

RESEARCH REPORT

IMPACT OF CLIMATE CHANGE ON VULNERABLE
COMMUNITIES - A CASE STUDY OF LADAKH

A study on impact of climate change in Ladakh.



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INTRODUCTION

As Ladakh region stands to be one of the most vulnerable spots in terms of detrimental effects and changes brought by environmental as well as climatic irregularities coupled with its unique geographical as well as topographical factors as part of the great Himalayan region which in turn is bearing the brunt of the drastic change in the climatic timeline, the region was considered as a site for my research study titled “Effects of climatic and environmental changes among vulnerable populations”.

Akin to the other parts of the Indian subcontinent, this unique and isolated Himalayan region has also been subjected to various bouts of infrastructural as well as other forms of development coupled with huge influx of tourists after its introduction to the outside world after the 1970s. This developing place has had limitations and scarcity in terms of resources unique to itself which are now becoming more prominent and posing a challenge to its population after being imbalanced due to climatic and environmental changes, infrastructural development, population growth, tourism boom etc. putting this place as high risk zone in terms of climate vulnerability or fragility of the society in general.

RESEARCH OBJECTIVE

The main objective of my research visit was to gain an insight through qualitative research methodology, such as discussion, interviews, etc. with various stakeholders who were engaged in or had been affected by the results of catastrophic causes, including climatic and environmental changes plaguing the region and plunging it into a cycle of incessant exploitation and destruction.

VISITS

The activities undertaken during the field research visit helped me gain a more or less clear picture of the on-ground happenings governed by various ecological and environmental factors affecting the region’s biotic population including humans, animals as well as plant or crop species.

Considering the season and meteorological impediments, various areas of target or focus groups had to be considered based on the earliest possibility or even availability and this posed a limitation in finalising the activities undertaken during the visit.

Visit to waste dumpsite, Bomb Guard, Leh

The area consisting of tons of wastes was once a protected land used rigorously by army teams, guarding this suburban outcasted area which is now dotted by heaps and heaps of various forms of wastes mocking it's colloquial name and now guarded by faithful feral dogs taking the place of faithful soldiers.

In this perpetually “No man’s land “ and more of “ Waste man’s land” , things done or done in a masqueraded way seemed to be more controversial and lawless than what identity less people do in the “No man’s land”, where these people have an identity of “Slaughter person” evading the eye of law or at least common people and ruthlessly carrying out a systematic ritual of animal sacrifice to be offered to the outside “Human’s land” as a source of sustenance.

The scenery was no less haunting than an apocalyptic set where destruction was the only truth. Amidst the ongoings of burnings of mountains of wastes in almost every single spot in the area, the only witness of these events of destruction was those families of feral dogs seeing, smelling and scavenging for remnants of food from the fumes which can be inhaled by them and their families. Solid wastes are indiscriminately tossed into the dumpsite, day in and day out, and ignited with no introspection of attempt to management of these wastes resulting in a plume of toxic gasses breathed out by the wastes into the air, which is breathed in by the busy residents carrying on their lives morbidly.



View of dumpsite, Bomb Guard, Leh.

Participation in Awareness Camp on Sustainable Menstruation, Choglamsar village

The camp was organised by Zero Waste Ladakh for the waste workers of the Tsang Da Waste Management Project under the Rural Development Department in the Choglamsar suburb of Leh city. Before the awareness camp, a visit to the waste management plant was done which paved a way to see the plight of the waste segregation workers, burrowing through a sea of mixed waste, collected at the plant everyday from the suburbs.

Seeing the unsurmountable threat posed by one specific kind of waste which menstrual waste, the team of Zero Waste Ladakh had brilliantly implemented a plan to tackle and mitigate this almost neglected waste generated by single-use sanitary pads, used widely by menstruating women and disposed in really unhygienic ways, which makes it difficult for the segregation workers to carry out their tedious work.

