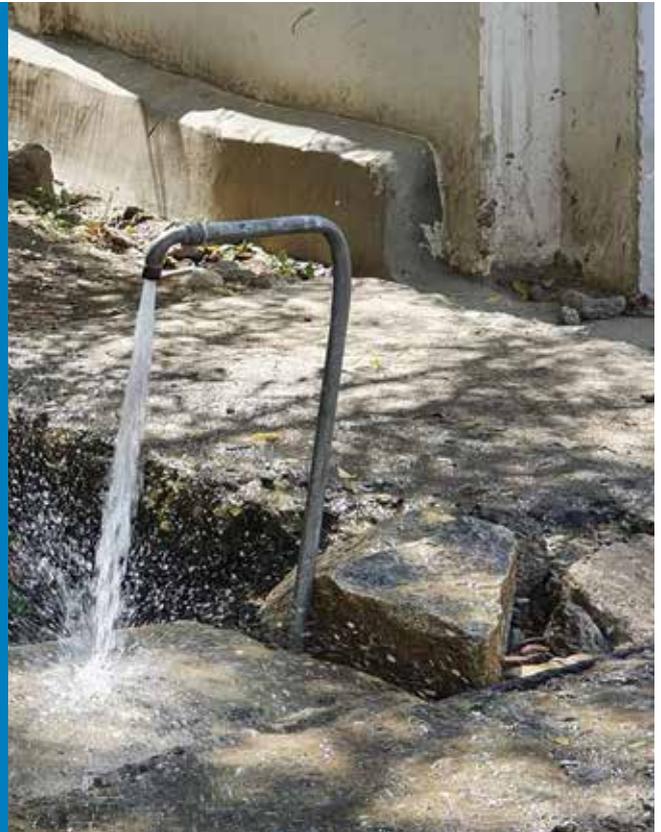


WATER SUPPLY

- Sustainable, responsibly used and pollution free water resources
- Assuring water security for future generations
- Adequate piped and quality drinking water supply, 24-hours a day
- Water tariffs affordable to all sections of society and charged appropriately



- Improve understanding of local natural water systems
- Create a management structure and plan for water and wastewater management, including responsible financial management
- Expand and improve the piped water system to reach all users and improve service levels



A Water stand post, Upper Leh

A.2.2: Develop a holistic five-year Water and Wastewater Management plan using tools like Water Safety Plan and Water Audit, and exploring options like decentralized systems to identify solutions that are optimal for Leh. This plan must be updated each year.

A.2.3: Create a detailed financial projection of the total cost of water supply, including piped water and tankers.

A.2.4: Develop a telescopic tariff structure for different customer segments that is affordable (especially for low income users), creates incentives to use water responsibly, and generates revenues to cover all O&M costs.



A water tanker being refilled at a PHE water pumping station for supply in various parts of Leh town

A.2.5: Ensure relevant and on-going training and capacity building for the Water Management Committee and all staff involved in providing these services.

A.2.6: Create a group of Water Ambassadors including prominent local leaders, citizens, NGOs and associations to create continuous awareness and dialogue about water issues and conservation.

STRATEGY 3

Expand and improve the piped water system to reach all users and improve service levels

A.3.1: Prepare detailed maps of unserved areas and project future growth of the Town.

A.3.2: Create a road map for expanding the system to reach unserved users, and mechanism to set targets and monitor progress.

A.3.3: Appoint expert consultants to create a roadmap for upgrading the water network to deliver 24x7 water supply throughout the year, and ensuring properly O&M to minimize costs and maximize asset life.

SEWAGE AND FAECAL SLUDGE MANAGEMENT

In 2016, the PHED started building a sewerage network in Leh. It is now completed, covering an estimated 60% of the town, with 61.6 km of pipelines. Construction of 3 MLD STP is already under process and is expected to get commissioned next year. However, there are some buildings whose sewer network is not properly connected and all the wastewater generated is flowing into open spaces, sometimes creating smells and problems for people living nearby.

A record of connections has not been properly maintained, which can create problems in ensuring good operations and maintenance and charging tariffs in the future, and there is no plan for re-using the treated wastewater, which will be discharged into the Indus river. This can be a huge problem if the STP is not well operated.

As Leh does not have a functional sewer system yet, septic tanks and soak pits are the only way to handle wastewater. Most soak pits have porous walls, thereby directly leaching wastewater into the soil and polluting the groundwater which is used by people for all purposes, including drinking.

Since 2017, MCL developed a Public Private Partnership with the Blue Water Company (BWC) to build and operate a complete Faecal Sludge Management (FSM) system. Earlier, faecal sludge from septic tanks was dumped at Bombguard without treatment, which is unhygienic and in violation of national guidelines.

About 5 million liters of water is used every day in Leh during the summer which means about 85%, or 4.3 million liters of wastewater is generated each day. Today, the FSM services collect and treat about 12,000 liters per day, which means that 4.2 million liters of wastewater is flowing into the ground each day, carrying chemicals and pathogens which are dangerous for humans, animals and the environment.

OUR VISION

1. 100% of wastewater is collected and properly treated.
2. As much treated wastewater is reused as possible.
3. Full operation and maintenance costs of the sewer and FSM systems is recovered through user tariffs.

STRATEGIES & ACTIONS

STRATEGY 1

Create a proper institutional structure for managing wastewater

- A.1.1: The proposed Water Management Committee will be responsible for all actions related to sewage and faecal sludge management, including planning projects, overseeing O&M and creating requisite regulations, tariff structures and penalties.
- A.1.2: A separate department is set up within the water supply team to manage sewerage and FSSM services to provide integrated and effective services



Faecal Sludge Treatment Plant, Leh





SEWAGE & FSM

- 100% wastewater collected and treated
- Maximum possible reuse of treated wastewater
- User tariffs recover O & M costs



STRATEGY 2

Use de-centralised STPs and FSSM to effectively cover all areas

- A.2.1: Decentralised, small-scale sewage treatment plants (capacity 70KLD – 1MLD) can be built where treated wastewater can be re-used productively, or where the sewerage network does not reach.
- A.2.2: Large hotels, campuses and all public toilets will have on-site, small-scale STPs to treat and re-use wastewater for flushing, landscaping and on-site farming.
- A.2.3: All households that are not connected to the sewer have proper septic tanks and use proper FSSM services, and 100% of faecal sludge generated is properly managed and treated.

STRATEGY 3

Treated wastewater should be re-used productively

- A.3.1: Treated wastewater from well-maintained Government or private STPs can be tested and sold or provided free of cost for agriculture, construction, landscaping and other uses.

*“My Waste
is My Responsibility.”*

– Dhontsal, 28

STRATEGY 4

Regular Behavior change, Awareness and Training Programmes

- A.4.1: Regular schedule of technical and management training and accreditation programmes for all persons involved in providing sewage and FSSM services, whether from the private or public sector.
- A.4.2: On-going citizen communication and awareness programmes about solid and liquid waste management and their hazardous effects on health and environmental, and encouraging people to minimise waste and wastewater, and to support and use all waste management services properly, through mass-media, events and public spaces, schools, places of worship and online platforms.



SEWAGE & FSM

- Create a proper institutional structure for managing wastewater
- Use de-centralised STPs and FSSM to effectively cover all areas
- Treated wastewater should be re-used productively

SOLID WASTE MANAGEMENT

In 2019, Leh generated about 40 Tonnes of waste each day during the tourist season and about 9 Tonnes per day during the winter. While Leh was declared the Cleanest Town of North India in 2017, the overall process of waste management must be significantly improved as there are many gaps in the current system.



Bomb Garh — the waste dumping site of Leh town

Until recently, all the waste was dumped at the landfill site called Bomb Garh near the Housing Colony, where waste pickers separate out plastics and recyclable materials, bundle and send them to Jammu and other places. Bomb Garh is not in compliance with criteria set by MoEF and Solid Waste Management Rules 2016.. A new Material Recovery Facility and Scientific Landfill have been recently operationalized and the process of clearing Bomb Garh of the legacy waste is under planning.

The main generators of waste during the summer are the tourism sector and construction. As per a study in 2018, 57% of waste is food and organic material; recyclable waste such as paper, glass, metal and plastics constitutes 22%; and construction and demolition waste are also a significant but unknown quantity. All these waste streams need to be properly managed, including segregation and treatment for further re-use and recycling.

Plastic waste is a particular concern as it has grown sharply and is very visible even on roadsides, drains/ water channels, highways and open spaces. Over 30 Lakh plastic bottles were sold in Ladakh in 2019, sachets for ketchup are commonly used in restaurants and hotels, and plastic packaging is everywhere.

While Ladakhis are environmentally conscious and careful about the waste they create, there has been no organized and consistent effort to reduce the amount of waste generated.

The MCL operates 8 tipper trucks and has a staff of 113 field staff for collecting solid waste. Out of 44 roadside container where people used to dump their garbage, 40 have been removed and Door-to-Door collection has been initiated in various residential and commercial areas. Segregated food and inorganic waste are collected from commercial establishments, but only inorganic waste is collected from households—they have to manage their organic waste themselves.



Roadside container for dumping garbage

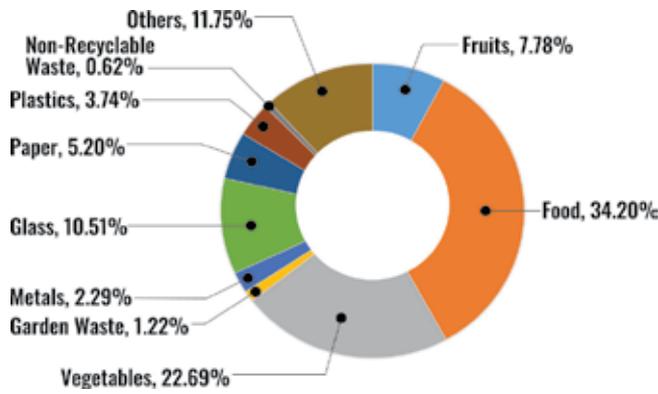
Frequency of collection varies from zone to zone—from once in 15 days, to daily. Shops and hotels leave their waste outside at night to be collected in the morning, and dogs and donkeys are often seen eating this garbage in the early morning, creating filth and a menace of wild dogs. There is no safe system for collecting or managing hazardous (medical, electronic, chemical etc) materials, which causes problems for workers at the Material Recovery Facility. Service is free for households, and commercial establishments pay annual fee based on their nature and size.

“Educational programs are the cornerstone of awareness raising for Solid Waste Management.”

– Wangial, 45

Figure 18:

Composition of Solid Waste in Town of Leh



Source: (Wani, Dada, & Shah, 2018)

OUR VISION

1. Waste generated in Leh is minimised through responsible consumption and production, with special focus on plastic waste (Reduce).
2. The city achieves 100% Door-to-Door collection of 100% segregated waste, including hazardous materials.
3. Leh has waste management, segregation, re-use and recycling infrastructure and services so that less than 10% of waste goes to the landfill.
4. All generators of waste, producers and consumers, pay suitable fees to discourage creation of waste, and to properly manage the waste that is generated.



Material Recovery Facility

STRATEGIES & ACTIONS

STRATEGY 1

Create a proper institutional structure for managing Waste

- A 1.1: Create a Waste Management Committee with 12 members, including members from MCL, Government of the Union Territory, LAHDC, residents, and technical and management experts, who will plan and oversee all activities, investments and services related to solid waste including evaluating services contracts and PPPs, creating regulations, and collecting tariffs and fines.
- A 1.2: Create Neighbourhood-Level committees including MCL councillors, citizens, NGOs and other associations, who oversee waste management services, and monitor illegal disposal, burning and other such activities in their area.
- A 1.3: Develop a holistic five-year plan for reducing and managing waste with inputs from experts and industry as needed, and update the plan annually.
- A 1.4: Identify the right party to manage each step of the solid waste management value chain, including MCL, private parties and NGOs, using PPPs where they are necessary or beneficial for end outcomes.
- A 1.5: Implement suitable safety processes and social security benefits for all waste workers including rag pickers.
- A 1.6: Create an effective and easily accessible customer complaint system.

STRATEGY 2

Create a sense of Shared Responsibility for waste reduction and management

- A 2.1: Create a group of Waste Ambassadors including prominent local leaders, citizens and local organisations with clear plans and goals for each member.
- A 2.2: Continuous citizen communication and awareness programmes about solid and liquid waste and their hazardous effects on health and environment through mass-media, events and public spaces, schools, places of worship and online platforms.

SOLID WASTE MANAGEMENT

- Minimize waste generated through responsible consumption and production
- 100% Door-to-Door collection of segregated waste,
- Less than 10% of waste goes to the landfill
- Generators of waste pay fees to discourage creation of waste, and to properly manage waste



A 2.3: Encourage people to:

- Minimize waste through carefully monitoring their own consumption and waste generated
- Actively participate in through programmes like street clean-up drives, recycling camps etc.

A 2.4: Bulk generators and producer responsibility – shall be the basic principle, promoting the idea that “My Waste is My Responsibility”.

A 2.5: Ensure adequate and relevant training and capacity building for the Waste Management Committee members, municipal staff, and any other persons involved in waste management in Leh.

STRATEGY 3

Reward waste reduction efforts

A 3.1: Create incentives for hotels to increase on-site waste management and reduce waste handed over to MCL, with special attention to reducing plastic waste.

A 3.2: Public recognition for “Zero-Plastic Hotels” and “Green Hotels”, and benefits like reduced fees for municipal services and additional promotion in public communication.

“Solid waste management in Leh town is at infancy stage.”

– Farhana Faheen, 29

STRATEGY 4

Implement 100% collection and management of all waste stream

A 4.1: Conduct periodic waste stream analysis and characterization studies to understand the types and amounts of waste generated by different parts and different users in Leh, which can help to identify policies and reduce / recycle possibilities.

A 4.2: Ensure 100% door-to-door collection of multi-stream segregated waste (minimum three categories: food and organic waste, clean dry waste and dirty dry waste) from all households, institutions, commercial and industrial establishments.

A 4.3: Develop and publish specific guidelines and processes for collecting, transporting and processing
(i) medical and bio-hazardous,
(ii) electronic,
(iii) hazardous industrial, and
(iv) construction and demolition waste, and train relevant groups of generators and waste managers about these.

A 4.4: Build facilities with adequate capacity to properly recycle all waste streams to the extent economically and technologically feasible, while capturing all harmful by-products of such processes.

A 4.5: Ensure protection and well-being of all humans and animals involved or affected by such work, processes and infrastructure.

STRATEGY 5

100% Recovery of SWM Service Costs

- A 5.1: Understand the full cost of SWM services and analyze options such as outsourcing and Public Private Partnerships that can reduce costs.
- A 5.2: The Waste Management Committee will create and update a tariff structure for all customers that is fair and affordable.
- A 5.3: Implement surcharges and limitations on the sale of polluting products.

STRATEGY 6

Pay special attention to eliminating hazardous materials including plastic

- A 6.1: Identify materials that are hazardous to the local environment and prepare and implement a plan for suitable time-bound and progressively stringent restrictions on the sale and consumption of such materials—including certain types of plastics, styrofoam, coated papers, engineered construction materials, paints and chemicals with heavy metals and so on.
- A 6.2: Work with manufacturers to find alternative materials and product designs to avoid such restricted materials.
- A 6.3: Implement surcharges and limitations on the sale of such dangerous polluting products.

SOLID WASTE MANAGEMENT

- Create a proper institutional structure for managing waste
- Create a sense of Shared Responsibility for waste reduction and management
- Reward waste reduction efforts
- Implement 100% collection and management of all waste stream
- 100% Recovery of SWM Service Costs
- Pay special attention to eliminating hazardous materials including plastic

STORM WATER MANAGEMENT

Leh has a network of water channels called 'yura' which run through the town and bring water from natural springs in the higher reaches of the town. These channels also help drain storm water away, and new channels (covered and uncovered) have been built over time alongside streets. The town receives 170 mm of precipitation, with rainfall April-May and Oct-Nov, and snow between December-March.



A typical 'yura' water channel in Leh

Coverage of storm water drains is defined in terms of the percentage of road length covered by the storm water drainage network. Presently, coverage is only about 15% – 93km of roads have 14 km of storm water drains. Ultimately, these drain into the Indus river.



Storm water drain in Leh

This network is not adequate as it does not cover enough of the town, and does not have the capacity to drain large volumes of water in case of uncharacteristically heavy rainfall, which will be a growing risk in the future.



STORM WATER MANAGEMENT

- A complete and adequate storm water drainage system to manage rainfall and prevent flooding of streets
- System of wells and holding ponds to increase storage and groundwater replenishment



OUR VISION

1. Leh has a complete and adequate storm water drainage system to manage rainfall and prevent flooding of streets.
2. A complementary system of strategically situated wells and holding ponds improve storm water collection and groundwater recharging.

STRATEGIES & ACTIONS

STRATEGY 1

Design, build and maintain a storm water management system that can handle peak expected rainfall

- A 1.1: Create a network of canals that can quickly evacuate large quantity of water into the Indus river in the event of floods, using gravity and pumps and other equipment if needed.
- A 1.2: Ensure that storm water drains are cleaned and properly maintained so solid waste and debris does not impede water flow.



Uncovered drain at Skalzangling

A 1.3: Build and maintain wells and pools at flood-prone locations to store large quantity of water until it can be safely drained or soaked into the soil, to replenish groundwater.

A 1.4: Stress test the system annually.

STRATEGY 2

Best Management Practices- assigned to reduce the pollutant loading and reduce the volumes and velocities of stormwater runoff to surface waters.

- A 2.1: Plan and create facilities to capture, treat and recharge groundwater with stormwater.
- A 2.2: Public awareness programmes to inform people about stormwater pollution, including the proper use and disposal of household chemicals.



STORM WATER MANAGEMENT

- Design, build and maintain a storm water management system that can handle peak expected rainfall
- Best Management Practices- assigned to reduce the pollutant loading and reduce the volumes and velocities of stormwater runoff to surface waters.

“Water knows no physical or political boundaries so management of water can be particularly complicated.”

– Deldan Namgial, 40

THEME 3 : ACTIONABLE RECOMMENDATIONS

NOTE:

The Potential Projects listed below are preliminary recommendations and will be finalised after detailed discussions amongst relevant Government authorities and departments, consultants and experts. Some Projects may be mentioned or detailed in other related Themes.

NO.	POTENTIAL PROJECT	TIME FRAME	DEPARTMENT RESPONSIBLE
STUDIES AND PLANNING			
1	Conduct a hydro-geological study of Leh's ground water	2021-2022	MCL
2	Prepare and adopt a Water Safety Plan (WSP) to guide planning and investment decisions related to water supply in Leh	2021	PHED
POLICY, REGULATIONS AND INSTITUTIONS			
3	Create a Water, Sanitation and Waste Management Committee	2021	LAHDC
4	Create a Borewell Registry to register every borewell in Leh area	2021	MCL
5	Draft and enforce Municipal Solid Waste Management bye-laws and rules	2021	MCL
CAPITAL PROJECTS AND THEIR OPERATIONS AND MAINTENANCE			
6	Ensure 100% Household tap connections with meters	2021-2023	PHED
7	Upgrade entire water supply network to 24x7 water supply first for the summer season and then through the year	2021-2024	PHED
8	Improve and maintain water stand posts in public areas	2021-23	MCL
9	Rebuild and clean up <i>dzings</i> and <i>yura</i> , restart the traditional <i>Chhurpon</i> system, and create artificial glaciers to support agriculture in Leh	2022-23	MCL
10	Complete the Sewage Treatment Plan for Leh	2021-2022	PHED
11	Plan and build small-scale sewers and decentralised STPs for areas not connected to sewer, with re-use of treated water	2022-2025	PHED
12	Clean up and bio-remediation of legacy waste dumping site at Bomb Garh	2021-2022	MCL
13	Implement extensive Awareness and Waste Reduction Programmes for bulk generators and households	2021-2023	MCL
14	Implement 100% Door-to-Door collection of segregated solid waste at least 2-3 times per week	2021-2023	MCL
15	Operationalise a wet waste processing plant	2022-2023	MCL
16	Build storm water drains as required	2022-2024	PHED
17	Build wells at flood prone area to store excess rainfall and to replenish ground water	2022-2024	PHED

SCHOOL BUS



GN NATIONAL PUBLIC SCHOOL
INSTITUTIONAL AREA, SARDOOTMANG, NEAR ITOP (60 BATTALION),
CHOCOLAMSAI, LEH (LADAKH)

ADMISSION OPEN
for
PRE-NURSERY to V FROM 1st OCT, 2014

Reg. No. : K41206273-276 Dated : 14/08/2014
(To be Attached To C.B.S.E. Delhi)
01982-253120, 9999996210
E-mail : gnnp.leh@rediffmail.com
The school will be admitting 1000 TLE & 2000
2014 & 2015 batch students.



G.N. NATIONAL PUBLIC
SML
LEH

JK 10
A2971

AMBU. 101
POLICE. 100

01982 253120 E-mail : gnnp.leh@rediffmail.com

79 EDUCATION

85 HEALTHCARE AND WELLNESS

88 SAFETY AND SECURITY

90 HOUSING

92 COMMUNITY AND PUBLIC TOILETS

95 PUBLIC SPACES

THEME 4 | SOCIAL INFRASTRUCTURE

The term social infrastructure is used here as an umbrella term that refers to various physical and conceptual infrastructure to fulfil the social imperatives and needs of Leh town. In this section we focus specifically on education, health, safety and security, housing, communication, public toilets and public open spaces.

EDUCATION

People of Ladakh place high value on education as a vehicle for progress and Leh town has emerged as a major educational hub in the region along with Kargil town.

SCHOOLS

There are 21 schools in Leh municipality including 12 private and 13 public schools. The Education Department provided data for the public schools as of 2020. There were 23 teachers and 159 students in primary school; 47 teachers and 285 students in middle school; 29 teachers and 233 students in high school and 40 teachers and 555 students in higher senior secondary school; altogether 139 teachers and 1232 students. Comparable data for private schools were not available at the time of finalising this report.

It was reported that there seems to be a preference for private schools over public ones as the former appears to have a higher quality education and infrastructure as compared to the latter. Many of these private schools



Primary school students, DPK school

are located in Leh town. This has also fuelled migration from rural areas to Leh town to access educational facilities. It must be noted that the teacher student ratio varies across schools.

Only eight schools out of 25 have access to facilities with digital educational content. It is important for schools to not only focus on procuring digital infrastructure but also focus on connecting to robust digital learning networks such as the national knowledge network developed by the Government of India.

All primary school students in Leh complete primary education. While this is an encouraging statistic, it is not necessarily a result of the quality and systems in educational facilities and these need to be constantly evaluated and improved.



Government Secondary school, BHS School Leh

As of 2018, only about 41 percent of students belonging to secondary school cohort i.e. approximately 1500 of 3600 school-aged children complete secondary education from schools in and around Leh town, as most of them are enrolled in schools in cities outside the region in search of better education. Secondary education in Leh needs to improve by introducing more choices and improving the quality of education, especially by investing more resources into the existing government schools.

VOCATIONAL TRAINING

The Food Craft Institute, Leh, a unit of the National Council for Hotel Management and Catering Technology, offers courses leading to Diploma in Food Production, Diploma in Housekeeping Operation and Diploma in Front Office Operation.

The Government Polytechnic Leh, is a Government diploma college located at Choglamsar. It offers three part time / full time diploma engineering and non-engineering courses: Civil Engineering, Computer Science and Engineering and Travel and Tourism.

The Industrial training Institute (ITI) opposite Leh Airport, Leh, also offers vocational training to 10+2 students, in different trades like Computer Hardware and Network Maintenance, Electrician, Mechanic Motor Vehicle, Plumber, Welder, Sewing Technology and Stenography.

Given the range of new economic activities possible in Leh, as well as traditional activities like agriculture, crafts and tourism, there is a need for a broader range of vocational courses for youth as well as for upskilling the workforce.

UNIVERSITY OF LADAKH

This recently established university is the only trans-Himalayan institute of higher learning and research and, therefore, an institute of higher learning of its own kind.



EJM college, affiliated to University of Ladakh

Established with the six existing degree colleges in the region, three each in Leh and Kargil districts, as its Constituent Colleges, it will also have courses and research programmes specific to Himalayan, trans-Himalayan and South and Central Asian regions not ordinarily available in other universities in the country.

The University has headquarters and campuses in both Leh and Kargil to cater to students graduating from various schools and colleges in the region. Opportunities for higher education are very limited, so students often go to other Indian cities for higher education.

CIBS (DEEMED TO BE UNIVERSITY)

The Central Institute of Buddhist Studies (CIBS), formerly known as the School of Buddhist Philosophy, is a deemed to be university under the Ministry of Culture. It was founded in 1959 and formerly affiliated to the Sampurnan and Sanskrit University in Varanasi. Apart from Buddhist Philosophy, languages such as Sanskrit, English, Hindi, Tibetan and Pali are also taught at CIBS.

RESEARCH CENTRES IN THE LEH REGION

The Defence Institute of High Altitude Research (DIHAR), established in 1960, is working on cold arid agro-animal technologies. The laboratory is screening and identifying the medicinal and aromatic plants to exploit them for use for defence purposes and also on greenhouse technologies for high altitude and cold desert areas. It also hosts world's highest terrestrial R&D Centre and seed vault at Changla, Ladakh, established in 2015.

The Central Arid Zone Research Institute has a Regional Research Station (CAZRI) at Leh, which does work on the Cold Arid Network Programme, Productivity and Energetics of Agricultural Production System in Leh, Integrated weed management in crops and the National Mission on Sustaining Himalayan Ecosystem – Traditional Knowledge System and Himalayan Agriculture.

The National Research Institute for Sowa-Rigpa, Leh is a peripheral Unit of Central Council for Research in Ayurvedic Sciences, Ministry of AYUSH, Govt. of India. It was established in 1976 in Leh-Ladakh for Research and Development of Himalayan art of healing "Sowa-Rigpa",



National Research Institute for Sowa-Rigpa, Leh

popularly known as Tibetan or Amchi medicine. Since its inception this research institute has been doing considerable work for preservation and promotion of Sowa-Rigpa in India.

LIBRARIES

Presently there is only one public library (District Library, Leh), situated near the town centre.



EDUCATION

- Affordable and inclusive education for all
- High standard of education across all categories of schooling with pedagogy rooted in the culture of the region
- Opportunities for higher education within Leh
- Local vocational training institutes
- Scholarships to deserving students
- Need based education for adults
- Technical facilities for remote learning
- Research in various disciplines specific to the region of Ladakh
- Experience based co-curricular activities for children
- Mental health as an important component

“Our cultural habits and heritage can be developed in time to further enhance the values of students at school.”

OUR VISION

1. Provide affordable and inclusive education for all, irrespective of gender, social class and special needs.
2. Promote high standard of education across primary, secondary, higher secondary schooling; colleges and vocational institutes. With special focus on health and nutrition of nursery and kindergarten children; child friendly infrastructure and atmosphere to nourish them, along with teaching of culturally rooted innovative subjects; with emphasis on the environment, history, language, culture and heritage of the region.



Innovative and child friendly classrooms, DPK school

3. Provide opportunities for higher education with Leh for most faculties, with associated infrastructure like hostels.
4. A range of appropriate vocational education programmes are available to support the aspirations of Ladakhis and support the economic and cultural development of Ladakh.
5. Offer scholarship to deserving students in highly specialized or advanced educational courses outside Ladakh.

6. Provide need-based education for adults that helps them learn and improve skills to live a respectable life.
7. Provides technical facilities (infrastructure, human resource for training and follow up) for remote learning for all age groups.
8. Promotes research in various disciplines like science, social sciences, technology, among others that are specific to the high cold mountain region of Ladakh.



Co- curricular activities in school

9. Promote experience-based co-curricular activities for children like traditional and winter sports, field visits to learning centres, study tours for higher education, and student exchange programs for overall grooming of children.
10. Pro-actively address mental health issues and treat it as an important component of child welfare, safety and happiness.

“In our school, a child who was good with growing vegetables, as part of co curriculum activities, was called one with ‘Green Fingers’. That tag was really something special and helped other students get interested in trying their hands on the field.”

STRATEGIES & ACTIONS

STRATEGY 1

Promote and encourage enrolment of children in public schools

- A1.1: Enhance the existing public school infrastructure with basic facilities like water, toilets, desks, libraries, heating system during the harsh winter months, sports grounds (both indoors and outdoors); laboratories (computer and science labs); proper electrical systems for smooth functioning of smart classes, ICT labs and CAL centres; upgraded midday meal kitchen and plastering of compound walls so that they can be used for educational graphics.
- A1.2: Improve support services for schools such as (i) timely distribution of text books from nursery to 12th class under Samagra; (ii) enhancement of grants for school uniform at the beginning of the session; (iii) improvement of midday meal scheme by including pre-primary section, enhancing the meal costs (cooking cost, honorarium for cook-cum-helper and management costs) and ensuring timely release of food grains and cooking cost.
- A1.3: Make the schools innovative and child-friendly to discourage rote learning. This includes improving the design of classrooms with contemporary furniture for both students and teachers.
- A1.4: Establish more schools for children with learning difficulties and for children with special needs (both mental and physical).

STRATEGY 2

Develop a programme for continuous quality improvement in public schools through special training programmes for teachers as well as students

- A2.1: Establish a separate and autonomous Ladakh Board of School Education as per the need of the students living in this geographical settings with online facilities like examinations etc.
- A2.2: Constitute an expert group on educational quality improvement in schools with special attention to teacher training and support.

Categorise teachers by qualification, service and language; use these categories for training as well as transfers. Design special training for language teachers, especially English teachers. Organise training programmes in winter.

- A2.3: Offer Ladakhi as a local language, as an optional choice for the student alongside other languages like Urdu, Hindi and English.
- A2.4: Monitor and work (if needed) on the existing programmes for teacher, student, parent trainings especially to teach slow learners and children with special needs (both mental and physical).
- A2.5: Strictly implement and monitor child safety laws.

STRATEGY 3

Create an effective system to ensure need based hostel appointment without any bias/nepotism

- A3.1: Establish a board that records the number of students coming from far-flung areas to study in Leh (school, colleges and institutes).
- A3.2: Establish systems and procedures to ensure that selection of students for hostels is done well in advance before the start of academic calendars, enabling smooth transition of students arriving from rural areas.

STRATEGY 4

Develop a holistic structure for higher and vocational education that is aligned with the aspirations of people and needs of the region

- A4.1: Carry out a study to identify skill and knowledge requirements in the region.
- A4.2: Prepare a plan for expansion and improvement of higher and vocational learning. Invite leading institutions from across India and internationally to partner in this effort and create exchange programmes for Ladakhi students.

STRATEGY 5

Develop scholarship programmes

- A5.1: Set up a foundation to fund students from Ladakh seeking higher education in Leh or specialised education elsewhere.

STRATEGY 6

Develop and promote a contextually relevant adult education programme for Ladakh

- A6.1: Develop modules on adult education in the context of Ladakh.
- A6.2: Set up adult education centres within the premises of schools or colleges to help adults to learn different modules as per their need.

STRATEGY 7

Establish a public library system with facilities for remote learning for all age groups

- A7.1: Carry out a feasibility study for establishing a library system with digital resources and mobile libraries.

STRATEGY 8

Launch an initiative to attract research institutions to work in collaboration with existing research centres of Leh on various area specific disciplines, for knowledge exchange and to broaden the scope of aspiring researchers from Ladakh and vice-versa

- A8.1: Establish research centres for teachers and faculties. Carry out full-fledged student exchange programmes and collaborations with universities, research centres in India and abroad at the Ladakh University; with the aim to organize academic conferences, research expeditions, scholar- and teacher-exchange programmes, among other initiatives in various disciplines, to focus on contextually relevant (high altitude) research.

STRATEGY 9

Launch co-curricular activities within schools by allocating more funds to all the schools

- A9.1: Encourage experience-based learning by collaborating with local farmers, scientists, cultural centres, museums, heritage houses, handloom weavers, among other identifiable resource persons or organisations, so that the children as well as the student can focus on first-hand experience at learning in the context of Ladakh.
- A9.2: Introduce seminars on cultural preservation, peace and environmental protection, promote care of cultural centres.

STRATEGY 10

Launch programmes or collaborate with existing mental health practitioners (at SNM Hospital) like clinical psychologists and counsellors to help students especially at an adolescent age to cope up with mental health issues

- A10.1: Create a statutory body that allocates one counsellor in each school for students to address issues around mental health to curb cases of depression, suicide among other mental health issues.
- A10.2: Introduce training in SEE Learning (Social, Emotional and Ethical Learning) for teachers.

“If a teacher is updated with his or her discipline, that helps a student.”



EDUCATION

- Enrolment of children in public schools.
- Continuous quality improvement in public schools
- Ensure need-based hostel appointment
- Holistic structure for higher and vocational education
- Scholarship programmes
- Contextually relevant adult education programme
- Public library system with facilities for remote learning for all age groups
- Research institutions to collaborate with existing research centres of Leh
- Co-curricular activities within schools
- Mental health practitioners to help students to cope up with mental health issues

HEALTHCARE AND WELLNESS

Traditionally, people of Ladakh have been very healthy due to the clean environment, physically active lifestyles and healthy diets. Traditional forms of medicines were used to heal illnesses. In recent years, however, lifestyle and food patterns have changed, leading to a rise in various health problems such as diabetes. Aside from serving the local population, Leh's medical system must be able to serve people from across Ladakh who come to Leh for medical services.



SNM hospital Leh, functions as district level hospital

In-patient hospital beds

Leh has 38 inpatient hospital beds per 10,000 population and is better than the benchmark of 25 beds per 10,000 population set by WHO. Leh has only one major hospital, which is Government run with 250 beds, and it is inadequate for the Ladakh region, considering the population served. The region also needs super-specialty facilities such as treatment for heart, brain, liver, kidney transplant etc, for which people often travel to Delhi or Jammu.

Healthcare professionals

Leh has only 16.9 healthcare professionals per 10,000 population, much lower than the benchmark of 23 per 10,000 set by the WHO. The number of doctors and nurses need to be increased, which requires substantially increasing health financing and the recruitment, development, training and retention of the health workforce.

Average response time in case of health emergencies

Emergency services in Leh take an average of 23 minutes response time, while medical initial distress calls should be responded to in under 8 minutes (Report of the Working Group

on Emergency Care in India, Ministry of Road Transport and Highways) for effective and timely medical attention. To enable this, better preparedness for response to emergency calls is required.

Prevalence of water-borne diseases

In 2018, there were 64 cases of water-borne diseases (0.9% of the total population) including cholera, typhoid, jaundice etc. – indicating problems with drinking water in certain areas.

Prevalence of vector-borne diseases

In 2018, there were 12 cases of vector-borne diseases (0.1% of the total population) including malaria and dengue, which is very low compared to the rest of India.



Health care professional in SNM Hospital's COVID centre



A traditional *Amchi* checking pulse of a patient



HEALTHCARE & WELLNESS

- Affordable healthcare for all
- Adequate high quality staff and infrastructure
- Affordable and reliable supply of medicine
- Medical support for treatment outside Ladakh and insurance
- Programmes that focus on health and wellness in general and especially in schools
- Discourses around health and wellness for persons of different age groups

OUR VISION

1. Good quality and affordable healthcare is available to everyone (regardless of income), integrating modern and traditional ways of treatment and healing.
2. Medical facilities have adequate high-quality staff, supplies and infrastructure, including ambulances and other facilities for emergencies and disasters.
3. Everyone has access to affordable and reliable supply of medicines, especially for chronic diseases.
4. Provide need-based support for medical treatment in hospitals outside Ladakh, when necessary.
5. Good programmes on health, wellness and preventive care are regularly offered to the general population and in schools, on topics including pre-puberty and sex education, menopause, couples' counselling, STDs, obstetrics, mother and infant care, etc, integrating traditional wisdom and ways with modern medical practices.

STRATEGIES & ACTIONS

STRATEGY 1

Enhance the existing health programmes and infrastructure

- A1.1: Roll out programmes that have already been worked upon by civil society organisations such as Ladakh Institute of Prevention (LIP) and Ladakh Heart Foundation to name a few. Preventive Health should focus on nutrition (local food based diet) and clean water source.
- A1.2: Establish either a Primary Health Centre or a Community Health Centre in wards like Skampari, which is really needed.



Registration counter at a local hospital

“Chag tse and lums (barley remains while making chang) with butter is a very good nourishing bowl for a mother to help with lactation. All these natural age-old wisdom needs to be passed down from one generation to another.”

STRATEGY 2

Establish a medical university, speciality hospitals & research centres in Leh specialized in high altitude health research; to develop educational infrastructure around medicine with a focus on meeting Ladakh-specific health challenges and needs

- A2.1: Establish medical college (under progress).
- A2.2: Establish speciality hospitals where quality of medical training can be enhanced.
- A2.3: Establish Research Centres for early screening of Cervical Cancer among other diseases.

STRATEGY 3

Improve access to health care through facilities, services and regulation

- A3.1: Establish mobile healthcare facilities to enable people in every part of town to access healthcare facilities.
- A3.2: Conduct more health and wellbeing camps to provide training and awareness on various health-related topics.
- A3.3: Regulate prices for medicine at chemists.

STRATEGY 4

Enable easy access to specialists from outside Ladakh when required

- A4.1: Create a team of people, who can ensure fast, easy and quick medical support outside Ladakh, when patients are referred for special treatments.

A4.2: Bring in super speciality doctors for medical camps for treatment of various disease.

A4.3: Establish exchange programmes for medical practitioners with other reputed institutions, hospitals in the country as well as abroad.

STRATEGY 5

Introduce wellness activities like sports, meditation at school level and at offices for physical and mental wellbeing

A5.1: Establish full-fledged sports infrastructure for various sports, focussing on traditional sports like archery, horse riding, dice games etc., among new games including winter games.

STRATEGY 6

Promote integration of Tibetan Amchi medicine and Allopathic medicine practices

A6.1: Organize symposia to promote knowledge exchange and improve medical practice in both streams of medicine.



A traditional Amchi outlet

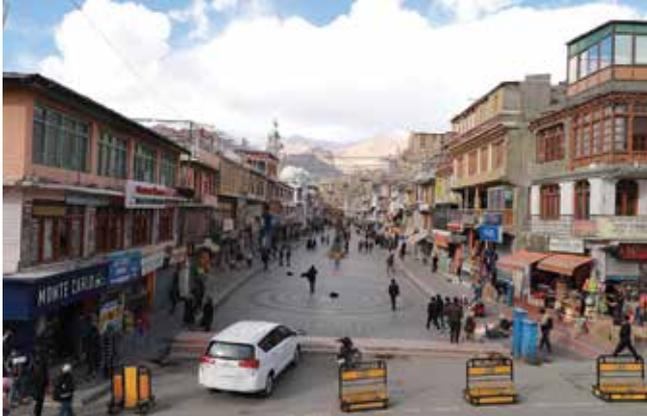


HEALTHCARE & WELLNESS

- Enhance the existing health programmes and infrastructure
- Establish a medical university, speciality hospitals & research centres in Leh specialized in high altitude health research; to develop educational infrastructure around medicine with a focus on meeting Ladakh-specific health challenges and needs
- Improve access to health care through facilities, services and regulation
- Enable easy access to specialists from outside Ladakh when required
- Introduce wellness activities like sports, meditation at school level and at offices for physical and mental wellbeing
- Promote integration of Tibetan Amchi medicine and Allopathic medicine practices

SAFETY AND SECURITY

Safety and security are not only important factors in ensuring quality of life, they are also prerequisites for attracting investments, promoting economic development and becoming a world-class tourist destination.



Leh market, one of the few streets with CCTV surveillance system

Leh is generally a very safe place. In the last 5 years, a total of 881 FIR cases were registered out of which 119 cases are still undergoing investigation and rest of the cases have been resolved. In 2020 (till 6th October) a total of 225 FIRs have been registered with 142 challans and 83 cases undergoing investigation (Source: Leh Police Station, Leh). That amounts to 297 crimes per lakh population. Of these, only one (0.5% of the total) was against a woman, child or elderly. Two out of 62 major streets (3.2%) have CCTV surveillance System. CCTV cameras are limited to the main Leh Market.

Traffic and transportation present a significant threat to safety, especially on highways and outskirts of the city. There were 31 cases of transport-related fatality in 2018. That amounts to 47 fatalities per lakh population. A total of 190 road accident cases were registered in the period 2015-19 for the Spituk-Leh-Choglamsar Road stretch, constituting the Leh Town area (Source: Dy SP Traffic, Leh.) 54% of the road accidents involve LMV's.

Out of the 27,000 registered vehicles in Leh district, around 5,000 vehicles are registered outside Ladakh. It is estimated that there are around 30 to 35,000 vehicles in Leh district alone. Around 70% of this traffic is in Leh town leading to high congestion of traffic in Leh town. There is a need to create efficient parking,

cycling and walkable spaces. The office of the Dy. SP Traffic, Leh has prepared a proposal for easing out congestion in Leh Town and to enable smooth traffic movement.

The Fire Department located at Agling Road, Leh has only two Fire Tenders for the entire district with 10 90-foot pipes. With a limited staff of 16 people, the fire department in Leh are unable to carry out essential emergency services related to natural disaster. (Source: Fire Department, Agling, Leh)

Fire hazards are a blind spot and the fire department faces many challenges due to narrow roads especially in the Old Town. Fire equipment need immediate upgradation like solarized rooms and heating systems to provide services in sub-zero temperatures of winter and establishment of fire stations at subdivisions of Leh with immediate recruitment to fill vacant posts.