The workers which consist of majorly local women had dealt a good amount of interactive time with the Zero Waste Ladakh team about the necessity and reasons to use the less waste generating and more environment- as well as body-friendly menstrual cups entirely made of silicone, which can be used during menstruation days, covering almost the entire menstrual age-time.

The overall vibe of the congregation was filled completely with intense discussions and curiosity overflowing from the participants, shattering any form of reluctance or shame which was evident in the initial phase of this gathering, proving that the aim of this menstrual health and menstrual waste management project was turning into reality and bearing fruitful outcomes now and continue to do so in the long run.



Awareness Camp on Sustainable Menstruation in progress, Leh.



A scene from one of the Material Recovery Facilities of Project Tsang Da in Ladakh region. Waste segregation is difficult here due to manual segregation done by workers who often handle hazardous and unhygienic wastes including soiled sanitary pads.

Visit to SECMOL Campus, Phey village

SECMOL (Students' Educational and Cultural Movement of Ladakh) is a close-knit community institute where youths, specially of school age hailing from far off places of Ladakh, come together to rethink and reboot their skills and aspirations.

The main principle or mantra followed by the institute is 3H signifying 'Bright Head, Skilled Hands and a Compassionate Heart', which according to the mentors of the institute, can be a drastic driving factor of living symbiotically and consciously with nature, animals and fellow human beings.

The campus sat on a distinct barren valley that looked like being metamorphosed into a flatland amidst the overlooking mountains surrounding the whole campus. It can be confidently guessed that the founders as well as the inhabitants of the campus have done their best to maintain the simple elegance that the well maintained campus reflects. Almost all the materials composing the building, halls and other miscellaneous things are of locally extracted biodegradable or eco-friendly resources.

One of the mentors residing in the campus named Mr. Stanzin Norboo gave consent and showed interest in an interaction with our team. The discussion was regarding the role which mindful institutions such as SECMOL can play in impacting the lives of local youths for building a

better future for them as social leaders and various other positions of authority. Mr Stanzin briefly shared about the original philosophy of starting the institution and also explained about the carefully curated curriculum which the institution implements in preparing the incoming students to undergo training in various activities in order to come out as strong-willed youth striving for a better tomorrow in this competitive world.

When asked about the importance of being empathetic towards nature, animals and other beings to be imbibed among the students, Mr Stanzin very firmly nodded, reflecting how the institution and its mentors are doing their best to plant this quality in the heart of the students so deeply that it will sprout and grow in them as they grow older and become a leader of tomorrow.

“How have external forces such as tourism, climatic and environmental changes changed the landscape of the lives of the people in the countryside?” was the last question directed at Mr Stanzin, which momentarily transported him back to his younger days in his village, situated in the high altitude nomadic areas of the Changthang region, throwing him in a state of comparative contemplation as he started comparing between “good old days” and now, “not so good days”.

He frigidly described how things have changed “drastically” with the introduction of Ladakh to the subcontinent and military takeover of the region, marking a period of increasing pollution, population explosion and



A view of SECMOL campus, supposed to be a one-of-it's-kind institution, which is eco-friendly and sustainable in terms of materials used in the infrastructure and even the lifestyle led by the students and other inmates of the institute.

and exploitation of resources, all of which have completely changed the ecological, environmental as well as social balances in the nomadic society in present times. People of his area are now shifting majorly to trade with the army personnels and tourism, in order to tackle the issue of resource scarcity, which had been exacerbated due to recent upsurge in environmental and climatic changes.

The interaction ended with a sigh from all of us reflecting the urgency of putting a break and taking things slowly amidst the fast changing overflow of the globalisation system that has engulfed the society and people of this region.

Visit to HIAL Campus, Phyang village

HIAL has had made a reputation amongst the Ladakhi people as a pioneering institute, promising and striding relentlessly to bring change in the materialistic lifestyle approach of the society to a more environmentally conscious/balanced lifestyle, adopting different long-lost traditional means/materials/methods, while taking into account the modern technological advances, giving rise to an “alternative” structure of higher education that seems less harmful to the nature.