Balkhang street — an accident-prone area with high probability of vehicular and pedestrian conflict

OUR VISION

1. Leh is the safest town in India, with zero violent crimes.
2. People can travel outside their home safely and easily.
3. Emergency safety services including medical and fire services are conveniently available.
4. Cyber crime and bullying is properly addressed so people and children feel safe in using the internet.

STRATEGIES & ACTIONS

STRATEGY 1

Invest in health, education, counselling of young juveniles and create employment generation to mitigate inequities and minimize criminal tendencies

- A1.1: Establish a cell to undertake counselling of juveniles and work with ICPS for reformation services and drug-Rehabilitation Centres.
- A1.2: Establish a system for registration and criminal background check for migrant workers.

STRATEGY 2

Introduce surveillance at necessary spots to curb accidents and traffic violations

- A2.1: Establish a cell for 24 X 7 CCTV surveillance with expertise and recording infrastructure, especially at major points on the way to Leh like Upshi, Spang, Kharu and Choglamsar (as suggested by Police HQ, Leh) to monitor traffic violations and accidents (from the Traffic point of view Leh Town includes the entry points from Markala, Spituk to Gompa Gangles and Choglamsar).

STRATEGY 3

Establish Road Safety Programme and redesign streets to ensure safety for pedestrians and cyclists

- A3.1: Prepare road plans and establish road safety programme.
- A3.2: Redesign streets to ensure safety for pedestrians and cyclists (refer proposals for Mobility).

STRATEGY 4

Establish and upgrade the Fire Safety Programme for fire and other emergencies

- A4.1: Prepare a project plan to establish/ upgrade fire safety system that includes emergency helplines on other connections apart from the existing 101 (BSNL).
- A4.2: In the building regulations for Leh, incorporate fire safety rules from the National Building Code including specifications for emergency exits; heating systems/ solarised rooms during winters.

A4.3: Procure mini fire tenders for quick fire service.

A4.4: Conduct training and awareness programmes on regular basis.

A4.5: Establish fire stations in all sub-divisions of Ladakh.

A4.6: Carry out recruitment to fill vacant posts in the fire department.

STRATEGY 5

Media Literacy for E-learning, cyber security for children as well as adults via internet and through camps

- A5.1: Create an e-cell to address the issue of cyber security at home, school for students as well as adults.

STRATEGY 6

Enable easy access to all emergency services

- A6.1: Establish a common cell for emergency calls and for registering e-grievances addressed to Police, Traffic and Fire departments.



SAFETY & SECURITY

- Low crime rate
- Safe mobility on streets
- High level of Emergency & Fire Safety services
- E-Safety on the internet



- Invest in health, education, counselling of young juveniles and create employment generation to mitigate inequities and minimise criminal tendencies
- Introduce surveillance at necessary spots to curb accidents and traffic violations
- Establish Road Safety Programme and redesign streets to ensure safety for pedestrians and cyclists
- Establish and upgrade the Fire Safety Programme for fire and other emergencies
- Media Literacy for E-learning, cyber security for children as well as adults via internet and through camps
- Enable easy access to all emergency services

HOUSING

Housing does not count as a major problem in Leh, but problems related to housing are ignored and not prioritized. As per municipal records, there are 216 slum and EWS households in the town. It appears that 110 households have benefited from EWS housing schemes like Rajiv Awas Yojna (RAY) and Pradhan Mantri Awas Yojna (PMAY) mostly in the old town where old heritage buildings were considered as slums and reconstructed as “pucca” houses.



Houses in Old Town, a heritage zone

Leh has a large workforce of seasonal migrants who live in houses rented out by local families. The average rent is Rs. 5,000 per month for a “1 room set” (room, kitchen & bathroom). Appropriate rental housing for the work force may become an issue if the growth trend continues.



Rental Houses of migrant workers, Skampari

Construction is a relatively unregulated activity and there are almost no norms to guide the aesthetics, materials used, energy and water efficiency, insulation, and other factors that affect the quality of housing and its environmental impact in the long term. Another issue to be

considered is that as of now we don't have a reliable assessment of how resilient the houses in Leh are, to natural hazards.

Quality of housing plays a very important role in creating a sense of security, self-worth and comfort, while the design of buildings and the areas round them can either build stronger and closer-knit communities that care for each other and their public spaces, or cause people to retreat and become isolated. Therefore, understanding and addressing the housing situation is very important.

OUR VISION

1. Everyone including migrants have comfortable and affordable housing.
2. All buildings adhere to contextually appropriate environmental and sustainability standards.
3. All buildings are in safe locations and resilient to natural hazards.
4. All homes and buildings integrate visually with their surroundings, and are designed to create a sense of familiarity and community.

STRATEGIES & ACTIONS

STRATEGY 1

Facilitate adequate housing supply

- A1.1: Assess the current status of housing supply and project housing requirements for different scenarios of economic growth.
- A1.2: Engage with appropriate stakeholders such as developers and local landlords to explore the possibility of group housing in Leh for both ownership and rental housing.
- A1.3: Propose appropriate land use zoning and building regulations to facilitate market-based supply of housing.
- A1.4: Conduct stakeholder consultations to assess the need for and viability of notifying the RERA act for Ladakh UT and establishing a real estate regulatory authority.



Traditional house with local architectural style and aesthetics

STRATEGY 2

Promote resilient and sustainable housing

A2.1: Carry out a multi-hazard risk and vulnerability assessment of housing in Leh and develop policies for building resilience.

A2.2: Develop and implement building designs, codes and sustainability standards based on green building principles, and a local aesthetic appeal.

STRATEGY 3

Promote good architectural and urban design

A3.1: Create awareness about architectural and urban design.



HOUSING

- Comfortable and affordable housing for all
- Adherence to contextually appropriate environmental and sustainability standards
- Safe locations and resilience to natural hazards
- Good visual integration of buildings with their surroundings, to create a sense of familiarity and community



- Facilitate adequate housing supply
- Promote resilient and sustainable housing
- Promote good architectural and urban design



COMMUNITY AND PUBLIC TOILETS

Leh's primary economic driver today is tourism. During the tourist season, clean and well-maintained public toilets are a necessity, not only for tourists but also for the large number of seasonal workers and other visitors who come to the Town. Public Toilets are important for convenience of residents and visitors.

In a town that attracts over 300,000 tourists annually, public toilets are an important basic service especially because many restaurants and cafes do not have decent toilets either. There are currently 11 public toilets in Leh. Centered around the main market area, this is inadequate for Leh and even many commercial areas like Old Fort Road, and Changspa do not have enough public toilets or urinals. Contributions from corporates and foundations have helped build some of the operational toilets, which are given to individuals or local NGOs to operate and manage. The user charge is either Rs 5 or free of cost. Many public toilets, especially those with traditional Ladakhi dry toilets, are not functional because they are not operated and maintained properly. Flush toilets often don't work in winter when water freezes.



All-weather public toilet at Zangsti

Most households in Leh have toilets. Flush toilets have become increasingly common as they are easier to maintain and require less space than dry toilets. Reducing agricultural land means that the handling and disposing the dried waste from the dry toilet is becoming more problematic. Wastewater, on the other hand, is automatically discharged into soak pits which may need to be cleaned every 4-6 years. Open defecation is rare, and seen only in some areas like Skampari where migrant workers live in over-crowded houses.

Many community toilets have been built but all are probably abandoned and unusable now because no one is responsible for maintaining them. Open defecation and urination are a problem in Leh. The following areas are known for these problems:

Places where open defecation is a problem:

- Skampari
- Sneymoling
- Skalzangling near Tongrey Zampa

Places where open urination is a problem:

- Skampari
- Snemoling
- Skalzangling near Tongrey Zampa
- Bus stand
- Polo ground
- Near Leh Gate
- Back side of Moti market



Solar energy for heating

Public and Community toilets should not only be built, but also well maintained. Technologies that add to environmental sustainability for example, reducing water usage, recycling wastewater for flushing, and use solar energy for heating—must be incorporated. Every aspect of toilet design must not only be suited to local conditions, but must ensure long lifespan of fixtures and fittings, and make cleaning and maintenance easy. Sensors can be used to ensure cleanliness and hygiene. These options have not been adequately incorporated in toilets built recently.



COMMUNITY & PUBLIC TOILETS

- A sustainable / decent flush or dry toilet or access to a community toilet for every household
- Mandatory toilets in every commercial building. Good wayfinding to conveniently located public toilets
- Adequate public toilets in tourist spots and public facilities



OUR VISION

1. Every house has a flush / dry toilet that is usable through the year.
2. Every commercial building has hygienic, water-efficient toilets that are well-maintained and easily accessible to all persons who work in or visit that building.
3. There are adequate public toilets in all the tourist spots as well as public facilities such as bus stands, markets, government offices, parks, restaurants and places where people congregate.

STRATEGIES & ACTIONS

STRATEGY 1

Ensure every household has convenient access to a toilet

- A.1.1: Identify and support those households who don't have functional toilets, to build one.
- A.1.2: Those households without toilets should have convenient access to a shared or community toilet, which is properly maintained with support from the MCL as needed.

STRATEGY 2

Construct new Public Toilets using sustainable, easy to maintain and user-friendly designs

- A.2.1: Consult experts to develop designs for public toilets best suited for Ladakh, keeping in mind
- (i) the cold climate;
 - (ii) incorporating viable technologies like sensors, robust fixtures and fittings that do not break easily, biochemical products for odour and waste management, water recycling, digital payment by users, solar energy, sanitary pad incinerators, user feedback panels, etc;
 - (iii) design features so the toilets are comfortable to use including for differently-abled people, small children and the elderly, and easy to clean; and
 - (iv) meeting all environmental norms and standards. These designs should be reviewed and updated every year and used a template for every new public toilet that is built.
- A.2.2: Design a urinal for men keeping the same factors in mind as public toilets.
- A.2.3: Map all existing toilet locations, and identify locations where public toilets and male urinals are required based on global norms for public toilets in tourist towns.

Organize interactions with businesses and residents in those areas to identify locations for new toilets.

A.2.4: Build new public toilets and urinals.

Two local parties should be identified and trained to properly build toilets as per the determined design and technology specifications.

A.2.5: Proper provisions should be made for maintaining these toilets, recognizing that user fees may not be enough to cover the cost of proper maintenance. While they may be operated by MCL staff or a private player, they should be inspected frequently to ensure they are hygienic, clean and functional. Local youth/Young entrepreneurs can be encouraged to take up this venture to further the economy of the town.

A.2.6: Mobile toilets may also be viable in some areas.



Interior of all-weather toilet, near Bus Stand



Public toilet at Leh main market

A.2.7: Develop a system for construction, operation and maintenance of public toilets across the Town, including the institutional arrangement, funding and contracting procedures.

STRATEGY 3

Awareness and Access to Community and Public Toilets

A.3.1: GIS mapping of all community and public toilet so users can find them easily.

A.3.2: Signage to direct people to the nearest toilets.

A.3.3: Leh has zero open defecation and zero open urination.



COMMUNITY & PUBLIC TOILETS

- Ensure every household has convenient access to a toilet
- Construct new Public Toilets using sustainable, easy to maintain and user-friendly designs
- Improve access to health care through facilities, services and regulation
- Create awareness and Access to Community and Public Toilets

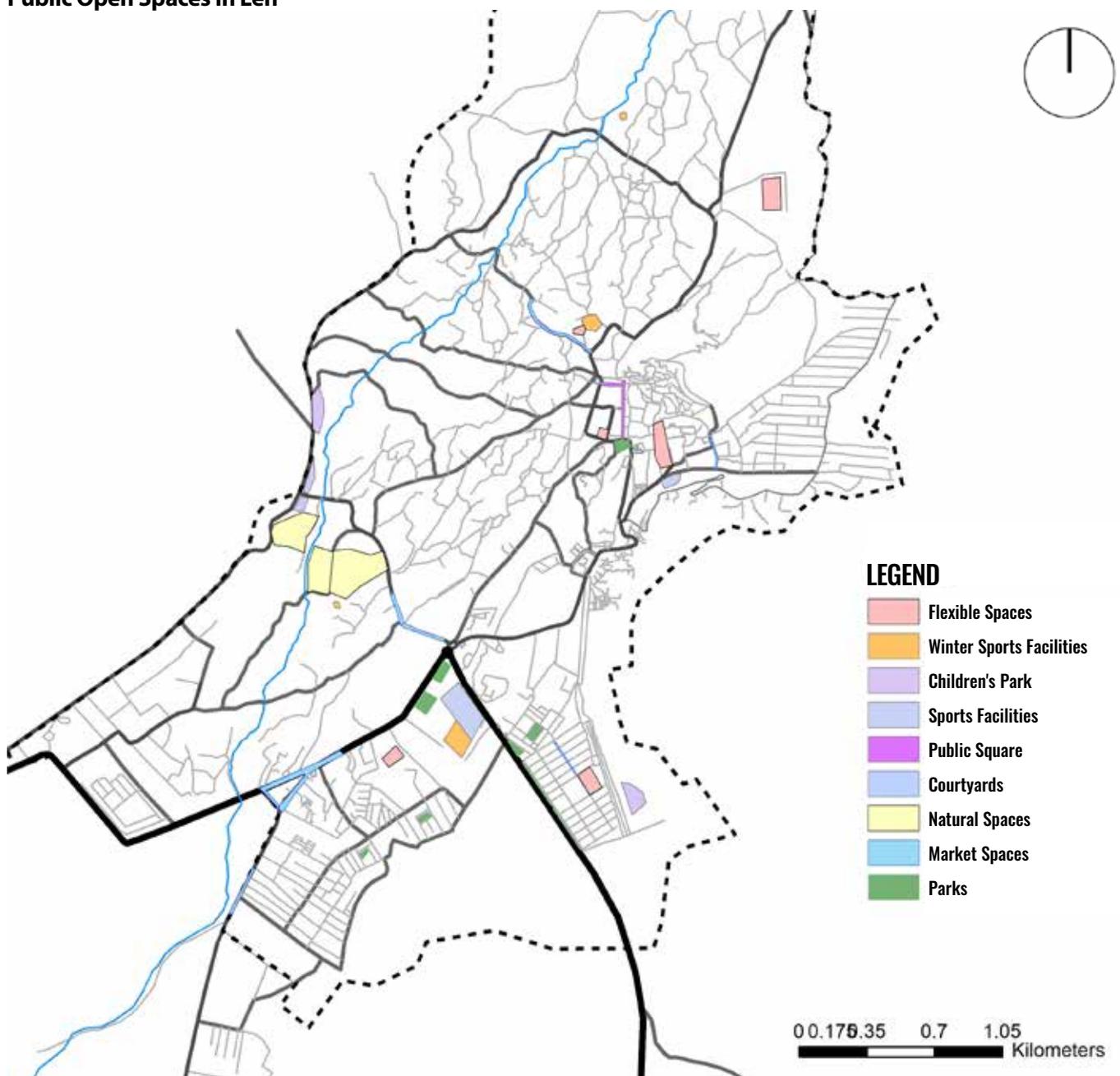
PUBLIC SPACES

Public spaces are the places where citizens meet as equals and therefore extremely important for building an egalitarian society. They are also the places where the town showcases its culture and identity. Public green spaces are also necessary to ensure opportunities for citizens to engage in outdoor recreational activities to enhance their physical and mental wellbeing. Research shows that views of and access to greenery actually reduces stress, increases peace of mind and results in better health. They also play a critical role in achieving environmental sustainability.

Therefore, having small and large green and public spaces bring multiple benefits and is an important contributor to the goal of becoming a happier town. Public spaces can have perhaps the greatest impact on the quality of life of residents and workers, and also make Leh a more attractive tourist destination.

There are 7 municipal parks in Leh. Other public open spaces include public squares, courtyards, natural spaces, market places and sports facilities. Figure 19 shows public open spaces in Leh.

Figure 19:
Public Open Spaces in Leh



Many locations in the Old Town and other areas have open spaces adjacent to heritage structures that can be developed as attractive public spaces. Such spaces can be a destination or alongside pathways where people can meet and relax. Games, musical and drama performances, greenery and art displays can be developed to invite people, and these spaces will serve a cultural and entertainment function as well.

Marshes and springs like Skara Spang, Spang Chenmo (Chubi) are important urban wetlands that not only promote recreational activities and are aesthetically pleasing but also support biodiversity. These open spaces should be conserved and maintained.



Skara wetland, a recreational space of Leh town

There is inadequate useable open space at the neighborhood level, especially in areas with relatively dense housing. There are leftover spaces between buildings, in the margins, etc. that are often encroached upon or become garbage dumping sites. Children, as a result, do not have safe playing spaces, which affects their physical, mental and emotional health.

Another aspect to be considered is the design of public open spaces from the point of view of users – comfort, convenience, safety and usability (throughout the year, in some cases). While there are some open spaces that satisfy a few of these criteria, there is considerable room for improvement. Many public parks are often locked up and closed to the public. It may be due to security and maintenance issues. Such issues can be addressed with innovative design solutions.

Leh has a per capita open space of 1.7 sq. metres which is much lower than the desirable standard of 10-12 sq. metres per person (URDPFI

Guidelines¹). 8.35 sq. kms (48.54% of total town area of 17. 2 sq. kms) is under green area which is further divided into three parts i.e 6.8 sq. kms (39.53% of total town area) under agriculture, 1.23 sq. kms (7.15% of total town area) under tree cover and 0.32 sq. kms under shrubs (1.86% of total town area). It should be noted that majority of the green cover is under privately owned agricultural fields leaving merely 2.5 sq. metres per capita of public green space.

OUR VISION

Innovative, inclusive, and interconnected network of open spaces and recreation services that promotes health, social activities, recreation and environmental sustainability as integral to a livable community.

This vision is underpinned by a number of goals:

1. Leh has an inter-connected network of beautiful, safe, innovative and creatively designed outdoor and indoor public spaces and green spaces of varying sizes, that are available to everyone, and promote health, environmental sustainability, social activities and community cohesion.
2. Leh has a network of off-street trails and pathways that interconnect parks, open spaces, significant environmental features like wetlands, libraries, public facilities, and areas of interest.
3. Open spaces in Leh have features and amenities that fit the local context, reflect the community's identity and are accessible, safe and easy to maintain in the long-term.
4. The natural areas and unique ecological features of the town are incorporated into the park and open space system to protect threatened species, conserve significant natural resources and habitat, and retain migration corridors that are unique and important to local biodiversity.
5. Public spaces are suitably and responsibly used for recreational services and programmes that serve local needs, support community cohesion and encourage greater public participation.
6. Effective and innovative funding methods are used to build, operate, maintain and promote the public open space in Leh.

¹ URDPFI Guidelines Vol-1 (2015)
<http://mohua.gov.in/upload/uploadfiles/files/URDPFI%20Guidelines%20Vol%20I.pdf>

STRATEGIES & ACTIONS

To realise the vision as articulated above, the following strategies are recommended:

STRATEGY 1

Identify and develop spaces at the neighbourhood as well as city level that can be upgraded or converted into usable public spaces

A.1.1: Audit existing and potential public open spaces of varying sizes across the Town.

A.1.2: Design and develop the identified spaces into public open and green spaces from the point of view of accessibility, convenience, safety, walkability and usability.

STRATEGY 2

Enhance the existing trail network to develop an off-road, multipurpose trail system connecting all major parks and open space areas

A.2.1: Audit existing and potential trail routes and corridors at the neighbourhood as well as city level to link the public open spaces.

A.2.2: Provide diverse trail opportunities, including both hard and soft paved trails, multipurpose trails and trails with variety of lengths, sizes and access points.

A.2.3: Increase public awareness of the trail system.



Park in Housing Colony.

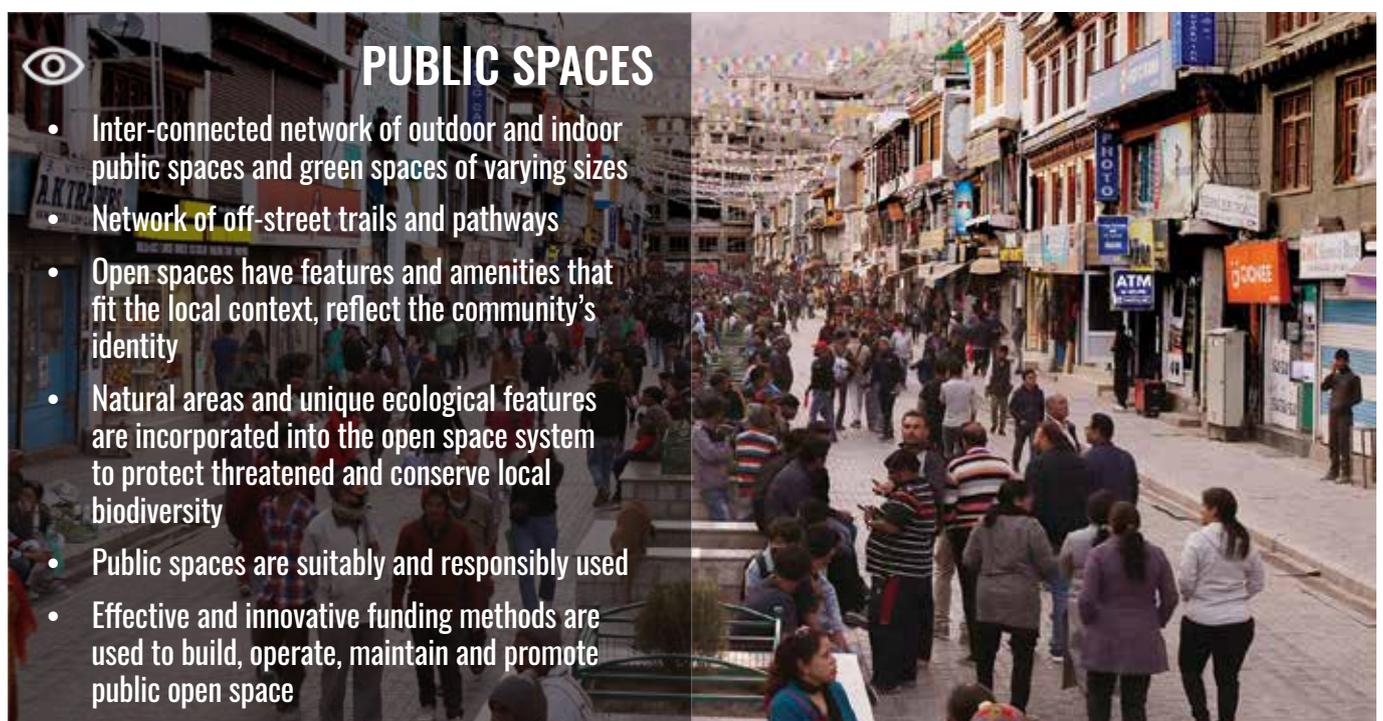
STRATEGY 3

Include elements in the design and development of parks that contribute to community identity and fit the local context, including the physical features on site, local history, culture and environment

A.3.1: Design and develop leftover spaces near or around heritage sites into attractive public spaces.

A.3.2: Address safety and accessibility issues with innovative design solutions.

A.3.3: Introduce urban design and landscaping strategies that are water sensitive and easy to maintain.



PUBLIC SPACES

- Inter-connected network of outdoor and indoor public spaces and green spaces of varying sizes
- Network of off-street trails and pathways
- Open spaces have features and amenities that fit the local context, reflect the community's identity
- Natural areas and unique ecological features are incorporated into the open space system to protect threatened and conserve local biodiversity
- Public spaces are suitably and responsibly used
- Effective and innovative funding methods are used to build, operate, maintain and promote public open space

STRATEGY 4

Conserve and integrate significant environmental features including wetlands, woods, springs, streams, ponds and other characteristics that support biodiversity

- A.4.1: Audit all existing unique environmental features at the neighbourhood as well as city level.
- A.4.2: Develop a plan to integrate these environmental features with the public open spaces.
- A.4.3: Ensure that the trail system supports natural area conservation while providing public access where feasible.
- A.4.4: Coordinate among various govt. departments to conserve and provide public access to environmentally sensitive areas and sites that are unique to Leh town.

STRATEGY 5

Provide open spaces with unique, innovative, state-of-the-art recreational facilities and services

- A.5.1: Develop various recreational facilities like playground, open-gym, open air theatre, swimming pool, library, play area and other sports facilities spread across the town.

- A.5.2: Consider the need for indoor and outdoor recreation facilities to provide year-round recreation opportunities.

STRATEGY 6

Develop a system for designing, developing, maintaining and promoting public spaces across Leh, including institutional arrangements, funding and contracting procedures

- A.6.1: Create a committee to perform these functions.
- A.6.2: Explore partnerships with other public and private agencies including school, NGO, religious institutions, etc. where feasible and desirable.
- A.6.3: Involve locals in developing plans on how to use each space optimally.
- A.6.4: Actively seek innovative funding methods to retain financial flexibility, match user benefits and interests, and increase facility services.

PROPOSAL FOR INTERCONNECTING OPEN SPACES

NOTE: This proposal is a part of the GREEN AND LIVEABLE LEH report prepared by LEDeG.

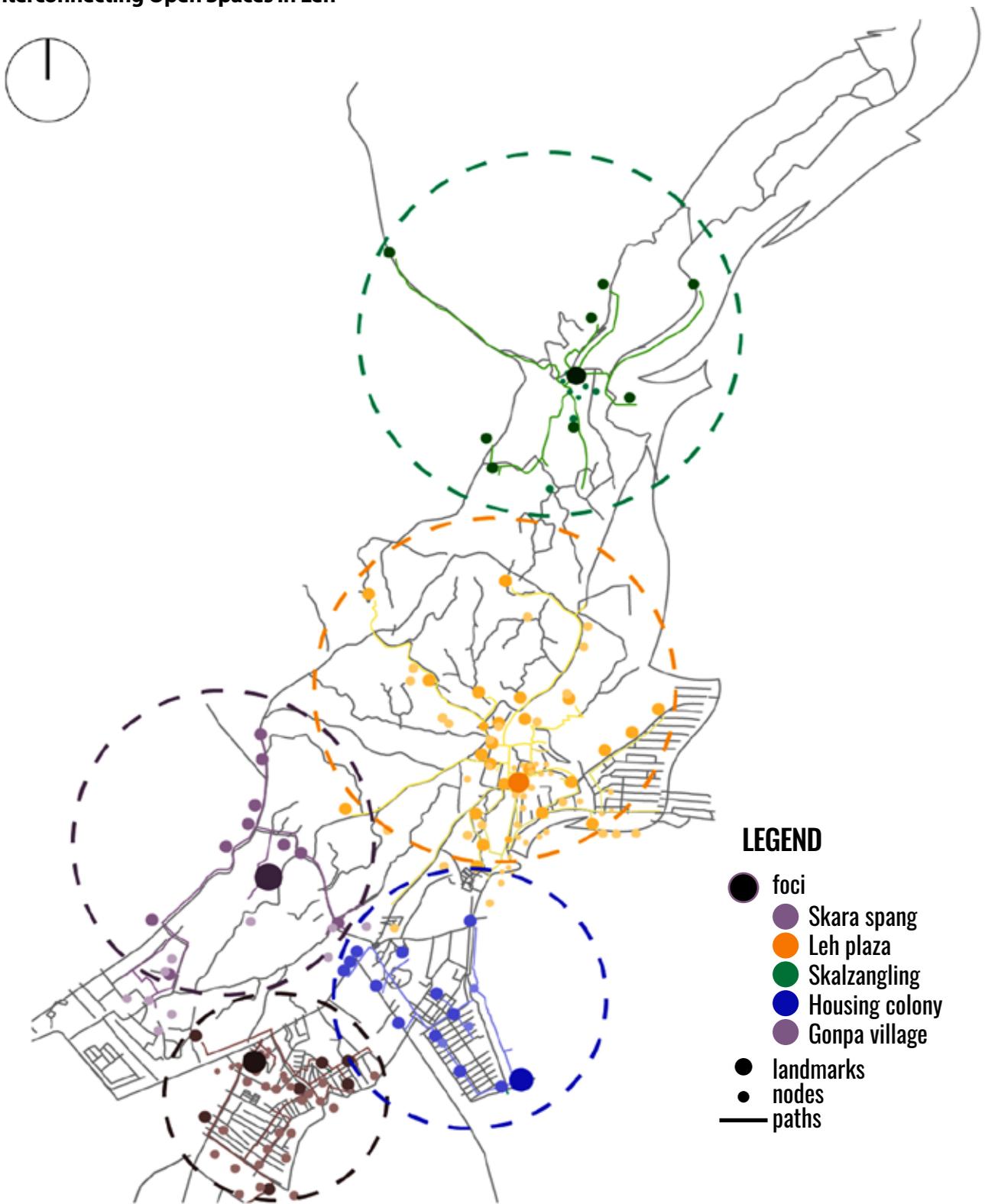
In the proposed plan of the public green and open space, major open spaces have been considered, that have or will have high footfall of pedestrians. These major open spaces are called foci. Around these foci, specific landmarks have been identified, which act as secondary open spaces and are unique in character. These foci and landmarks are proposed to be connected by pathways. Along the pathways, pockets or areas that have potential, are proposed to be converted into small open spaces known as nodes. With five foci and many landmarks connected to each other with pathways, it is proposed to create a city-wide network of open spaces, serving most of the population of Leh.

The five foci that have been identified based on their importance are:

1. Gompa (Upper Leh)
2. Leh market
3. Skara Spang (wetland)
4. Housing Colony
5. Skalzangling

¹ URDPFI Guidelines Vol-1 (2015)
<http://mohua.gov.in/upload/uploadfiles/files/URDPFI%20Guidelines%20Vol%20I.pdf>

Figure 20:
Interconnecting Open Spaces in Leh



THEME 4 : ACTIONABLE RECOMMENDATIONS

NOTE:

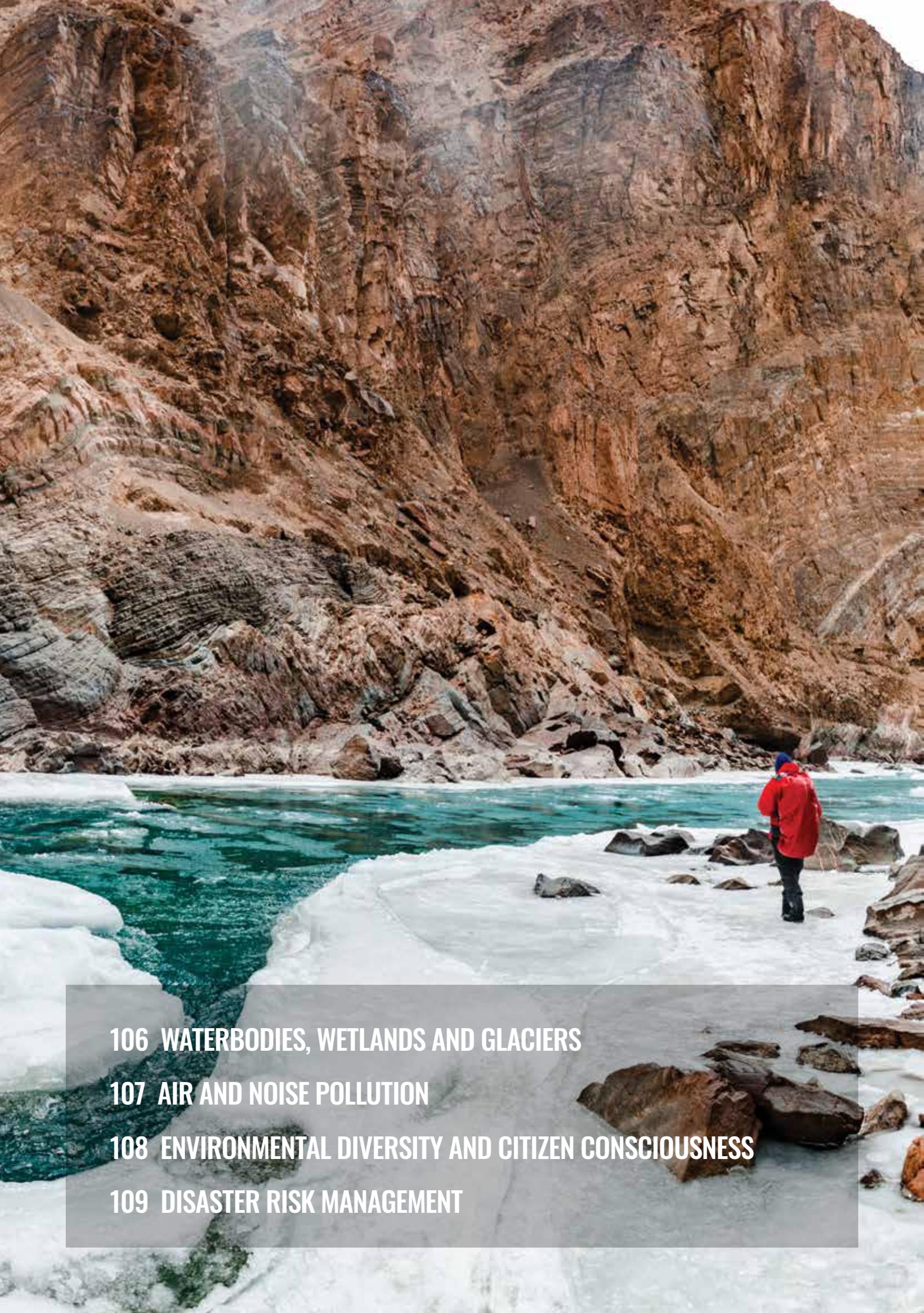
The Potential Projects listed below are preliminary recommendations and will be finalised after detailed discussions amongst relevant Government authorities and departments, consultants and experts. Some Projects may be mentioned or detailed in other related Themes.

NO.	POTENTIAL PROJECT	TIME FRAME	DEPARTMENT RESPONSIBLE
EDUCATION			
STUDIES AND PLANNING			
1	Conduct an infrastructure and performance survey of all schools and create improvement plans including basic facilities (water, sanitation, heating), laboratories, computer classes, residential hostels etc	2021	Education Department
POLICY, REGULATIONS AND INSTITUTIONS			
2	Establish an empowered State Education Board	2021-2022	Education Department
3	Introduce regulations for effective teaching including governing teacher transfers, rectifying mis-management, and training, incentivizing and promoting good teachers	2022-24	Education Department
4	Establish and fund a Foundation to support students who seek higher education outside Ladakh	2021-2023	Education Department
5	Implement and strictly monitor child safety laws in schools, with trained counsellors for mental health related issues	2021-2022	ICPS
CAPITAL PROJECTS AND THEIR OPERATIONS AND MAINTENANCE			
6	Establish higher and vocational education Institutes with participation of local employers (<i>also see A Thriving and Resilient Economy</i>)	2021-2025	Education Department
7	Set up public libraries and learning Centres for K-12 students	2021-2025	Education Department
8	Upgrade <i>Anganwadis</i> with good infrastructure	2021-2025	Education Department
9	Set up need-based Adult Literacy Centres (possibly in schools after school hours)	2021-2025	Education Department
10	Establish more institutions for children with special needs (mental as well as physical) with specially trained instructors and teachers	2021-2025	Education Department
11	Establish Reformation Centres, Drug-Rehabilitation/ De-addiction Centres.	2021-2025	ICPS
12	Create Experience-based Learnings opportunities in collaboration with local cultural centres, museums, art studios and traditional practitioners	2021-2022	LAHDC

NO.	POTENTIAL PROJECT	TIME FRAME	DEPARTMENT RESPONSIBLE
HEALTHCARE AND WELLNESS			
STUDIES AND PLANNING			
1	Prepare a comprehensive Health Services Plan for Leh	2021-2022	Health Department
POLICY, REGULATIONS AND INSTITUTIONS			
2	Campaigns and awareness programmes related to medical services, preventive healthcare, nutrition, and mental wellness for children, youth, adults and the elderly, in ways that are understandable to all people	2021-2025	MCL
3	Improve programmes for affordable access to medicines and treatment for low-income groups	2021-2025	Health Department
CAPITAL PROJECTS AND THEIR OPERATIONS AND MAINTENANCE			
4	Expand and improve healthcare infrastructure like medical colleges, hospitals, Primary Healthcare Centres, Community Health Systems etc according to the comprehensive Health Services Plan	2022-2025	Health Department
5	Establish a medical university and research institute with specialisation in high altitude research	2022-2025	Health Department
6	Ensure adequate and efficient ambulance services for emergencies	2021-2023	MCL
7	Ensure mental and social health services are available to everyone, including for pre-puberty and post-menopause stages, couples' counselling, sexual health of adolescents, pre-pregnancy counselling, anti-natal / intra-Natal / Post Natal support	2021-2025	SNM Hospital
8	Ensure availability of preventive medicine through collaboration with local doctors	2021-2023	SNM Hospital
9	Conduct regular symposium, conference and other discourses between local <i>Amchi</i> practitioners and doctors of allopathic and other medical practices	2021-2024	SNM Hospital

NO.	POTENTIAL PROJECT	TIME FRAME	DEPARTMENT RESPONSIBLE
SAFETY AND SECURITY			
POLICY, REGULATIONS AND INSTITUTIONS			
1	Publish emergency and evacuation procedures for various natural disaster and emergency scenarios, and conduct periodic mock drills	2022-2030	MCL
2	Form an agency for registering and conducting background check of migrants (<i>also see a Thriving and Robust Economy</i>)	2022	UT Ladakh
3	Create additional emergency numbers on other mobile services for better coverage of fire related emergencies	2021-2022	UT Ladakh
4	Enforce regulation of school, residential and commercial buildings under the National Building Code (Part IV for fire)	2021-2022	UT Ladakh
CAPITAL PROJECTS AND THEIR OPERATIONS AND MAINTENANCE			
5	Upgrade infrastructure based on the local climate for Fire, Police as well as Traffic Departments	2021-2025	LAHDC
6	Create check posts at Sarchu (Leh-Manali Road); Meeena Marg (Leh-Srinagar road); Darcha (Leh-Manali) with controlling system, medical, police and RTO Departments	2021-2025	UT Ladakh
7	Develop Fire Stations in all the subdivisions of Leh district.	2021-2025	LAHDC
8	Ensure adequate staff and recruitment for Fire, Police and Traffic Departments	2021-2023	UT Ladakh
9	Create an effective cyber security cell along with CCTV surveillance team with safeguards for privacy concerns (<i>also see Mobility of People and Goods, and Public Spaces</i>)	2021-2022	UT Ladakh
HOUSING			
STUDIES AND PLANNING			
1	Undertake study on housing with focus on rental housing and group housing for migrant labour, and develop a suitable Housing for All Plan for Leh	2021-2022	Dept. of UD
2	Test and identify suitable technologies to improve construction including insulation, heating materials / systems etc that suit the climate and environmental risks of Leh, and integrate into construction bye-laws (<i>also see Spatial Planning and Urban Design</i>)	2021-2024	Dept. of UD
POLICY, REGULATIONS AND INSTITUTIONS			
3	Develop appropriate land use zoning and building regulations to facilitate market-based supply of housing	2021-2022	Dept. of UD
4	Introduce RERA after assessing need and viability	2021-2022	Dept. of UD
CAPITAL PROJECTS AND THEIR OPERATIONS AND MAINTENANCE			
5	Develop and build the required stock of housing for different uses, with special attention to affordable and migrant housing in a time-bound manner		Dept. of UD

NO.	POTENTIAL PROJECT	TIME FRAME	DEPARTMENT RESPONSIBLE
COMMUNITY AND PUBLIC TOILETS			
STUDIES AND PLANNING			
1	Carry out GIS mapping and analysis of community and public toilets to assess need for new toilets, and improvements needed at existing ones	2021	MCL
2	Conduct a technology and best practices study to identify effective, easy to maintain and affordable toilet designs suitable to Leh's climate. Evaluate how the traditional Ladakhi Dry Toilet can fit into this scheme.	2021	MCL
CAPITAL PROJECTS AND THEIR OPERATIONS AND MAINTENANCE			
3	Build the requisite number of public toilets with special focus on how they will be maintained (consider using 10-year BOT tenders)	2022-2025	MCL
PUBLIC SPACES			
STUDIES AND PLANNING			
1	Ensure that a land-use plan is in place to guide selection and development of small, medium and large public spaces including playgrounds	2021-2022	MCL
CAPITAL PROJECTS AND THEIR OPERATIONS AND MAINTENANCE			
2	Develop and upgrade parks and play grounds around Leh	2021-2025	MCL
3	Identify and develop 100 locations across Leh as small, medium and large public spaces, with greenery and water bodies where feasible and appropriate safety features	2023-2028	MCL
4	Develop a network of pathways and trails to connect all open spaces and areas of interest	2022-2025	MCL



106 WATERBODIES, WETLANDS AND GLACIERS

107 AIR AND NOISE POLLUTION

108 ENVIRONMENTAL DIVERSITY AND CITIZEN CONSCIOUSNESS

109 DISASTER RISK MANAGEMENT

THEME 5 | ENVIRONMENT AND CLIMATE CHANGE

Human civilisations have thrived high altitudes, as evident in Tibet, Bolivia, Ecuador and Nepal, and all these regions have developed intricate cultural systems to conserve their environment while also harnessing its (sometimes scarce) resources. Ladakh is no exception.

Most of these regions are facing the challenge of social, economic and climatic change. High altitudes are the first to be impacted by climate change, which directly impacts the delicate environmental systems such as glaciers, snowfall, and weather patterns which in turn can lead to floods, agricultural disruption, landslides, water shortages and so on.

Quality of life, security and economy are intricately woven with the climate of the region but as discussed in this chapter, the environment has been largely neglected in the course of Leh's growth—which has not only reduced the natural resources such as clean water and safe land available, but has increased vulnerability to natural disasters.