While the journey of this institute started sometime around in 2013 with the intention to research and develop new sustainable forms of living simply by not jeopardising the fragile balance of nature that has already taken a turnaround in a few decades, A lot of aspiring and talented think tank people have had made association with the institute coming in for training, experimentation of projects, R&D, exchange programs, working on for the local initiatives as well as for further expansion into the subcontinent.

One of the recent trainee spared some time with our team and took us around for a campus tour pointing out to the works that has been ongoing for sometime to mitigate a problem that many individuals are facing in recent times due to rising temperatures as well as bouts of winter extremities commonly occurring nowadays especially in urban or suburban areas across Ladakh and in the whole country in general.

The materials processed for building some of the campus buildings are of mud and straw and other commonly found biodegradable ingredients that happen to work brilliantly by functioning as insulating enclosed houses

during harsh winters keeping the inside temperature warm while constantly allowing a comfortable temperature during scorching summer days.

Though the composition and the technique were inspired by the traditional means of building a house, it is more geographically adapted and dependent on the vernacular architecture, which is different in different parts of the country. One drawback of the architectural pilot project carried out by HIAL is the cost-efficiency of making a building out of the materials used and the space requirement of this kind of buildings, makes it better situated for places with well-ventilated or open spaces, and not tightly congested places, like cities.

INTERVIEWS

Stanzin Rabgias, Executive Officer, Municipal Committee Leh

Mr. Stanzin Rabgais, has been serving as the Executive Officer of Municipal Committee Leh since 2020 engaging with various governmental and non-governmental organizations and other government departments on waste management, environment and climate change issues.

According to Mr. Rabgais , Leh city has faced a lot of unprecedented turn of events for which the citizens didn't have the chance to contemplate and fuse properly with the changes leading to issues that weren't there before such as huge waste generation, sanitation problem, water scarcity etc.

When asked about the preparedness of the citizens with regard to weather extremities such as cloudbursts followed by flash floods or in times of any agricultural disaster or heat waves, Mr. Rabgais admittedly claimed that until now, there hasn't been a solid plan done either by the central government controlling the region or even from the level of local authorities, but there is now a budding thought of pushing for a "Climate Action Plan" soon from the local to higher authorities, which will include the adaptation, preparedness as well as mitigation techniques against various forms and events brought in by the environmental and climatic changes.

Takeaway

- There has been a rapid rise in population, influx of tourists, number of vehicles and industries in Ladakh, leading to drastic influence on the ecological as well as social environment.

- The number of extreme weather days have been increasing and becoming prominent which the local people aren't still prepared to face.
- In case of any emergency disaster, there is no such emergency action plan or system which can be beckoned, rather relying on the assistance from the Army, NDRF team and the local people for life saving missions.
- Tourism has made some beneficial and terrible changes in the way people function in this region and has led to a level of un-sustainability which is seriously hampering the delicate ecosystem of the region.



*Office of the
Municipal
Committee Leh,
which oversees
the sanitation of
Leh city.*

Dr. Tsewang Namgyal, Director, Snow Leopard Conservancy Trust (SLCT), Leh

“When we discuss and voice our opinions about our rights to live comfortably in our own environment and proclaim about the need to deal with the growing issue of climatic and environmental changes , WE almost always refer to humankind only. We somehow obliterate the other living organisms, especially animals.”

This was the first statement made by the Dr. Tsewang Namgyal, when asked about the plight of the common and vulnerable animals in face of the vigorous climatic and environmental changes that the region is seeing. According to Dr. Namgyal , animals are more sensitive and react more exclusively to even slight changes in the delicate balance in their natural habitat. Human interference and other environmental and climatic changes has definitely taken a toll on the intricate web between the species and their habitat.

It was noted by Dr. Namgyal that in case of snow leopards, who are reclusive in nature, they have indeed been relocating to the higher elevations because of many factors including decrease in snow cover on the mountains, human intervention, pollution, and even irregularities in presence of its prey species.

Though there has been no official attempt of counting the number of snow leopards inhabiting the mountains, there are promising signs that the species has not been subjected to hunting and other illegal activities and might have successfully bred in recent times. But in the face of growing environmental and climatic changes in localised forms, which can be attributed to the rising human activities and indirect interventions into the natural world, such as through wildlife tourism, it is still a matter of uncertainty how the snow leopard species will fare in the near future. There is also a need to carry out proper study of the snow leopard and other species inhabiting the mountains, which in general indicates the serious neglect of these species of concern.

Takeaway

- There has been no genuine interest or attempt to include the rights of wildlife species, such as snow leopards, when discussing the requirement of reformation or amendment of any land rights act, tourism act, or climate action plan.
- Animals have borne the brunt of various forms of suffering due human intervention and its resulting detrimental effects, such as environmental and climatic changes occurring, in the high altitude locations, such as Ladakh.
- In case of snow leopards who are exclusive to the mountains of Ladakh and other Himalayan zones, the behavioural pattern of these feline predators has also been affected due to rising global warming and pollution resulting in an unknown set of drastic changes which needed proper study research.
- If in the name of development, a set of irrelevant and un-sustainable initiatives and projects are carried out in the region, it will irreversibly alter the whole ecosystem of this isolated region where human community might adopt some measures circumstantially but the animals will be left to fend for themselves in the face of “industrialist-capitalist” rule of development.

Ms. Tashi Dolma, Chief Agricultural Officer, Leh District

The basic structure of any society is founded on the function and supply of agricultural produce that keeps the people in the society from crumbling down. This idea is conclusive in a way that denotes that from agricultural roots, everything else sprouts into different branches of sustenance and needs, which supports the whole tree of the society. From the interaction with Ms. Tashi Dolma, this reveal of a plantain simple fact struck as the base of the conversation.

Ladakhi society since ancient times was a pastoral-agrarian society where individuals used to cultivate their own produce on their own plots of land in the summer season for sustenance through the rest of the oncoming seasons every year. The practice was fully in symbiotic relationship with nature and its governed climatic conditions which were steady until recently.

With the introduction of Ladakh to the world as a laid back and pristine destination, preferred for leisure, eventually flooded the region with the demand of mass production or industrialisation to cater to the needs of incoming tourists and also the growing presence of army personnels, pouring in large numbers to the region.

With so much inflow which soon outnumbered the local population, which itself was growing, the tremendous scarcity of resources for sustenance, pushed the local population to start adopting industrialised or commercialised form of agriculture with the strong support of chemical pesticides/fertilisers that proved helpful for a period of time.

But as a result of the use of these chemical pesticides and fertilisers, the pollution levels shot up in case of soil and water, creating and adding up majorly to the already deteriorating environmental conditions altered by the global warming crisis. This cycle of deterioration is now a growing concern for the local authorities.

Floods, torrential rains, rising temperatures and air pollution and in some cases lack of fresh glacial water has directly and indirectly affected the local agricultural patterns where adaptive measures to withstand such effects are trivial especially in a region with extremely unpredictable weather, now significantly altered due to the climatic changes.

It took sometime for many agricultural families and the whole community in general to realise the need to eliminate indiscriminate use of chemical pesticides and fertilisers or even introduction of foreign species of plants, which might harm rather than benefit in the long-term, and consciously take into consideration the technical knowledge and advice of the Agricultural Department for reintroducing traditional methods of agriculture which would allow them to produce sufficiently through organic farming, amidst the risks and vulnerabilities faced by these communities due to environmental and climatic changes.