The massive flood in August 2010 which killed over 255 people, damaged agricultural lands, property, infrastructure and various services, showed the impact of poor urban planning and

lack of early warning and crisis management systems—and no action has been taken since to address these issues, leaving the town as vulnerable as before.

While impacting the climate system is beyond the scope of local action, Leh must still focus on making its residents more environment-conscious, revitalise traditional systems and find new solutions to manage and protect natural resources, and increase resilience against future disasters. Such actions will not only collectively help Leh to adapt to the impacts of climate change, but will increase the happiness people feel when living in true harmony with nature.



The road leading to Khardung La

WATER BODIES, WETLANDS AND GLACIERS

Water bodies are an essential resource for any town, and especially critical for one located in a high altitude cold desert. Leh has water channels which distribute natural spring and glacier water through the town, and reservoirs (called Zings) that absorb water to recharge underground aquifers, protect against floods and increase bio-diversity. Natural water bodies also serve recreational purposes such as becoming ice skating rinks in the winter, and research shows that they reduce stress and improve well-being.



T-Trench pond, Gonpa village

With borewells and a piped water systems that draws water from the Indus river, people are now less dependent on these natural systems for water supply—and many of these channels and reservoirs are now broken, blocked, polluted or not in use. Many small streams flow down from Khardung La pass, providing water for irrigation in the higher reaches of Leh. Natural water bodies still provide important services such as flood protection, water supply for agriculture and small-scale cultivation, recharging ground water and supporting animals and fauna. The flood zones across Leh town must also be properly marked to guide development practices and mitigate risks.

It is necessary to not only protect the existing natural water bodies and wetlands, but to expand them both to ensure a water-secure future for a growing population and economy, and provide protection against natural disasters.

OUR VISION

1. Leh expands its system of wetlands, water bodies and water channels throughout the town.
2. Leh's natural water bodies are protected so they can provide safe water to people, protect against flooding, preserve the ecology and biodiversity, and provide recreational services.

STRATEGIES & ACTIONS

STRATEGY 1

Re-establish and improve water management and resilience practices

- A.1.1: Develop town-wide and ward-level institutional mechanisms that involve communities in monitoring and protecting water resources, including re-establishing traditional practices like the *Chirpon* system.
- A.1.2: Develop a holistic research programme to monitor the natural water systems and watersheds in and around Leh, and use the data to both predict future shocks and identify opportunities to support the natural water system.
- A.1.3: Create a team at MCL that understands and manages natural water systems.

STRATEGY 2

Re-vitalize and expand the network of natural water bodies in Leh

- A.2.1: Revitalize and expand existing *zings* and *yura*, and identify locations where new ones can be developed, while integrating beautification elements and green spaces.
- A.2.2: Expand water harvesting mechanisms to capture rain and snow, and build systems to recharge ground water.

“Once we learn to read rocks and soil of Ladakh, we understand how our landscape has changed. They provide us with crucial lessons to manage natural disasters in the future.”



Yura – the traditional water canal system of Leh town

WATER BODIES, WETLANDS & GLACIERS



- Protection of the system of wetlands, water bodies and water channels while continuing to serve a growing town



- Re-establish and improve water management and resilience practices
- Re-vitalize and expand the network of natural water bodies in Leh

AIR AND NOISE POLLUTION

Tourism and economic growth have brought in more construction activity, diesel and petrol-fueled vehicles and electricity generators, which increase air and noise pollution and have a detrimental effect on the environment and human health and lifestyle.

While recent studies indicate that levels of SO₂, NO₂ and PM10 are lower than nationally-established acceptable limits, the various sources of air pollution should be identified (natural and human activities) and quantified so that appropriate policy measures and action can be initiated to manage and reduce them further. Indoor air pollution is also a challenge and is addressed in the Housing section. Ongoing research keeps pointing out new, earlier unknown health and environmental effects of air pollutants and therefore, it is prudent to be aggressive in reducing air pollution, rather than accepting established standards.



Heavy vehicles release thick black smoke and pollutes the air. They also create noise pollution

Not much research has been done about noise pollution, but its impact on high blood pressure, irritability and anger are now well established. A peaceful environment will support the harmony and good health that Ladakhis seek and therefore, minimizing noise from vehicles (especially honking), machinery and construction is critical.

As pollution is generated by most human activities, other sections like Transportation, Housing and Industry also have strategies to reduce air and noise pollution.

OUR VISION

1. Leh is a carbon-neutral town (net-zero emissions).
2. All parts of Leh have air quality throughout the year comparable with the most liveable cities in the world.

STRATEGIES & ACTIONS

STRATEGY 1

Monitor and track air and noise pollution in Leh

- A.1.1: Map all sources of air and noise pollution in Leh, including industrial activities.
- A.1.2: Set up smart poles to measure air quality and noise levels in real time.
- A.1.3: Publish air and noise data through MCL's website.

STRATEGY 2

Reduce Air and Noise pollution from vehicles

- A.2.1: Reduce vehicular traffic in the centre of town through no-traffic zones, congestion fees and one-way streets.
- A.2.2: Implement strict Pollution Under Control (PUC) certification for every vehicle in Leh, with mobile testing units that randomly check vehicles and impose fines.
- A.2.3 Promote public transportation and non-motorized transportation including walking.
- A.2.4: Promote electric vehicles for commercial vehicles (taxis, buses, delivery vehicles, waste collection etc) by providing financial incentives and building the requisite infrastructure needed for charging, battery swaps, servicing etc.
- A.2.5: Establish no-honking zones with strict enforcement and fines.

STRATEGY 3

Reduce non-vehicular air and noise pollution

- A.3.1: Improve electricity supply and promote battery-based backup; ban diesel generators.
- A.3.2: Strict ban on burning plant/agricultural waste and garbage.
- A.3.3: Adopt global standards for construction and road building, such as cladding to prevent the spread of cement, dust and other particles.
- A.3.4: Aggressively promote and subsidize solar energy systems for electricity, water heating and space heating.
- A.3.5: Identify polluting industries and devise solutions.

ENVIRONMENTAL DIVERSITY AND CITIZEN CONSCIOUSNESS

Most parts of Leh town have agricultural land and green spaces, though this has reduced in recent years as many people have converted farms into hotels. Wasteland reduced from 283 hectare in 2001 to 196 hectare in 2011, while built-up area increased from 168 hectare to 294 hectares. At the same time, the biodiversity of Leh town has suffered due to urbanisation and the introduction of exotic species of flora for aesthetic and commercial reasons.

Trees improve air quality by absorbing carbon dioxide, releasing oxygen and stabilize the soil which reduces dust and also prevents erosion and mudslides during heavy rains. Trees are visually pleasing and reduce stress and anxiety, support biodiversity, provide shade which makes outdoor spaces and walking / cycling more comfortable, and provide food. On the other hand, they extract water from the ground which can create problems in Leh, and invasive and foreign plant species can be detrimental to local flora and fauna.

The plurality of natural habitats, especially bogs, water bodies and trees that sustain animals and birds, must be used to conserve local biodiversity species that are well-suited to the climatic conditions and are a part for the natural resource of the town.

A well-researched process can increase biodiversity and green cover in Leh to maximize the above advantages including increasing biodiversity, without negative consequences. At the same time, the people of Leh must become more aware of environmental issues and play an active role in nurturing environmental assets.

Leh has a rich heritage of environmental awareness and a participative and active citizenry will help reduce the load on MCL and Government agencies. But some effort has to be put in to first educate and engage residents (and tourists) and create a roadmap for coordinated actions. Bringing citizens, Ward Committees and all levels of Government into this process will go a long way in building a stronger community and making Leh a happy, resilient and compassionate town.



AIR & NOISE POLLUTION

- A carbon neutral town (zero net emissions) with air quality comparable with the best cities in the world



- Monitor and track air & noise pollution in Leh
- Reduce air & noise pollution from vehicles
- Reduce non-vehicular air and noise pollution

OUR VISION

1. Everyone in Leh is aware of and engaged in strengthening the natural ecosystems to create a sustainable and healthy habitat for people and all creatures.
2. The town benefits from the resources and services generated by its natural spaces.

STRATEGIES & ACTIONS

STRATEGY 1

Properly Develop and Manage Natural and Green Spaces

- A.1.1: Invite experts to develop a plan for improving the natural environment and bio-diversity across town, and involve the people of Leh in this effort.
- A.1.2: Create local citizen groups, including children, youth and elderly Clubs, to take responsibility for natural spaces and assets across Leh.
- A.1.3: Develop green public spaces such as parks and playgrounds, as well as water bodies (as discussed earlier).
- A.1.4: Ensure proper maintenance and optimal use of all green spaces, whether privately or publicly owned.

STRATEGY 2

Maximize bio-diversity and its benefits

- A.2.1: Study and implement ways to maximise bio-diversity of local species.
- A.2.2: Focus on plants and animal species that create a healthy and resilient environment, and provide medicinal benefits.
- A.2.3: Construction bye-laws and zoning must be used to achieve these strategies.



ENVIRONMENTAL CONSCIOUSNESS

- Citizen awareness and engagement with natural ecosystems to create a sustainable and healthy habitat
- Properly develop and manage natural and green spaces
- Maximize bio-diversity and its benefits



DISASTER RISK MANAGEMENT

“Glacier and Snowmelt decline has altered the frequency, magnitude and location of most related natural hazards (high confidence). Exposure of people and infrastructure to natural hazards has increased due to growing population, tourism and socio-economic development (high confidence)”
– (IPCC Special Report on Oceans and Cryosphere, 2019)

Recent studies show that temperature increase in the Himalayas over the past 100 years has accelerated much faster than previously predicted. Warming has had significant effect on the region's water resources, most visibly with the retreat of glaciers and snowpack, unseasonal snow melting, and several floods in the past few years usually accompanied by mudslides that destroy homes, farms, bridges and roads, and cut off villages from communication and assistance.

The mountain ranges of Ladakh were created about 45 million years ago as the Indian plate drifted into the Eurasian plate. This movement continues, resulting in the Himalayan mountains growing taller with time, but also causing frequent, mild earthquakes (mostly 3.5-5 on Richter scale—3.6 in Feb-2020, 4.6 in Jan-2020, 4.4 in Jun-2018, 5.4 in Dec-2017) but scientists are warning of stress build-up that could result in even more severe earthquakes than the 7.8 scale one that hit Nepal in 2015.

It is commonly expected that natural disaster will probably increase in intensity and frequency, and better systems are needed to predict and prepare to reduce losses to minimum, and bounce back as quickly as possible after such an event, physically, emotionally and financially.

Not enough has been done to protect the town from future disasters, making the below strategies and actions absolutely critical to protect life, assets and the environment.

Advance warning systems are required, clear protocols should be in place for people to follow in such situations and no single department or office is responsible for planning or implementing measures for resilience.

OUR VISION

1. Robust and advanced disaster detection and warning systems are in place for floods, earthquakes, landslides and other natural disasters.
2. Effective disaster response plans and agencies are in place and tested regularly to minimize the impact of any event, and help recover as quickly as possible, with special support for the most vulnerable groups.

STRATEGIES & ACTIONS

STRATEGY 1

Revise and Update the existing Disaster Management Plan for Leh

- A.1.1: Invite experts to conduct detailed risk assessments for different parts of Leh and surrounding areas for various types of disasters, and establish a process to update this study every five years.
- A.1.2: Implement suitable advanced detection and early warning systems including public broadcast mechanisms (using loudspeakers, SMS messages, door-to-door message systems, internet, radio and television) based on relevant international practices and The National Disaster Management Act 2005, which, as per Section 11(3), includes:

- a) Measures for the prevention of disasters, or the mitigation of their effects;
- b) Measures for integrating mitigation measures in development plans;
- c) Measures for preparedness and capacity building to effectively respond to any threatening disaster situations or disaster.
- A.1.3: Establish clear roles and responsibilities of government departments, NGOs, community leaders and residents in responding to any disaster.
- A.1.4: Document and publish information about all natural events in Leh and analyze to track trends.

STRATEGY 2

Implement measures to prevent disasters and mitigate their effects

- A.2.1: The risk assessments must be used to amend zoning rules, construction norms and development plans, and create infrastructure that reduce the risks of disasters.
- A.2.2: Conduct regular trainings and practice drills periodically, with particular attention to the post-disaster recovery phase.
- A.2.3: Ensure a stockpile of emergency materials including medical, food and sanitation supplies, and funds with local authorities to deploy specifically in such situations.



DISASTER RISK MANAGEMENT

1. Robust and advanced disaster detection and warning systems in place for floods, earthquakes, landslides and other natural disasters
2. Effective disaster response plans and agencies



1. Revise and Update the existing Disaster Management Plan for Leh
2. Implement measures to prevent disasters and mitigate their effects

¹ <https://leh.nic.in/document/district-disaster-management-plan/>

THEME 5 : ACTIONABLE RECOMMENDATIONS

NOTE:

The Potential Projects listed below are preliminary recommendations and will be finalised after detailed discussions amongst relevant Government authorities and departments, consultants and experts. Some Projects may be mentioned or detailed in other related Themes.

NO.	POTENTIAL PROJECT	TIME FRAME	DEPARTMENT RESPONSIBLE
STUDIES AND PLANNING			
1	Develop town-wide and local plans to monitor, manage and recharge natural water resources	2021-2023	MCL
2	Commission a comprehensive biodiversity landscape and disaster risk study, to develop a biodiversity and green cover conservation plan including marking protected spaces, and zoning of Leh town for disaster risk mitigation with special attention to wetlands and farmlands <i>(also see Spatial Planning and Urban Design)</i>	2021-2022	MCL
3	Design and develop a robust, decentralized disaster detection, response and recovery system	2022-2027	LAHDC
4	Identify and map all sources of noise and air pollution	2021	MCL
POLICY, REGULATIONS AND INSTITUTIONS			
5	Set up a Biodiversity Protection and Natural Disaster Monitoring Committee	2021	LAHDC
CAPITAL PROJECTS AND THEIR OPERATIONS AND MAINTENANCE			
6	Set up air and noise monitoring poles around Leh	2022	MCL
7	Frequent, robust Pollution-Under-Control inspection system for all vehicles	2021	MCL
8	Promote battery-based electricity backup systems and ban diesel generators in high density areas	2022-24	LAHDC
9	Aggressively promote solar energy systems and low-energy consumption devices	2021-24	LAHDC
10	Create awareness and engagement programmes for people to become involved in ecosystem protection activities including cleanup drives	2021-2025	MCL



114 TANGIBLE / BUILT HERITAGE

117 INTANGIBLE CULTURAL HERITAGE

THEME 6 | HERITAGE CONSERVATION

The Ladakh region has a history dating back to Prehistory, tens of thousands of years ago, with rich influences that ranged from the Tibetan Plateau, Central Asia, and the Northern Subcontinent. Leh Valley shelters historical sites that reflect this long varied heritage, with Protohistorical rock art and pre-Buddhist grave sites, ancient fortifications, possible Kushan and/or post-Kushan material remains, temple ruins as well as old chortens and stone Buddhas from the Second Diffusion of Buddhism, around 11th century, and a range of buildings and temples from the Namgyal period from 16th to 19th century, when Ladakh controlled a territory that extended from Ngari in the west to Baltistan in the east.



Archaic *chortens* Gangles

The oldest historical sites tend to be situated in the upper parts of the valley, in particular at Shasthang, Gyamtsa, and Gangles, where no fewer than three forts, eight temple ruins, and the largest as well as possibly oldest *chorten* of Ladakh are found. The middle part of the valley appears to have been developed in the later part of the history of the region, especially under the Namgyal dynasty (16th to 19th centuries).

The Leh Old Town as we know it thus was founded under their rule, when Leh became the capital of Ladakh and the *de facto* trade centre, at the crossroads of some of the most important international trade routes of the Western Himalayas. Its architecture and landmark monuments reflect this multi-cultural history.



Petroglyphs at Gangles

The Leh Palace was built during the height of the Namgyal power (17th century), made possible by the syncretism of various architectural traditions, including Balti architecture. It came to redefine Tibetic architecture for the many centuries, paving the way to the future colossal palaces of Tibet, such as the Potala Palace in Lhasa, as some experts believe. The Leh Old Town is nowadays one of the last well preserved examples of Tibetic renaissance architecture in the world. This also makes the town so appealing to scholars and travelers from all around the world. The intent of this chapter is to propose ways of preserving, protecting, researching, and valuing this millennia-old and multi-cultural heritage of the Leh valley.

BUILT HERITAGE AND OTHER TANGIBLE HERITAGE

There are multiple sources for information on the architectural heritage of Leh Ladakh, of which some important ones are listed below:

1. THE TIBET HERITAGE FUND (THF) & LAHDC, LEH

THF and its affiliate Leh Old Town Initiative (LOTI) are NGOs that have been operating in Leh Old Town since 2003. THF/LOTI in cooperation with the LAHDC have prepared a report in the form of guidelines titled 'Towards a Management Plan for the Old Town of Leh' authored by Dr Andre Alexander, in the year 2006 wherein the Ladakh Autonomous Hill Development Council has declared an official policy to turn historic Leh into a Heritage Zone (Ladakh 2005-2015 Vision Statement). The LAHDC has defined the following objectives for the sustainable management of Leh as a Heritage Zone:

- a. To preserve and upgrade the existing historic town structures;
- b. To develop future programmes for water and waste management;
- c. To upgrade the infrastructure;
- d. To help improve the life and conditions of the people of Leh;
- e. To rehabilitate by order of priority town houses and religious monuments; and
- f. To establish a building code for the Heritage Zone.

In 2018, THF/LOTI resubmitted proposal document authored by Yutaka Hirako and Pimpim de Azevedo with input by Prof. Tashi Ldawa for 'Declaration of Leh Old Town Heritage Zone and Guideline for Applicable Rules and Regulations' emphasizing THF's conservation philosophy on 'Community Based Conservation Approach' to preserve the town as living heritage. Their experience for a decade and half in the Leh town includes restoring buildings, conserving wall paintings from temples and stupas and established the Central Asian Museum in Leh old town.

The THF/LOTI's work has been recognized by the UNESCO and won three awards of the Asia-



Meditation cave, Gyamtsa

Pacific Cultural Heritage Conservation for high-quality work. This should be the basis and the model for all future conservation work in Leh, continuing THF/LOTI's effort.

2. THE ARCHAEOLOGICAL SURVEY OF INDIA

The Archaeological Survey of India (ASI) plays a significant role in protecting some of the architectural heritage in Leh. There are four National Protected Monuments currently under ASI in Leh Municipal Area:

- a. Leh Palace
- b. Old Castle (Tsemo Hill)
- c. Tisserru (Stupa)
- d. Shrine of four Lords Gon-Khang (Tsemo Hill)

With discovery of new heritage sites and monuments and with more information from recent research on Ladakh, there is scope to review the sites under ASI as Centrally Protected Monuments in Ladakh. ASI regulates the area around their monuments and sites. This includes a prohibited area in a 100 m radius and a regulated area in a 200 m radius beyond the prohibited area. Thus, a large part of the old town falls under ASI's restricted area.