Takeaway

- The shift from the traditional methods of agriculture towards an exploitative state of agriculture happened within a short span of time in Ladakh, marking the onset of excessive usage of detrimental amenities which led to a state of unsustainable agriculture.
- Since most of the agricultural produce is seasonal and climate dependent, in recent decades, due to the growing climatic and environmental changes brought in by different external and internal factors, the produce of crops has been greatly affected, sometimes leading to high inflation charge of common crops due to the need to import from the plains.
- Adaptive and mitigation measures are very scarce against such climatic and environmental changes given the unique challenges posed by the geographical and ecological characteristics of Ladakh, added with unpredictable weather patterns in recent times.
- The Agricultural Department is trying to promote “Organic farming” to boost the local economy and reach a state of self-sufficiency, while combating various challenges such as pollution and ecological imbalance, in order to achieve some level of sustainability in the region.



*In conversation with
Ms. Tashi Dolma,
Chief Agricultural Officer,
Leh District*

Mr. Thinles Singhey, Brand Owner, Jimpo Juice, Phyang village

A sparsely distributed fruit plant that is found exclusively in such mountainous regions, including Ladakh, and which bear a fruit with an extremely distinct taste having numerous proven health benefits, sea buckthorn products have now become a trademark of Ladakh, which one must surely try while visiting this place.

According to Mr Thinles Singhey, founder of Jimpo company, which specialises in products from sea buckthorn berries, the taste and quality of the berries borne by the sea buckthorn plants depend on the quality of air, soil as well as water and it is extremely sensitive to any kind of disturbances which drastically alter its productivity. Though the plant in general has a high adaptive capability, withstanding harsh winters or even other weather extremes, excessive intervention by humans has certainly affected it's blossoming and led to late or early bearing of fruit which can affect the food processing industry relying on it.

Mr Singhey pointed out that so far the plant species had been successful in adapting itself against the growing unpredictability of weather brought in by the climatic as well as environmental changes, but one point of concern for him is that in case more different industries come up, encroaching the areas of the plant's occurrence, or excessive human intervention takes, these might hamper the plant in the next fruit bearing season. However, for now, it seems that the sea buckthorn industry, like the raw material which is its lifeline, has been evolving and simultaneously tackling the challenges and obstacles coming its way. A more productive and sustainable future was what Mr. Singhey seemed to hope for, for the whole Ladakhi society.

Takeaway

- Productivity of plants depends on the quality of air, water and soil, which had greatly changed and been disturbed in Ladakh since it is growing rapidly as a commercial centre, under the pretext of tourism and infrastructural development.
- Livelihood will be greatly impacted, including in the food processing industry, if the climate and environmental changes go beyond the tipping point, putting at stake many other things down the line.



Seabuckthorn squash product from Jimpo juice company (left) and Jimpo juice factory premises in Phyang Industrial Estate, Phyang village.

Mr. Stanzin Dothon, Environmental Activist

“Activism” is a robust word, where the source of taking action comes from within, with the realisation that a situation is grave in nature, compelling the person to react strongly, to not let the triggers aggravate which have caused the situation. One such trigger struck and took hold of Mr. Stanzin Dothon, when he moved to Delhi for his academic pursuit. The hustle and bustle of Delhi made a lasting impression on him, which seemed almost incomprehensible to a person coming from a place having a distinctive and different lifestyle, ecology as well as environment. But the net of globalisation is spreading so fast that when he returned back to Ladakh, he saw almost no difference from Delhi in life and behaviour towards nature, animals or even fellow human beings.

The situation had aggravated into a state where almost everything was out of balance. Even after harsh warning events signalled by nature such as flash floods of 2010 in Leh, episodes of cloudbursts etc., people in general remained ignorant and far away from the door of realisation. It is under those circumstances that those who realised the deteriorating situation and spoke up, were given the name tag of “activist”, which the general people associate it with radicalism, or even extremist or the worst of all, communism that make it more difficult for such individuals to express themselves and explain the realities to the common people.

For Mr. Stanzin, “activism” is a process of rethinking, revisiting, rebooting and reacting to our own actions and be mindful the next moment we take

any decisions or actions because the consequences of our actions come right back to us in the form of episodes of heatwaves, heavy rainfall, pollution etc., that are harming or killing us in the end.