Tisserru, Khakshal

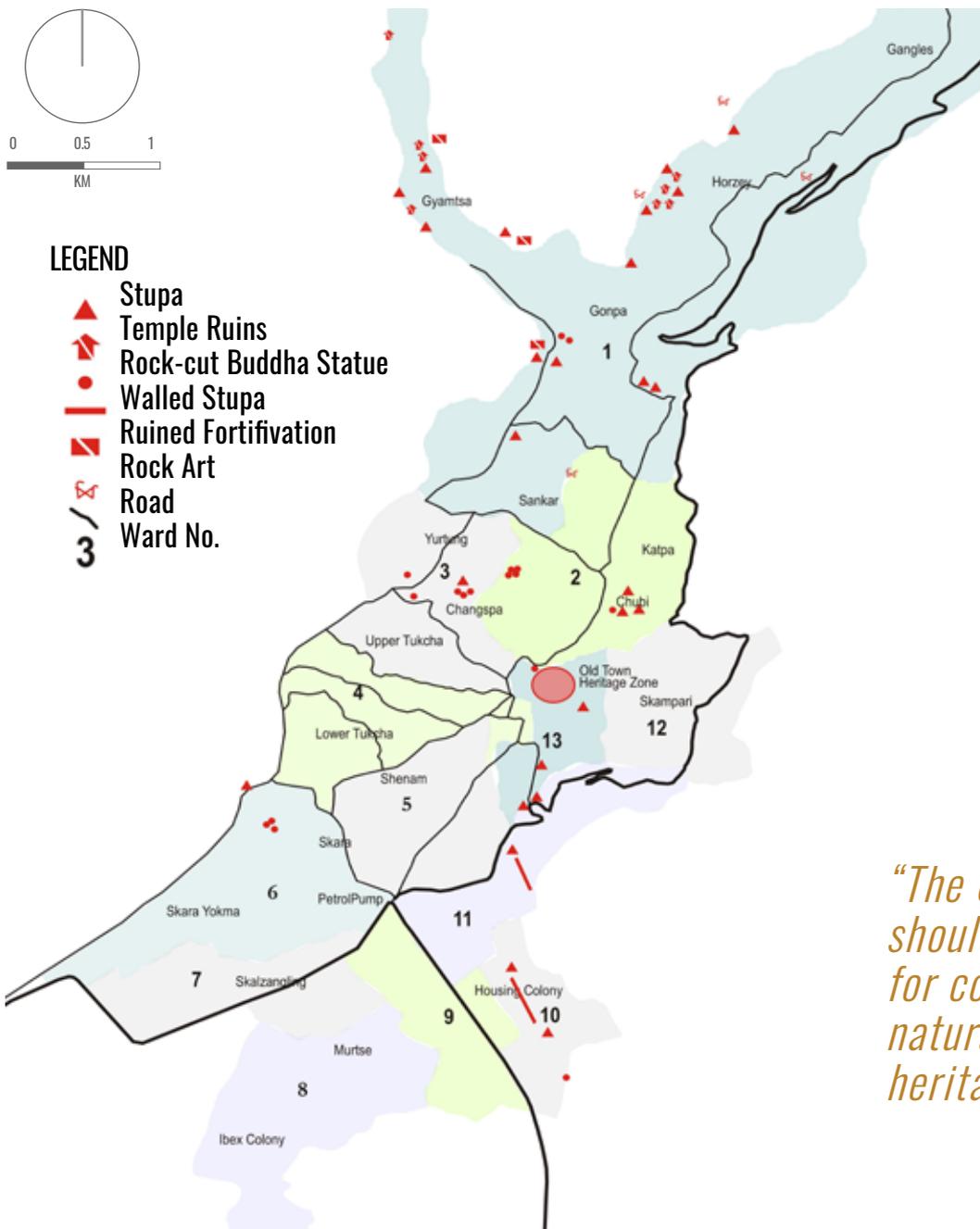
“Cultural heritage is significant in the present, both as a message from the past and as a pathway to the future. Viewed from a human rights perspective, it is important not only in itself, but also in relation to its human dimension.”

– Karima Bennoun

3. INTACH

INTACH produced various documents/proposals on heritage conservation of Ladakh. Ladakh: Architectural Heritage authored by Janhwij Sharma and Conservation Strategies and Regulations for Leh authored by Dr. Ashwani Luthra are examples. The ongoing listing of historical sites of Ladakh conducted by INTACH also updates the heritage documentation. Although the volume containing Leh is not completed, they can provide a documentation on the sites of Leh valley, which includes dozens of rock art sites, forts, ruined temples and stone Buddha statues not listed so far in any recent publications.

Figure 21 :
Preliminary Heritage Map of Leh town



“The Government should allocate funds for conservation of natural and cultural heritage of the area”

– Ward Numbers 1, 2, 3, 4 & 5 during public consultations

Table 8 :

List of lesser known heritage monuments in and around Leh town (Survey under progress by INTACH)

MONUMENTS/STRUCTURE	STATUS	REMARKS
11 rock art sites in Gonpa-Ganglas	Vulnerable	Under study
Choskor (Ganglas): 4 temples ruins & numerous ancient chortens	Damaged	Under study
Changri Khar (Shasthang)	Damaged	Under study
Fortification 1 of Gyamsa: Shalatse Khar	Damaged	Under study
Fortification 2 of Gyamsa	Damaged	Under study
Temple ruin 1 of Gyamsa	Damaged	Under study
Temple ruins 2&3 of Gyamsa	Damaged	Under study
Temple ruin 4 of Gyamsa	Damaged	Under study
Ancient chortens of Gonpa-Ganglas	Damaged	Under study
Ancient chortens of Gyamsa	Damaged	Under study
Ancient chortens of Shasthang	Damaged	Under study
2 stone Buddha statues at Shasthang	Damaged	Under study
5 stone Buddha statues at Sankar	Damaged	Under study
1 stone Buddha statue at Chubi	Damaged	Under study
3 stone Buddha statues at Chute Rantak	Damaged	Under study
10 stone Buddha statues in Old Town	Damaged	Under study
8 stone Buddha statues at Changspa	Damaged	Under study
1 stone Buddha statue near Polo Ground	Damaged	Under study
3 stone Buddha statues at Skara	Damaged	Under study
3 Doksa in Gyamsa valley	Damaged	Under study

“Any physical conservation intervention should be the minimum necessary to ensure the stabilization of original fabric and retention of tangible and intangible significance and values.”



INTANGIBLE CULTURAL HERITAGE

While tangible cultural heritage, primarily architectural heritage, dominates the discourse in urban planning, it is equally important to document, protect and celebrate intangible elements of cultural heritage. This includes language, literature, performing arts, fine arts, poetry, cuisine festivals, religious/ spiritual practices, practices related to agriculture, nature, ecology, traditional knowledge systems, and any other manifestations of culture. More importantly, the intangible cultural heritage reflects the 'self-identification' of the inhabitants.



Lchangri Gyamo - enroute Gyamtsa

There is no doubt that intangible heritage culture and practices (religious and temporal) are undergoing the inevitable social evolution with time. While some changes may be for good, other practices are waning under socio-economic stress.

There have been efforts at various levels to document the intangible cultural heritage, however, there is no central repository to have all the documentations under one roof. Besides some audio or video recordings, particularly by foreigners, in late 1890s and some more to be found of late 1970s or 80s after reopening of Ladakh to the tourists, there is no official records of such early documentations. However, All India Radio (AIR) has considerable length audio recordings, particularly song and music which needs to be safeguarded by digitalizing,

from further loss. Likewise, Doordarshan may also have some records in their archives. Organisations like THF/LOTI, INTACH, ACHI, HCHF, LAMO etc. have done considerable work in the town area.

“We are the most informed generations about our inherited heritage, However, if we still do not stop decimating our heritage fortunes, we shall be morally responsible for the losing identity from the future generations.”

OUR VISION

1. Heritage is an integral part of life of the people of Leh, who conserve and enhance cultural heritage resources as a part of daily life.
2. The community assimilates growth in keeping with its heritage character, making the town a living and thriving place with a strong sense of belonging.

STRATEGIES & ACTIONS (TANGIBLE & INTANGIBLE HERITAGE)

Good heritage conservation strategies require: a better appreciation of the value of heritage assets (both tangible and intangible), and integration of such strategies within the larger processes of planning and development of a city or urban area. A good policy in preservation and conservation not only brings urban identity and pride in its residents, but also generate opportunities for job creation and poverty alleviation. It is said, a good heritage conservation strategy will have to ensure that the scale of action is local and micro in nature, to cumulatively enable the conservation of heritage assets in the longer run.



HERITAGE CONSERVATION

- Heritage as an integral part of life
- Conservation and enhancement of cultural heritage resources
- Assimilation of growth in keeping with the heritage character

To realise the vision as articulated above, the following strategies and actions are recommended:

STRATEGY 1

Establish the institutional framework: Ladakh Heritage Committee and Ladakh Protected Monuments

It is proposed that the Union Territory of Ladakh constitute a Heritage Conservation Committee and under its direction establish a list of **Ladakh Protected Monuments**¹ along the lines of the State Protected Monuments list in the erstwhile J&K.

It may be noted that while this report is focused on the town of Leh, this intervention needs to be conceived at the Ladakh regional level considering the nature of Ladakh's heritage and its spatial distribution.

A 1.1: Constitute a Heritage Conservation Committee (HCC) for Ladakh Union Territory. The Committee should have statutory powers to (a) notify heritage buildings and precincts in the entire UT of Ladakh, (b) formulate and oversee the enforcement of heritage regulations and (c) formulate and oversee the implementation of policies including incentives for conservation. The 'Model Heritage Regulations' of Town and Country Planning Organization, New Delhi, Ministry of Urban Development, also proposes such a Heritage Conservation Committee. The HCC may be assisted by an advisory body consisting of experienced organisations like THF/LOTI, INTACH, ACHI etc. whose representatives may also be members of the HCC.

A 1.2: Notify the list of Ladakh Protected Monuments along the lines of State Protected

Monuments in the erstwhile J&K. All monuments of historical importance (secular or religious including landscape/precincts) shall be listed. The listing may be initiated at the town or village level and then be reviewed by experts for inclusion in the final list. Later this list may be used for framing regulations for each category i.e. vernacular buildings, forts, rock art, steles, temples in ruins, chortens, objects/artifacts etc.

STRATEGY 2

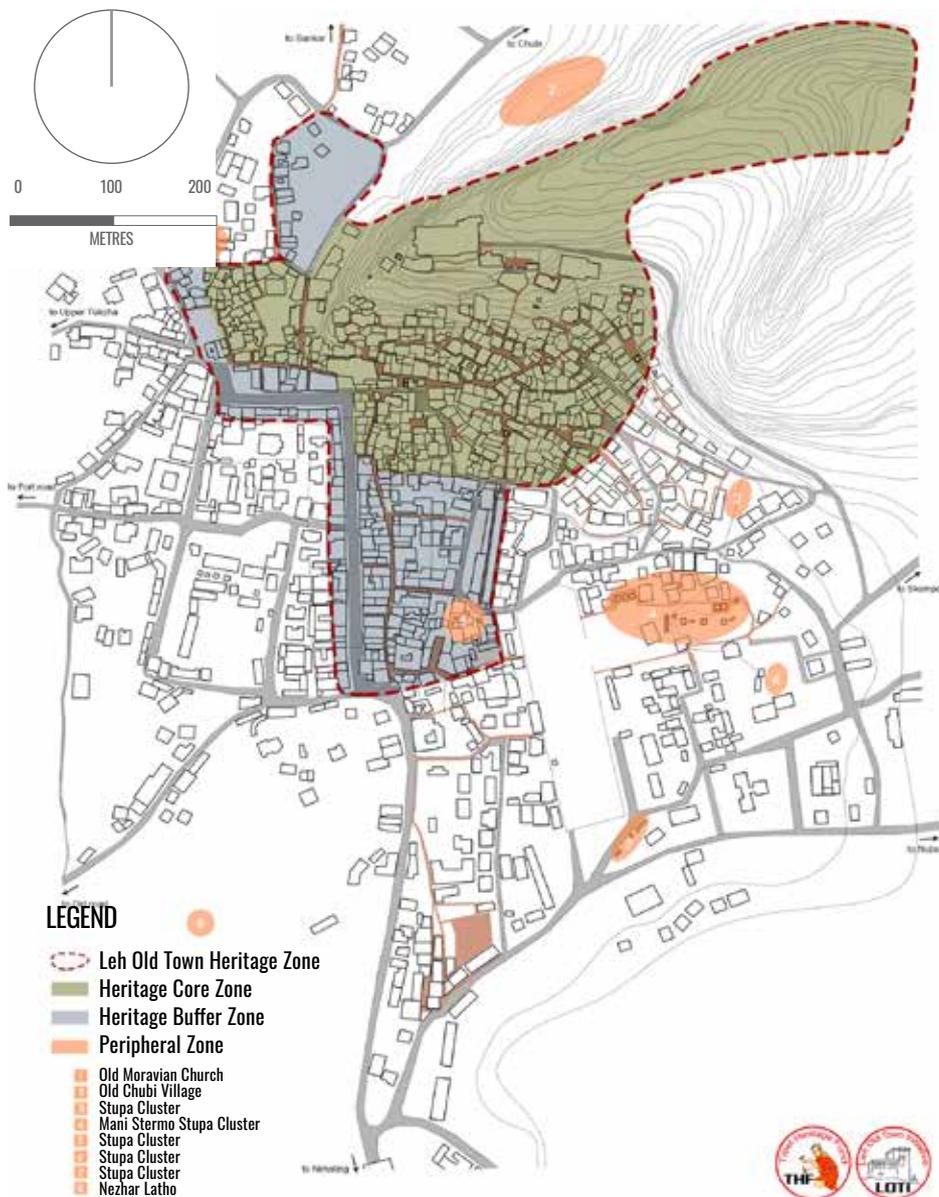
Formulate Heritage Regulations and Guidelines for Leh old town and the rest of the town

For heritage conservation to be effective in the long term for the old town in particular, it is important to integrate conservation into the spatial planning, urban design and development regulation system. Since there is no operative Master Plan or development regulation in Leh old town, and these are in process of being prepared, there is an opportunity to include conservation in the planning system.

A 2.1: Carry out delineation of heritage zones and precincts, along with listing and grading of heritage properties. The work already done by THF/LOTI may be taken as a base document for Leh Old Town. Their document "Declaration of Leh Old Town Heritage Zone" authored by Yutaka Hirako and Pimpim de Azevedo with inputs from Prof. Tashi Ldawa, submitted to the administration and the LAHDC will ease the preliminary task of survey and documentation. The listing and grading will determine the applicability of various regulations as well as eligibility for incentives. The higher the architectural/historical/archaeological/cultural value of a property, the higher will be the grade assigned to it.

A 2.2: Formulate Heritage Regulations and Guidelines for heritage precincts and for each grade in the listing. The higher, the grade of a property, the more conservative the regulations will be, in line with the saying 'best restoration is to leave a monument alone' as envisaged by UNESCO and WMF.

¹ A draft proposal for Ladakh Protected Monuments has been submitted to the LAHDC by Prof. Tashi Ldawa and team.



“A good heritage conservation strategy should be linked to the local economy, in order to create jobs and alleviate poverty, particularly in developing countries.”

– Hari Srinivas,
Heritage and Conservation Strategies



Figure 22:
Zoning map of Leh Old Town as proposed by THF/LOTI

The regulations and guidelines should enable conservation and adaptive reuse of heritage buildings in a sensitive and meaningful manner.

The Development Control Regulations or Building Byelaws formulated along with the Master Plan for Leh town must incorporate these Heritage Regulations and Guidelines. The listing and grading must also be appended to the regulations and be updated on a regular basis.

STRATEGY 3

Promote conservation and adaptive reuse through incentives

One of the most effective methods of conserving the character of historic urban areas is adaptive reuse, where an old building with traditional character is restored and adapted

Any physical conservation intervention should be the minimum necessary to ensure the stabilization of original fabric and retention of tangible and intangible significance and values. Any physical intervention should therefore, aim to do ‘as much as necessary’ to preserve the cultural heritage asset but ‘as little as possible’ to alter its original fabric.

to contemporary use in a manner sensitive to the social context, living traditions, integrity of architectural language and urban form while serving the needs of the new occupants. Adaptive reuse avoids museumization of the town and maintains lively neighborhoods as 'living heritage'. Therefore, it is important to protect residents and to limit the extent of commercialization in heritage zones, if necessary, relocating activities that do not conform to the zone. Such living heritage may also motivate the younger generation to conserve and continue their heritage in the longer run.

A3.1: Formulate policies for providing incentives for conservation and adaptive reuse of heritage buildings. There are several kinds of cost incurred in conservation and adaptive reuse including (a) the opportunity cost of not redeveloping the property and thus losing out on potential for profit, (b) the actual cost of restoration of heritage elements and (c) the cost of improving the usability of the building carefully without losing its heritage value. Incentives offered may include (i) Tax discounts, (ii) Grant funding for restoration, (iii) Subsidized loans for renovating the property and (iv) Transfer of Development Rights (TDR) to properties in other zones.

“Churpon system should revive as it is traditional practices of water management and conservation. The knowledge they have acquired through experiences is honoured. Any attempt to introduce unconventional technology is bound to fail.”

– Ajang Tsering lay, 75

STRATEGY 4

Sustain/ Revive/ Preserve Intangible heritage

Ladakh has numerous religious and temporal intangible characteristics that make the cultural identification of the Himalayan towns and villages not only unique but also a source of self-identification of the population. There are many cultural traditions that are very much alive, there are other that are waning and those that have almost disappeared. In this strategy we propose that those traditions that are alive and have value, sustain them, those that have value but are waning, revive them and those that are bound to disappear, document and preserve them in meaningful ways.

A4.1: Sustain and revive age-old traditions:

There are social and/or religious practices that are either undergoing drastic change or on the verge of abandonment. Many of the practices are still carried out in villages. Some of the practices are like *churpon* system (water regulation by community), *rarez* or *barez* (traditional grazing regulation system) *lora* system (protection of agricultural fields), *saka*, traditional dances, and many other such practices. These systems and practices not only promote community cohesion, they also help optimize the use of human and natural resources. Therefore, it is meaningful to revive some of these systems not only for the sake of the tradition, but also to regulate resource use in a sustainable way. The Municipal Committee, Leh may incentivize reviving these systems in an inclusive manner, involving stakeholders from the grassroots level.

A4.2: Revive traditional craftsmanship:

Provide awareness and training inputs to local craftspeople in such fields as carpentry, masonry, tailoring, dyeing, music and cuisine. Such activities or workshops may be carried out through various NGOs and social entrepreneurs with support from Skill Development Programmes.

A4.3: Document social, temporal, religious

practices: Many traditional practices are disappearing. Some social events like Losar celebration (New Year) have many facets. Some of the events can only be narrated or practiced by older generations. These events

may be recorded and documented for future generations or else they will be lost forever.

A4.4: **Establish audio and video archive:**

Traditional stories, songs, music etc. need to be preserved for posterity. Compilation of available records from past may be archived systematically. The various forms of social and religious activities that are either rarely performed or very unique may be videographed for future use and reference. The traditional religious chants or oral narrations of social ceremonies like in the event of marriages or death may be recorded.

STRATEGY 5

Heritage related activities

In order to build support for conservation of tangible and intangible heritage, it is proposed to undertake a wide range of activities to create awareness and engage the public on heritage related topic. Such activities may be carried out with the help of NGOs like THF/ LOTI/ HCHF/ LAMO/ ACHI/ Alchi Kitchen, based in Leh town. These activities will also provide a major boost to tourism.

A5.1: Design and conduct **heritage walks** on a regular basis. Starting with heritage walks in Leh Old Town, the activity can be expanded to include other heritage locations in the town as well as hiking in the periphery of the town along heritage sites.

A5.2: Organize **events and programmes to promote cultural heritage** including celebration of cultural festivals in heritage zones, craft festivals, food festivals and light & sound shows. Use of technologies like Augmented Virtual Reality to enhance the tourist experience can also be considered.

A5.3: Organize **workshops and lectures** on the history of Leh as well as events to keep alive the **oral traditions**.

STRATEGY 6

Heritage related research, publication, documentation and archiving

We cannot protect what we do not understand. It is necessary to build knowledge and

understanding of all aspects of our heritage. The pathways to achieve this include research, publication, documentation and archiving.

A6.1: Develop programmes to support

research and publications on heritage.

The Union Territory of Ladakh should fund research and publication on the history, architecture, archaeology and culture of Leh Ladakh. There are many scholars, both independent as well as affiliated to institutions, doing research on these topics. However, there is no repository for the outputs of such research efforts. One of the objectives of a research and publication initiative may be to produce educational material to be included in the curriculum of schools and colleges. The University of Ladakh may consider creating a department of history/ archaeology to advance this initiative.

A6.2: Develop programmes for **documentation** of tangible heritage and **archiving** of existing and new documentation material. The archiving of existing material may be carried out on priority basis. The following activities may be considered:

- (i) carry out systematic 3D photogrammetric modeling of all heritage sites or structures;
- (ii) in consultation with experts, prepare inventories of tangible heritage materials in the possession of Gonpas of Ladakh as well as private individuals, for protection from theft, smuggling, natural calamities, etc.;
- (iii) archive existing documents of important heritage structures that have already disappeared – many may have had important historical events associated with them.

STRATEGY 7

Involve heritage conservation professionals, train volunteers

Conservation is a delicate and professional task. There are many instances where conservation was carried out without engaging experts, resulting in damage of the monuments. It is proposed that consulting expert conservators in the relevant field i.e. art conservator, structural conservator, paper conservators etc. be made standard practice for all conservation projects in Ladakh.

A7.1: The Heritage Conservation Committee shall create a panel of conservation experts to provide expertise in conservation projects in Leh, Ladakh. This empanelment may be revised periodically.

A7.2: Conduct training programmes for volunteers interested in working on heritage conservation projects.

A7.3: Formulate procurement policies in relevant government departments and agencies for procuring the services of experts empaneled with the Heritage Conservation Committee for conservation projects in their jurisdiction. Such policies shall specify minimum qualifications and experience of experts.