Ladakh is no longer alien to the system of exploitation, consumerism and all the by-products of this era, governing our everyday lives. The traditional feature of our lives based on “balance in everything” is almost abolished from our actions and decisions in today’s times.

But now, youths and “activists” in Ladakh, like Mr. Stanzin are now trying to promote an understanding and sustainable “balanced” system through small steps rather than in drastic ways, encouraging people to live “in” nature rather than “by” nature.

Takeaway

- The harmony in ourselves has gone astray which has led us to invading the harmony in nature, creating an imbalance that can be seen in the form of climatic and environmental changes and occurrences of extreme episodes, impairing the earth system.
- Individualistic action accumulates into collective action that will proven successful in at least recovering the damage already done on the face of earth.
- All the resulting climatic and environmental changes happening in the recent times is the result of centuries of assimilation of numerous mindless acts and decisions taken by humankind biased towards our needs.
- It will take much more time for all of us to realise what has happened and what is going to happen in future if we don’t get careful about our actions and work on establishing a sustainability.

Mr. Deleks Namgyal, President, All Ladakh Tour Operators Association (ALTOA)

Ladakh has a distinctive feature in terms of topography, society, climate, and people that sets it apart in many ways from the rest of the Indian mainland. Perhaps, because of this interesting peculiarity mixed with its unique geographical landscapes, curious people from different parts of India and the world come to this place to witness the contrasting affair of landscape, people, and culture amalgamated into a world in itself.

“And Ladakh welcomed the world with open arms!!! This was an approximate statement made by Mr Delek Namgyal who has been heading the All Ladakh Tour Operators Association.

New opportunities brought in new changes in the region but such importing of different conditions have adulterated the place with many things that can prove disastrous for the local community in the long run if not taken care of. With the concept of tourism grasping the common minds of the Ladakhi society, a huge wave of projects and initiatives have poured in by the hands of the governmental authority as well as the Ladakhi society for “infrastructural development” aiming to reach all the possible corners of the region.

With a great deal of a sigh, denoting a deep sense of disappointment, Mr. Deleks stated that people are running towards nature and natural settings for “exploitation” by giving a disguised term of “development” for the sole purpose of benefiting selfishly and associating ourselves with nature almost as in a relationship of “parasitism”. What he perhaps meant is that for the sake of our own survival and betterment, nature and the environment had always been ready for altruistic acts, but that has completely drained or weathered away its own core system, while humans are still going on exploring and extracting more, be it in the form of tourism, industrialisation or even commercial agriculture.

The army made it possible to lay out road connectivity to even the hardest reaches of this geographically scattered region, which in turn made it possible for pollution, waste generation and indiscriminate exploitation of natural resources to plague every corner of this province.

Naturally, all the unbalanced interferences led to a drastic irreversible deterioration in the local environment and climate. As a result, in recent times, Inhabitants have to face a lot of unimaginable situations and circumstances in the form of low yield of agriculture, pollution etc., which if asked to the aged population of the region would ponder upon surprisingly to it’s occurrences. Even though a major part of the population as well as those working in the higher authorities remain blind to the effects brought in by all such unregulated development, and not at least give a thought to flip the coin for seeing a more sustainable way of development, a minuscule group of people have taken the lead to try and update the approach to development from an “abolitionist” ideology to a “conservationist” ideology.

Ladakhis as a community had followed the tradition of conservation in almost every aspect of their lives because of which they were able to survive for centuries in the harsh environmental conditions of Ladakh. Now, slowly, many of them are reverting to the same state of conservation and cooperation with nature.

Takeaway

- Ladakh region has undergone a wave of developments which has taken an unregulated turn with the boom of the tourism industry.
- Government is pouring in huge stashes of money and creating new initiatives and projects without doing a solid future assessment of how these would affect the local community as well as the environment of Ladakh.
- The growing climatic and environmental changes has certainly made this region very unpredictable in weather conditions, which is likely to affect the tourism industry itself in future with rise of incidences of flash floods, harsh winter, and food scarcity brought by the different changes in the ecological balance.
- Some reformation in the form of stricter permits, tourist capping, ensuring quality tourism over quantity tourism etc. are needed, as stated by Mr. Deleks, to break the exploitative run of this system, which has brought more difficulties for local people than benefits.
- Already water quality, sanitation level, pollution etc. have reached a record high in terms of deterioration. Growing climatic and environmental changes will add another layer of challenge to the Ladakhi society and region.

Farmer, Saboo village

“ It was unimaginable that it could rain this much at this place, I still remember clearly that unfateful day,” said the old, stoic Ladakhi man trying to recall the moments he witnessed more than a decade ago, when the first recorded incident of cloudburst and flash flood happened in Ladakh in 2010. Although in recent times, heavy rainfall followed by flash flooding has become more common in the region since 2010, the kind of devastation and impact that one single event of cloudburst rain brought to the region was hard to believe for this resident of Saboo village, located around 9 km from Leh city, which was literally washed away during the 2010 flash floods.

Saboo village sits in between hills, fed by glacier water which merges into the Indus. The residents of Saboo have accepted the fate of flooding, being clueless about what to do or how to overcome this. "The river has given us life as well as taken lives", the words spurted out from the old man's mouth, denoting the inevitable dependence of the community on the river for livelihood and sustenance while at the same time the main playground for destruction in times of incessant rainfall and consequent flooding.

The residents of Saboo village have a deep sense of attachment to their land and the river, but it has somehow been overshadowed by the sense of vulnerability. Hence, when there is less to no rainfall, the residents spend time in the village with an optimistic mind, including farmers, like this old man, who are happy with the usual amount of rainfall for the region. But as soon as an unusual downpour happens, the villagers sense a possibility of danger and start preparing to vacate the place for higher locations in their village or Leh city.

The old man smirked while recalling childhood days and was pointing out how organised and distinct all the seasons used to be, with people simply depending on the natural means for sustenance and livelihood. Many things have changed rapidly in recent decades, which he has witnessed, but from his expression, it was clearly visible that deep down he seemed to know that this "unimaginable" rate of development will come back to us in the form of "unimaginable" serious consequences.

Takeaway

For Ladakh to witness bouts of rainfall and floods has become more common and frequently occurring in recent times.

Because of seasonal irregularity, agricultural production has also been affected with many crops not ripening timely, not giving sufficient yield, or not flowering as before and so on, which has posed a major challenge for farmers.

Institutions such as DIHAR have developed methods of farming that are better adapted to the new climatic and weather conditions of Ladakh, such as green houses and trench farming.

The government has not taken effective measures for the citizens for adaptation to or mitigation of climate change in the region of Ladakh to be better prepared for future climate disasters.



View of Saboo village with the stream flowing it which has inundated many times in recent years.

REFLECTIONS

A night to remember

Because of the El-Nino effect setting on this season, monsoon arrived a bit late around the start of the second week of June from the southwest, delaying the monsoon season in the subcontinent.

2023 had achieved a great deal of feats so far, having one of the hottest summer seasons so far across the world, and so everyone was expecting a lot more sunny days to pass especially in the wake of the El-Nino effect controlling the climate of the regions across western Pacific, including the Indian Subcontinent. But that theory proved wrong, and what proved right was how much the climate has changed that it has become invariably unpredictable.

Talking about the Subcontinent, some regions in the country had seen some of the worst flash floods happening ever in recorded history, brought in by record breaking showers, battering the cities and states this monsoon season.

Because of its geographical uniqueness, Ladakh had historically been deemed for the most part as a dry desert, having less precipitation in comparison to the rest of the country. It wasn't prepared for the kind of heavy torrential rain that it saw on the night of 21st July, 2023.

Quite a lot of rainfall had been happening but people were carrying out their work since it was the peak of tourist season. The rainfall that occurred on that night proved to be unbearable for the city to withstand its effects and within an hour, many of the streets seemed to be full blown streams running with heavy silted water. Many people got stuck and got separated for sometime and there was a sense of panic and urgency among all the residents witnessing this peculiar event unfolding.