STRATEGY 8:

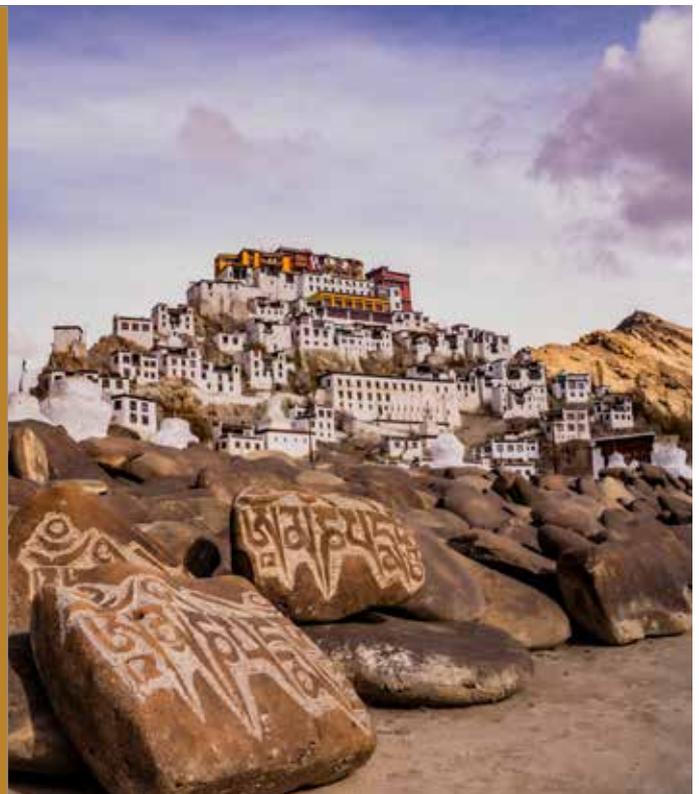
Cultural Impact Assessment

Establish the practice of conducting Cultural Impact Assessment for major project along the lines of Environmental Impact Assessment.



HERITAGE CONSERVATION

1. Establish the institutional framework: Ladakh Heritage Committee and Ladakh Protected Monuments
2. Formulate Heritage Regulations and Guidelines for Leh old town and the rest of the town
3. Promote conservation and adaptive reuse through incentives
4. Sustain/ Revive/ Preserve Intangible heritage
5. Promote heritage related activities
6. Promote heritage related research, publication, documentation and archiving
7. Involve heritage conservation professionals, train volunteers

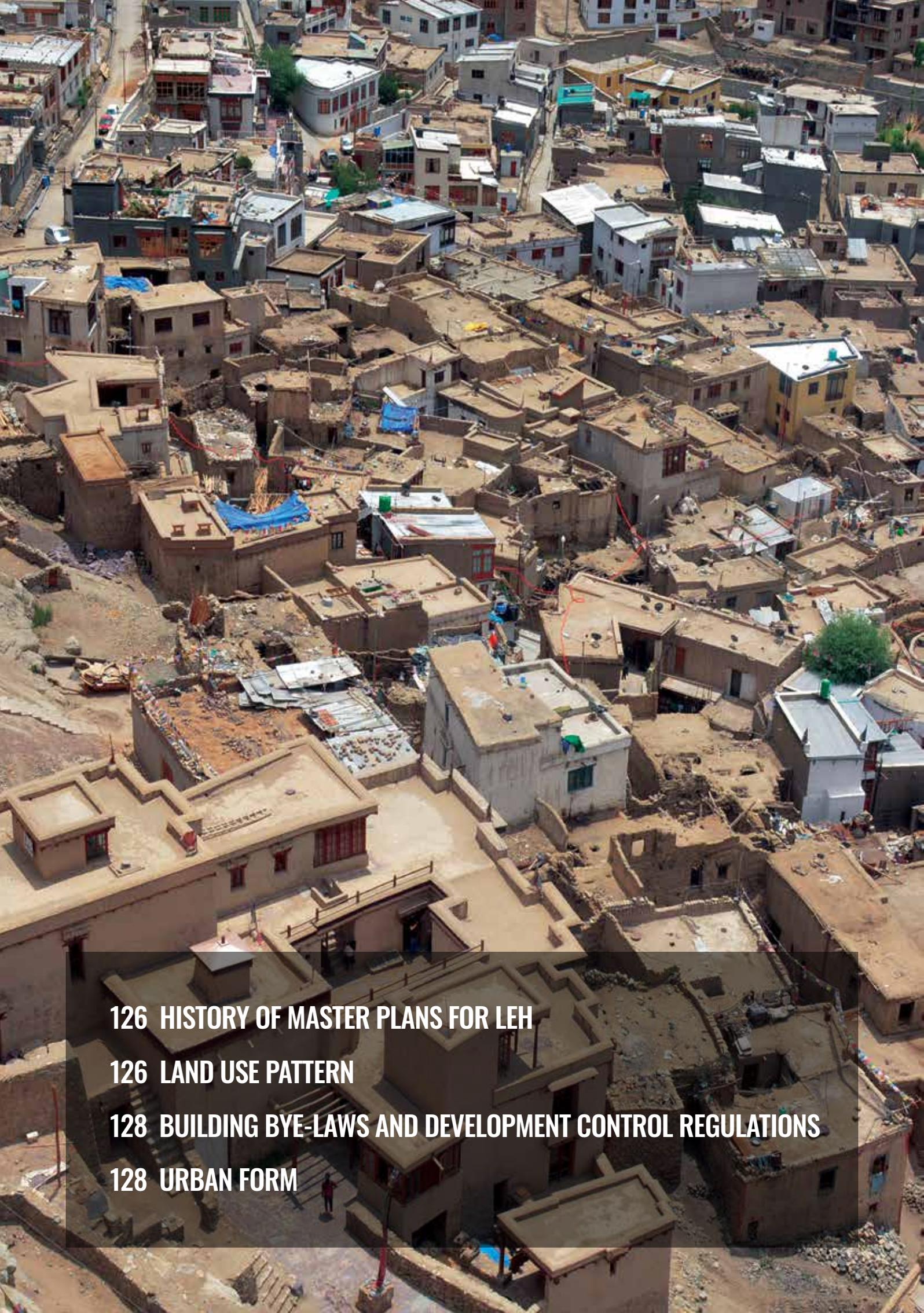


THEME 6 : ACTIONABLE RECOMMENDATIONS

NOTE:

The Potential Projects listed below are preliminary recommendations and will be finalised after detailed discussions amongst relevant Government authorities and departments, consultants and experts. Some Projects may be mentioned or detailed in other related Themes.

NO.	POTENTIAL PROJECT	TIME FRAME	DEPARTMENT RESPONSIBLE
STUDIES AND PLANNING			
1	Holistic Plan for adaptive reuse of buildings in Leh Old Town	2022-2024	Tourism Department
POLICY, REGULATIONS AND INSTITUTIONS			
2	Establish Heritage Conservation Committee (HCC) and initiate Ladakh Protected Monuments legislation.	2021-2022	LAHDC
3	Establish Regulations and Guidelines for Leh Old Town (<i>also see Spatial Planning and Urban Design</i>)	2022-2024	MCL
4	Introduce programmes for preservation of intangible heritage	2021-2030	Tourism Department
5	Create a budget to actively support and promote heritage documentation and archiving activities, and create relevant programmes at educational institutions	2021-2025	Tourism Department
CAPITAL PROJECTS AND THEIR OPERATIONS AND MAINTENANCE			
6	Implement the above plan for adaptive reuse of building sin Leh Old Town	2023-2028	Tourism Department
7	Develop live shows and events for educational and entertainment, including Light and Sound Shows, for tourists and locals	2021-2024	Tourism Department



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THEME 7 | SPATIAL PLANNING AND URBAN DESIGN

The physical growth and development of a town is managed using spatial plans and development regulations. This is further enhanced in terms of town form and character by urban design. Some aspects of urban design, especially those that guide urban form over time, also need to be integrated into spatial plans and development regulations.

Over the past 20 years, Leh has witnessed sharp growth in infrastructure development and prosperity. The rise of tourism has resulted in unregulated urbanisation resulting in chaotic growth of the town, causing many inconveniences to public life.

Spatial planning and regulation of urban development, guided by a comprehensive master plan, is becoming essential. However, Leh does not have an operative Master Plan. These processes must, however, put the needs and desires of the people of Leh at the centre of all considerations, also value the social relationships and activities of the people.

Planning must integrate people and create stronger communities where people take ownership of and care for their neighbourhood and their neighbours, at the same time conserving and enhancing the natural environment.



Panoramic view of Leh town, indicating the extend of urbanisation

HISTORY OF MASTER PLANS FOR LEH

Spatial planning is a statutory function usually discharged through Master Plans or Development Plans prepared under the provisions of a Town Planning/ Urban Development legislation. In the case of Leh, the applicable legislation was the Jammu and Kashmir Development Act 1970 when Ladakh was part of J&K. Now that Ladakh is a Union Territory, the provisions of the same Act are applicable until a new legislation is in place for Ladakh.

In 1978, a Draft Master Plan was prepared by the Town Planning Organization, Kashmir. Later, another one was prepared by the Indian National Trust for Art and Cultural Heritage (INTACH) New Delhi.

A third one in 1996 was prepared again by the Town Planning Organization, Kashmir; and a fourth in 2003 by the Town and Country Planning Organization (TCPO), New Delhi.

In 2009-10, yet another effort was made, this time by LAHDC. The Council hired a private consulting firm, Tetrattech, to prepare a Draft Master Plan. They prepared a comprehensive report and land use plans, but it was not sanctioned.

Ultimately, though numerous efforts were made, none of the Master Plans ever became operative.

After the last effort in 2009-10, there has been a dramatic change in the development, therefore none of these Master Plans can be considered relevant in today's context. Moreover, there are new realities such as climate change impacts, change of status to Union Territory and impact of the COVID-19 pandemic to be considered. Leh needs a completely new spatial plan that addresses new concerns and opportunities.

A new GIS based masterplan is being formulated for Leh town under the AMRUT scheme by Institute of Spatial Planning and Environmental Research (ISPER) Panchkula, Haryana. Their scope of work includes the preparation of building bye-laws. The work is expected to be completed in 2021.

LAND USE PATTERN

In the Draft Master Plan prepared in 2009-10 by Tetrattech, the total area under the planning division comprising of Leh Town was subdivided into four categories:

1	Town Municipal Area under Notified Area Committee (NAC) limits	1908 ha
2	Area available for extension	1933 ha
3	Hilly Terrain	405 ha
4	Area under Defense Use termed as 'Land Use Undefined'	1200 ha
Total		5446 ha

LEDeG has carried out a GIS based analysis of the current land use pattern and categorized it as follows: 54% of the land in the municipal limits is agricultural land; 21% is predominantly residential and mostly located towards the south of the town; 12.37% of the area is under public space; 5.15% under defense and only 3.09%, 2.06% and 1.03% of the land are under commercial, mixed use and industrial respectively.

Figure 3 shows the settlement pattern of Leh Town in greater detail. Figure 4 categorizes the municipal wards in the Town based on the predominant function they serve.

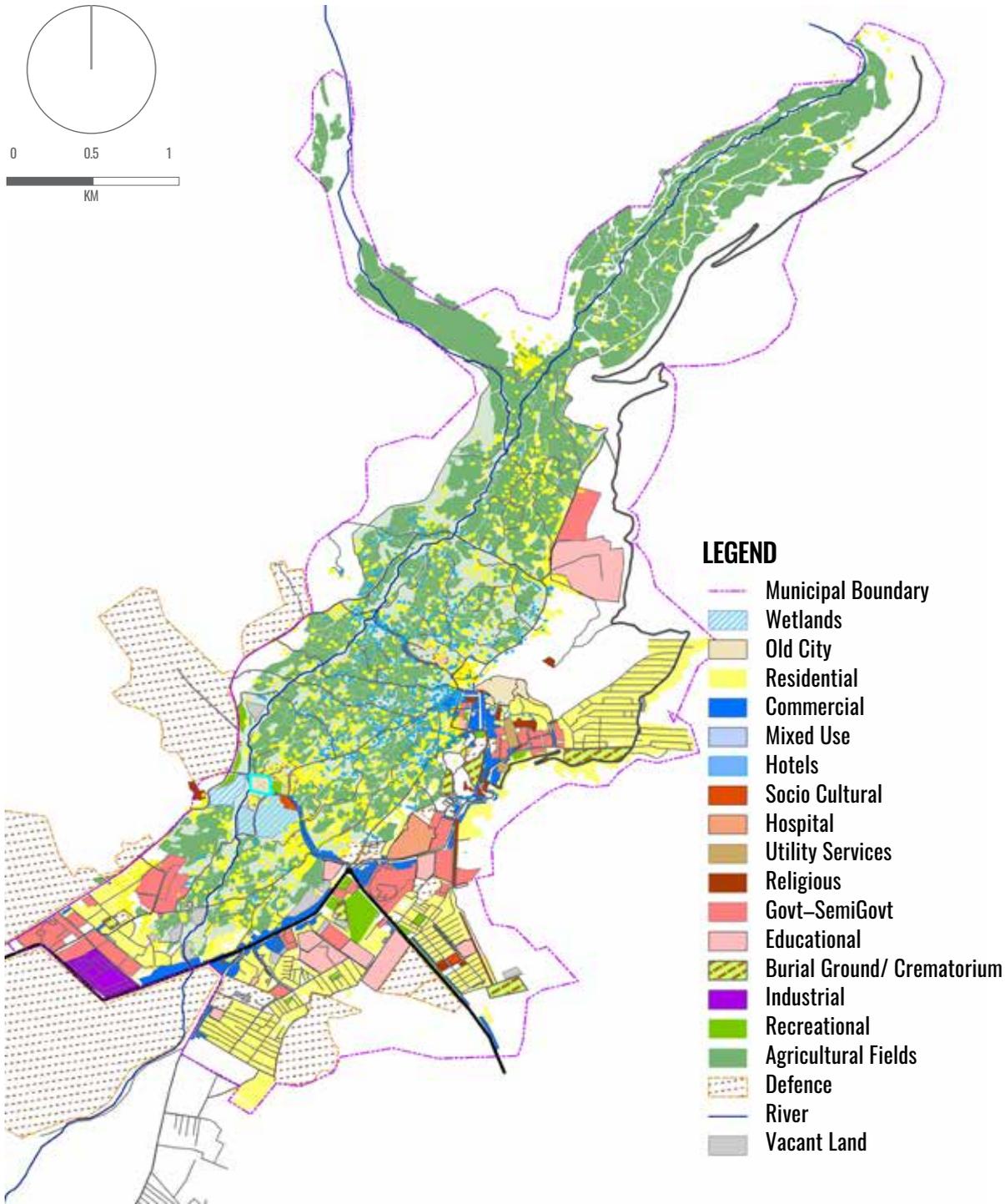
The important point to note here is that these patterns have evolved organically over time as development progresses slowly over the post-independence decades. However, given the manner in which development accelerated in the last 10 to 15 years, it is no longer desirable to leave the process to proceed organically as it has done over the years.

It is desirable to consider the aspirations and functional needs of the Town and plan the predominant land use zones in order to ensure

“Leh is beautiful and mesmerizing, but on my way to my hotel from the airport, all I saw was unmaintained roads, poorly built buildings and loads of mechanic shops. This stretch is the first impression of Leh – it needs to be better.”

– Gisele, a tourist

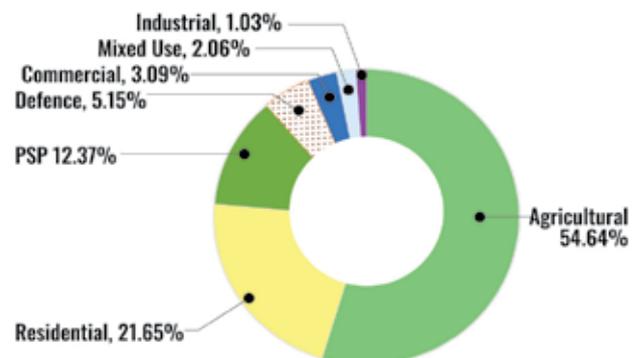
Figure 23:
Land use pattern of Leh Town



that conflicting land uses do not come adjacent to each other and to take proactive steps to provide infrastructure.

However, it must also be noted that the land use zoning should be reasonably flexible to address the unpredictable changes that can happen in the economy and other factors. The rapid growth of tourism and the impact of the pandemic are enough reminders that the future is not all predictable and delineating inflexible land use zones can be counterproductive.

Figure 24:
Percentage of land use pattern in each category





Aerial view of agricultural fields near Gangles, Leh town

BUILDING BYE-LAWS AND DEVELOPMENT CONTROL REGULATIONS

As of now all constructions in Leh town are guided by simple Building Guidelines prepared in the 1960s and are quite outdated. After the devastating flash floods and mudslide of 2010, the need for regulation of building constructions became more relevant and significant than ever. To partly address this need, a Government Order No. 193-TSM of 2018 dated 19.06.2018 was issued by the Government of Jammu & Kashmir, Civil Secretariat - Tourism Department.

The order stated that till a new Master Plan along with the mandatory E.I.A. and G.I.S. is in place, any building above the height mentioned in the Building Guidelines (35 Feet) would not be registered as a Hotel/Guest House or any property under the Tourism Act 1978.

Various interim measures are notified which may be useful and even effective, but a comprehensive set of development regulations along with a spatial plan, incorporating urban design as well as heritage conservation imperatives, is essential and urgent.



Irregular planning and construction activities resulting in haphazard development in Leh Town

URBAN FORM

In the section on heritage conservation it was mentioned that Leh Old Town and other locations have a traditional character that is worth preserving. In addition to this, if Leh is to develop as a Town that is loved by its residents and also continue being attractive as a tourist destination, then it is necessary for the town to consider various aspects of urban form that contribute to comfort and attractiveness.

One of the most important elements of urban design is the design of the public domain, which includes all streets, pathways and public open spaces. Leh has till now not focused its attention on the urban experience in the public domain, with the exception of the recent initiative to redesign Changspa Road and pedestrianize Leh main market.

In cities that are well designed, each part of the town has a character that is appropriate to its function and that character is quite consistent within the area. To achieve this consistency in urban form, it is necessary to have form-based regulations that determine the height of buildings, their relationship to the street and the spaces that are created between buildings. This is another aspect of urban design that Leh needs to focus on.

OUR VISION

1. Leh has become the most pleasant town to live in and most attractive town to visit in India. It has streets and public spaces that are vibrant and active, safe and comfortable not only in summers but also during the harsh winters.
2. Different areas in the town have distinct character, making them memorable as places for both residents and visitors.
3. Land uses in different parts of the Town make the best use of terrain and ecology while ensuring that adjacent uses are compatible.
4. The land use plan and development regulations are understood well by all stakeholders, easy to follow and fully complied with.
5. The plan and regulations are adequately flexible to address changes in the economy and other factors and promote equitable growth and development.



URBAN DESIGN

- A pleasant town to live in and an attractive place to visit. Vibrant streets and public spaces
- Urban areas with distinct character – memorable for residents and visitors
- Land uses making optimum use of terrain and ecology
- Land use plan and development regulations are easy to follow and fully complied with by all stakeholders
- Flexible plan and regulations so as to address various changes and promote equitable growth and development.

STRATEGIES & ACTIONS

To realise the vision as articulated above, the following strategies are recommended:

STRATEGY 1

Formulate Master Plan and Building Bye-laws for Leh Town

- A1.1: The town should engage with the concerned authorities to ensure that the Master Plan and Building Bye-laws (i) reflect the contents of this vision document; (ii) incorporate the smart city concept and (iii) plan for a greater Leh area including Phyang in the west, Choglamsar in the east and Egoo-Phey in the south and (iv) identify distinct areas of Leh with distinct historical and functional characteristics and propose form-based regulations for each one.
- A1.2: Ensure that the land use zoning in the Master Plan and the building performance standards in the building bye-laws, both take into consideration all hazard risks relevant in the Ladakh regions, such as earthquakes, landslides, flash floods.
- A1.3: Ensure that the building bye-laws incorporate green building regulations to the extent relevant and affordable to the citizens.
- A1.4: Ensure that the building bye-laws mandate provision of proper septic tanks in areas without sewerage lines.
- A1.5: Ensure that the building bye-laws include

architectural and urban design guidelines for the street front of buildings on major streets to maintain the identity of the town and give character to specific streets and locations.

STRATEGY 2

Promote efficient utilization of urban land by guiding development towards suitable locations

- A2.1: Expand the municipal boundary to include Choglamsar.
- A2.2: Encourage mixed use in wards that lack commercial facilities and are dependent on the town centre for their daily needs, through appropriate land use zoning and development regulations in the Master Plan.
- A2.3: Promote group housing for both ownership and rental housing through appropriate development regulations.
- A2.4: Promote transit-oriented development along major roads such as the road from Airport to Leh Gate.
- A2.5: Promote shared use of open spaces such as the use of school playground for community purposes after school hours.

“You know there is a problem with Leh when people start thinking the unmaintained roads and broken drainages are normal.”

– a student

STRATEGY 3

Ensure equitable and efficient mobility across Leh town with an integrated transportation network connecting locations of residence, work, education, recreation and shopping¹

- A3.1: Establish a clear hierarchy of roads and trails to provide adequate access for movement of people and goods.
- A3.2: Expand and optimize the public transport routes.
- A3.3: Upgrade the existing roads with clear demarcation of lanes and good pedestrian infrastructure, including wherever possible, bicycle lanes.

STRATEGY 4

Preserve ecologically sensitive areas and conserve natural heritage

- A4.1: Designate wetlands and springs as ecologically sensitive areas and ensure that these are protected in the Master Plan planning and design.