I, personally, had to seek refuge at the monastery situated near the Leh palace and saw from the mountain, the city reeling under harsh sounds of water and screaming and clattering of unknown things all over the place. On this night I realised how unfathomable and unpredictable the whole situation had become and how unprepared our society is for something this major that is bound to increase in frequency due to climatic changes.

CONCLUSION

The notion of “change” is very subjective in different contextual applications. “Change” is a gradual transformation that has a constant but almost undetectable progress that becomes prominent and factual with the accumulation of time. With the passing of every century in terms of chronological timescale, so many drastic occurrences of “change” have happened within the recorded history of time. One such drastic event in time was the surge of “industrialisation” that led to the onset of other commercialised and different refined activities that hampered nature’s rate of “change”. Over the last few centuries until now, this unprecedented and unnatural rate of change has resulted in climatic as well as environmental changes that have the potential to change the course of history not just for mankind, but also our Earth.

In recent years, there has been a surge of the results of these “changes” in the climate and environment that are almost apocalyptic in nature and have the power to react dangerously in the form of weather extremes and other associated effects that the inhabitants of this planet aren’t prepared for. Thousands of different living species get affected and sometimes eventually get extinct because of the lack of adaptive capability in the face of the wrath of nature. Humans are no exception in this case and already hundreds are getting perished in the hands of floods, hurricanes, heatwaves and other hazardous changes which are occurring more rapidly than expected.

Some regions across the world are more prone to such occurrences and have witnessed these destructive changes hitting frequently in recent times, plunging the whole ecosystem into extreme disability and imbalance that might become impossible to change in future. One such vulnerable place is the Indian Himalayan region, where ice cover had greatly diminished within the last few decades, resulting in a crucial change in the whole earth's ecosystem, affecting the climate of the planet. Places such as the Arctic, Amazon, and the Himalayas are more sensitive, and act like a warning siren that things are going wrong and if not corrected now, might be too late to do anything later.

The region of Ladakh, situated high up in the Himalayas at an average elevation 3500 meters above sea level, and populated sparsely by different ethnic groups, has been the observing ground of glacial retreat, cloudbursts and other irregularities dotting the seasons of this place, clearly indicative of the prolific changes in the ecological as well as environmental landscape of the region. There is a great deal of scarcity of resources in the Ladakh region, and the occurrence of such changes are proving to be too big for the local population to handle and demand serious attention and cooperation to resolve.

One crucial point that emerged from this study is that governmental and non-governmental bodies are worried about the level of ignorance people have towards sustainability, climatic changes, and the environment in general. Almost everyone interviewed as part of the study expressed their concern over the intensity of the effects of changes that they have to handle in their own everyday life or workplace.

The Agricultural Department is trying hard to adjust the agricultural pattern of the region keeping in mind the unpredictability of weather. Flood-affected village residents are left to fend for themselves even after an event of major climatic disturbances. Tourism groups are worried about the extreme pollution due to excessive tourism and invasion into far reach places in the region affecting the environment. Waste management organisations are running out of breath by seeing the piles of harmful wastes, degrading the natural ecosystem and generating toxic fumes affecting the atmosphere. Wildlife conservation groups are voicing loudly against the wildlife habitat destruction caused by human intervention, aggravated by climatic and environmental changes putting wildlife on the high risk category of vulnerability.

All such overwhelming scenarios being centred around one bounded region, prove true to the notion of “extreme threat” to the overall earth system, happening everyday, all the time, as a result of these “extreme changes” in the functioning of the earth system ignited mainly by human activities and “developmental changes”.

Many enlightened groups and even communities of people consisting of all age groups have understood the state of our complex interconnected world, thanks to globalisation. These small groups in the society have at least started making small adjustments and changes in their own ways to stop this intricate earth ecosystem going into disarray, and they are voicing the urgent need for integrated and immediate action to stabilise this situation that is just a short way from a dystopian reality.