URBAN DESIGN

- Formulate Master Plan and Building Bye-laws for Leh Town
- Promote efficient utilization of urban land by guiding development towards suitable locations
- Ensure equitable and efficient mobility across Leh town with an integrated transportation network connecting locations of residence, work, education, recreation and shopping
- Preserve ecologically sensitive areas and conserve natural heritage
- Promote conservation of built heritage through planning and design
- Widen the scope for decentralized commercial centres and economic development
- Promote harmonious urban form reflecting Leh's identity using urban design to guide development

STRATEGY 5

Promote conservation of built heritage through planning and design²

- A5.1: Demarcate the old town area as a heritage zone and formulate a special development plan to conserve the traditional character of the area.
- A5.2: Ensure that the building bye-laws include heritage conservation regulations.

STRATEGY 6

Widen the scope for decentralized commercial centres and economic development

- A6.1: Promote multiple urban centres namely, Skara market, Skalzangling market, Housing colony market, Choglamsar and the Leh market through appropriate zoning and development regulations in the Master Plan.

STRATEGY 7

Promote harmonious urban form reflecting Leh's identity using urban design to guide development

- A7.1: Conduct a public urban design studio/workshop to conceptualize Leh's approach to spatial planning and urban design.
- A7.2: Prepare a document that articulates the urban design philosophy of Leh and ensure that this guides the statutory Master Plan and Development Control Regulations.
- A7.3: Prepare and enforce urban design guidelines for Leh, keeping in mind Leh's identity and legibility. The guidelines should also incorporate winter friendly urban design principles such as:
 - Strategies to block wind, particularly prevailing winds and downdrafts;
 - Maximize sun exposure through orientation and design;
 - Use of colour to enliven the winterscape;
 - Create visual interest with light, while being mindful of intensity, spread, contrast, and colour;
 - Design and provide infrastructure that supports desired winter life and improves comfort and access in cold weather.

¹ Though **mobility** is addressed as a separate theme, it is important to ensure that proposals for improving mobility are reflected in spatial planning. For example, proposals for the street network have to be included in the Master Plan

² There is a separate chapter on **heritage**, which goes into detail on conservation measure to protect both tangible and intangible heritage. However, there is a regulatory aspect of conservation that needs to be include in the Master Plan and building bye-laws, therefore it is mentioned here as well.

THEME 7 : ACTIONABLE RECOMMENDATIONS

NOTE:

The Potential Projects listed below are preliminary recommendations and will be finalised after detailed discussions amongst relevant Government authorities and departments, consultants and experts. Some Projects may be mentioned or detailed in other related Themes.

NO.	POTENTIAL PROJECT	TIME FRAME	DEPARTMENT RESPONSIBLE
STUDIES AND PLANNING			
1	Develop a Statutory Master Plan and Development Control Regulations with special attention to conversion of farmland into build spaces	2021-2022	LAHDC
2	Carry out a hazard risk and vulnerability assessment of Leh and its surrounding areas (<i>also see Environment and Climate Change</i>)	2021-2022	LAHDC
3	Prepare Strategic Local Area Intervention Plans	2021-2022	LAHDC
4	Prepare Special Development Plan for Leh Old Town (<i>also see Heritage Conservation</i>)	2020-2021	MCL
5	Formulate a Sustainable Urban Mobility Plan (<i>also see Movement of People and Goods</i>)	2021-2022	LAHDC
6	Prepare a plan for public parking across Leh (<i>also see Movement of People and Goods</i>)	2021-2022	MCL / Traffic Department
POLICY, REGULATIONS AND INSTITUTIONS			
7	Prepare and enforce comprehensive Urban Design Guidelines	2021-2023	LAHDC
8	Formulate and enforce Building bye-laws (<i>also see Housing</i>)	2021	MCL



THEME 8 | URBAN GOVERNANCE

There are four levels of Government that influence how Leh is managed:

1. **Municipal Committee Leh (MCL):** The first-ever elections for committee members was held in 2018, and 13 Committee Members were elected including 4 women. The President presides over the Committee, and an Administrator is appointed to run the daily affairs of MCL. MCL currently does not manage all the services specified under the Nagarpalika Act, 1992, which through the 74th amendment to the Constitution of India, gave constitutional status to municipal bodies.

Certain functions like water supply, sewerage, and roads and buildings were managed by departments of the State Government of Jammu and Kashmir, and now have been taken over by departments of the Government of the Union Territory of Ladakh. MCL currently has limited control over these departments and services, partly because it does not have the technical competence to understand or manage these systems. Solid waste management, issuing commercial licenses and permits, and several other services are managed by MCL. Of the approximately 200 staff members of MCL, about 150 are involved in SWM services.



Municipal ward members

MCL requires more qualified and trained staff who have understanding and experience in urban management and services like waste management, water supply, sewerage, environmental protection etc, to shape the direction of the Town as it evolves and grows.

2. **Ladakh Autonomous Hill Development Council, Leh (LAHDC, Leh):** Referred to as 'Council' or 'Hill Council Leh' it was constituted under the Ladakh Autonomous Hill Development Council Act, 1995. Councillors are elected directly by people, and it is an independent body with authority to plan and implement policies of the

District, and programmes and schemes for the development of the entire Leh district. The 32-member council is headed by the Chief Executive Councillor (CEC) and has extensive rights to levy and collect local taxes and fees.

3. Government of the Union Territory (UT) of Ladakh governs both districts of Ladakh, Leh and Kargil. The administration is led by a Lieutenant Governor who is appointed by the President of India, acting on behalf of the Government of India. Ladakh became a Union Territory on 31st October 2019, and significant budgets have been allocated to improve infrastructure and services, which is overseen by the UT Government.

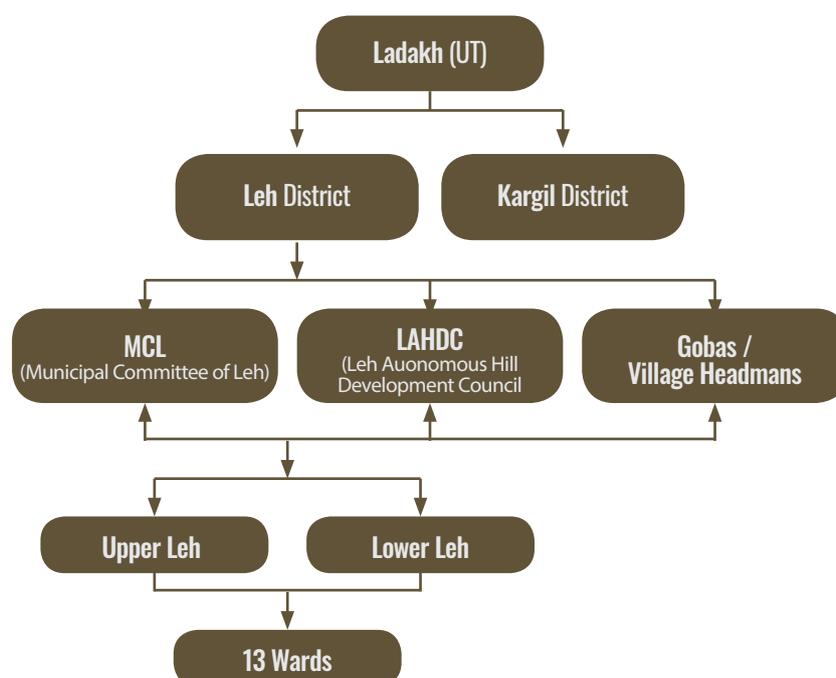
4. Goba/Nambardar An informally elected headperson, the traditional post of Goba/Nambardar works at the ground level in every sub-area in Leh. They are involved in various issues including land matters, finance, organising local events, resolving disputes, etc. Even after the introduction of Municipality and the Panchayati systems in Ladakh, Gobas enjoy great support and influence in their area. They should therefore be involved in the formal and legal decision-making processes of the other three bodies, as gobas deal directly with citizens and can therefore understand concerns and resolve conflicts more effectively. Local governance



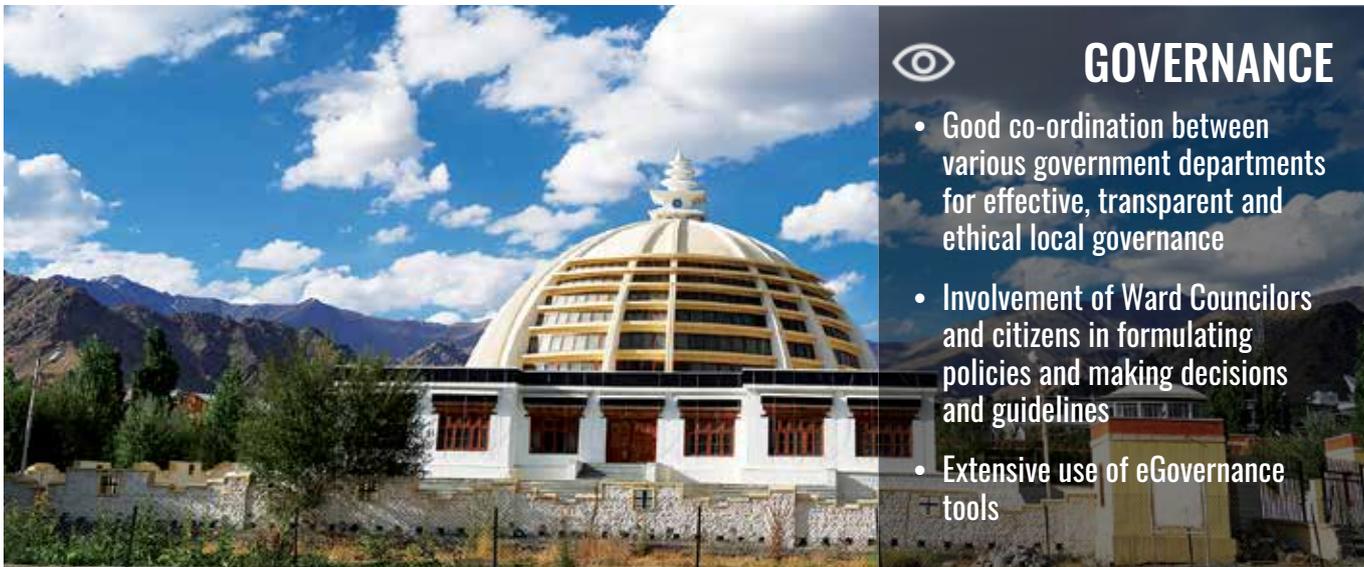
Community meeting with ward representatives of Leh

needs to be strengthened as MCL's committee that is still new. Processes can be simplified so citizens spend less time availing services, MCL should have a stronger role in all services provided to residents, and financial planning can be strengthened so MCL generates its own revenues which can be spent on the most pressure issues of the town, rather than being largely dependent on funds from the Indian Government.

The changes in government structures when Ladakh was announced as a Union Territory have created lack of clarity in roles and responsibilities of the above units. Priority must be given to clarifying processes and accountability in line with relevant Acts and laws so citizens spend less time availing services, and also in giving relevant execution resources and powers to the right body.



Governance Structure of Ladakh and Leh district



GOVERNANCE

- Good co-ordination between various government departments for effective, transparent and ethical local governance
- Involvement of Ward Councillors and citizens in formulating policies and making decisions and guidelines
- Extensive use of eGovernance tools

Ladakh Autonomous Hill Development Council, Leh

Most importantly, all the authorities and departments affecting governance in Leh must prioritize the well-being of the people and environment in all activities and policies. The people must demand this from all elected representatives and unelected officials.

OUR VISION

1. Proper co-ordination between various government units and departments for effective, transparent and ethical local governance that is aligned with the inclusive and eco-friendly vision for Leh articulated herein, in a financially responsible manner.
2. Ward Councillors and citizens are involved in formulating policies and making decisions and guidelines related to Leh town, which are focused on maximizing the happiness of people.
3. Extensive use of e-governance tools with priority towards addressing and solving grievances of citizens, and properly enforcing laws.

“Inclusion of common citizens in decision making process in matter of public interest.”

STRATEGIES & ACTIONS

STRATEGY 1

Strengthen internal procedures and capabilities of MCL

- A.1.1 Publish roles and responsibilities of all MCL employees and representatives.
- A.1.2 Promote and pursue diversity, especially the involvement of women in decision-making, across all levels of the organization.
- A.1.3 Adhere to a regular schedule of planning, management and review meetings including with other departments and arms of the Government, keeping and publishing minutes of meetings.
- A.1.4 Provide training and capacity building programs to each employee and officer to help them better understand their roles and tools to improve efficiency, and measure learning outcomes and performance improvements.
- A.1.5 Create Standard Operating Procedures for all tasks and responsibilities and pursue quality certifications (such as ISO) and benchmark performance.
- A.1.6 Strengthen finances of MCL through appropriate tariffs, fines, penalties and taxes collections.
- A.1.7 Award good performance by municipal employees.

“Gangles, Horzey, Gompa under Town area (urban area) whereas these are rural areas, due to which we don’t get benefits of any rural schemes such as funds for agricultural activities etc.”

STRATEGY 2

Simplify and improve how services are delivered

A.2.1: Adopt a multi-departmental Management Information Systems (MIS) that provides complete information about all activities in and around Leh to MCL and all government bodies, as well as citizens.

A.2.2: Developing an online portal and mobile phone app through which residents, migrants and visitors can avail of most municipal services, including property tax, water and sanitation utilities, fines and other payments.

A.2.3: Set up Civic Centres in every ward where all municipal and information services are made available, operated by MCL or local groups, and integrate with the MIS system and online portal.

A.2.4: Use technology wherever possible to improve services.

STRATEGY 3

Promote transparency and participative governance

A.3.1: Create Ward Committees including the Ward Councillor, Gobas, citizens, urban development experts and Civil Society Organisations as an interface between local government bodies and the people.

A.3.2: Open Data: Accurate and timely information should be available and easily accessible to the public (including in multiple languages) disclosing the status of past, present and upcoming projects in Leh and all services provided to people by any government unit.

A.3.3: Hold regular meetings with residents, business owners, NGOs and other stakeholders at the town and Ward levels, especially over new plans and projects.

A.3.4: Online and time-bound grievance redressal system for citizens with institutionalised feedback mechanism to monitor performance.

A.3.5: Extensive programmes to inform people about programs of the government, rights of people and how to exercise them, and how to provide feedback to the right office or resolve problems, using audio-visual means such as skits, dramas, announcements on radio and TV, and displays at various locations.



GOVERNANCE

- Strengthen internal procedures and capabilities of MCL
- Simplify and improve how services are delivered
- Promote transparency and participative governance

THEME 8 : ACTIONABLE RECOMMENDATIONS

NOTE:

The Potential Projects listed below are preliminary recommendations and will be finalised after detailed discussions amongst relevant Government authorities and departments, consultants and experts. Some Projects may be mentioned or detailed in other related Themes.

NO.	POTENTIAL PROJECT	TIME FRAME	DEPARTMENT RESPONSIBLE
STUDIES AND PLANNING			
1	Launch Open Data and E-governance Portal	2022	MCL
2	Develop a 5-year financing and investment plan for MCL	2021	MCL
POLICY, REGULATIONS AND INSTITUTIONS			
3	Establish Ward Committees with regular meetings and public discussions	2021	MCL
4	Capacity Building Programmes for all Government departments and institutions	2021-2024	LAHDC
5	Create Standard Operating Procedures (SOP) for routine tasks of all Government departments	2021	UT Government
CAPITAL PROJECTS AND THEIR OPERATIONS AND MAINTENANCE			
6	Establish Civic Convenience Centres in each Ward	2021	MCL
7	Set up a comprehensive Citizen Grievances Redressal System	2022	MCL

THE WAY FORWARD

This Vision 2030 has been formulated through extensive consultations with the people of Leh and with inputs from local experts.

The planning process for the formulation of LVD 2030 along with detailed proceedings of the meetings conducted during the month long intensive mass public consultation to capture views and suggestions of experts and citizens of Leh can be viewed on the Leh Vision 2030 website www.lehvision2030.com

The Leh Vision 2030 sets goals for the future and identifies the important strategies and actions that must be taken to achieve these goals. Each Theme also includes a list of actionable recommendations or projects, including

1. Studies and preparation of more detailed plans,
2. Policy / programme / regulatory interventions, and
3. Capital investment projects.

These Recommended Actions need to be elaborated and detailed through stakeholder consultations and expert inputs, to take them forward. While there is generally a focus on capital projects, it is very important to conduct studies so that the knowledge required to make the right decisions is available. Good plans must be prepared that take local factors and risks into account, and regulations must be developed and enforced.

Without the right data and knowledge, planning and regulations, even the built infrastructure and budget expenditure will not achieve the goals of the Government or people.

Each Project should be owned and managed by a single agency, who are recommended herein, but several other relevant organisations and departments, from the Government and outside, should be closely involved to ensure proper planning, design and outcomes.

Now the work of realising this Vision begins. This requires three steps.

1. PARTICIPATION

Every major government and private institution involved in local development and governance must review this Vision to identify their roles and responsibilities. More importantly, this Vision must guide future decisions and actions of all parties, especially in creating and enforcing institutional frameworks and regulations.

LAHDC, Leh, the Government of the Union Territory of Ladakh and all Departments, Municipal Committee, Leh, Defence forces, the police, private associations (e.g. ALTOA and All Ladakh Hotels and Guest Houses Association) and religious organisations, schools, NGOs and citizens, all have important roles to play.

To enable active participation of all stakeholders, the Leh Vision 2030 website should provide mechanisms for on-going feedback from residents, and present updates on the implementation process.

2. EXECUTION

The LAHDC, Leh must create a new Empowered Standing Committee (**ESC**) to plan and monitor the implementation of the Vision 2030.

This Committee of 12-15 members should include government officers, citizens and experts, hold monthly meetings and publish their proceedings for public feedback, and coordinate various projects related to the development of Leh. Members can be appointed for a 2-year tenure with half the members rotated each year to ensure overlapping tenures and continuity.

While this document has recommended specific Projects for each thematic area, the first deliverable of the ESC must be a detailed "**Action Roadmap**" detailing projects with clear timelines, budgets, the responsible authority or department, and metrics to monitor success.

3. EVOLUTION

The Vision must become a living document that is periodically reviewed, debated and updated.

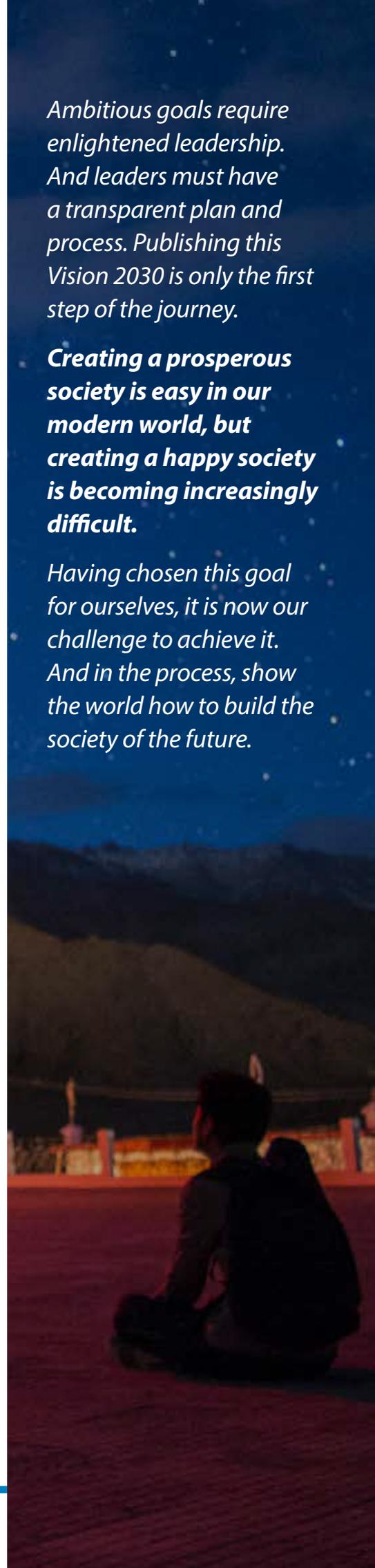
A continuous schedule of public feedback consultations and expert meetings should be planned.

The ESC must produce an "**Annual Implementation Status Report**" and update the Vision and Action Roadmap each year, so that the Vision remains relevant and people can participate in the process.

Ambitious goals require enlightened leadership. And leaders must have a transparent plan and process. Publishing this Vision 2030 is only the first step of the journey.

Creating a prosperous society is easy in our modern world, but creating a happy society is becoming increasingly difficult.

Having chosen this goal for ourselves, it is now our challenge to achieve it. And in the process, show the world how to build the society of the future.



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LEH VISION 2030

A Path to our Shared Happiness

INCLUSIVE · **SUSTAINABLE** · **RESILIENT**

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