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Revisited: Re-assessing the Present,
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DEVELOPMENT OF INDIA'S MOUNTAINOUS REGIONS REVISITED: RE-ASSESSING THE PRESENT, RE-IMAGINING THE FUTURE

K.C. RATHA

ABSTRACT

This article explains how the race to build the economy, accelerate urbanisation, attain energy security, and connect remote areas have detrimental effect on the Himalayan region's natural environment. This becomes clear by showing how human populations, ecosystems, and industrial waste lead to the release of various toxins and non-biodegradable wastes in mountainous regions. Aggressively implementing a development plan completely disregards the delicate terrain and ecosystem of the Himalayas. Despite the mountains' inherent significance, sustainable mountain development rarely receives the attention it merits. Investing in sustainable mountain development is a top most priority for addressing the existing problems. Therefore, using sustainable development solutions is especially important in mountainous locations. The mountain regions need specific structure of governance and whether the scale and territorial organisation of governance provides this. It is important to understand that the governance process calls for participation from not only official government structures but also from all other organisations that provide social, environmental, and economic management as well as regulatory action. An exploration into appropriate policies and their implementation in the region to fully capitalise on the potential of its natural resources is the need of the hour.

Key Words: *Ecology, Mountainous Regions, Sustainability, Catastrophe, Development.*

KEY RESEARCH QUESTIONS

1. Why development of mountainous regions matters?
2. How the sensitive ecology of the hilly regions and incessant human

interventions makes it susceptible to the whims of nature, along with major changes in physio-climatic conditions?

3. What are the challenges ahead on the way of its development?
4. What is lacking in the government's comprehensive plan to meet the unique requirements of the population particularly in environmentally vulnerable Himalayan zones?
5. What is the need of the hour?

INTRODUCTION

The climate and physiography of India are greatly influenced by its mountain ranges and hill regions, which are also major factors in the socio-economic development of the country's plain areas¹. One of our environment's most delicate and significant ecosystems is the mountain range. Mountains affect individuals who live far away from them since they are the source of rivers. The ecology of mountain regions has faced existential risks in recent years as a result of rapid development. Due to its biological fragility, the area requires unique types of protections to maintain its delicate nature. It is well acknowledged that climate change is the primary cause of the rapid retreat of glaciers seen in mountainous locations. Additionally, growing population pressure and increased human avarice drive people to encroach on forests, mountainous regions, and even ecologically protected areas.

A growing population, increasing water scarcity and desertification, declining water quality, loss of biodiversity, general environmental deterioration, financial crises, political instability, migration, and the expansion of cities are some of the major challenges. Particularly in a nation like India, these difficulties disproportionately affect mountainous regions and the people who live there. Additionally, changes that take place in mountain areas exert an impact that extends well beyond the mountains due to the importance of mountain goods and services. Furthermore, the mountainous areas have strategic opportunities for ensuring sustainable development. The natural, economic, and cultural

aspects of the mountainous areas call for special treatment. As a result, the institutional architecture and governance of these domains are crucial concerns.

THE CONTEXT

Although Indians have traditionally viewed the Himalayas as unbeatable and insurmountable, climate change has significantly impacted them. The larger Himalayan region, known as “the roof of the world,” is home to the largest and most untamed high-altitude regions on the planet. The region is currently known as the Third Pole since these are the largest glacier and permafrost-covered areas outside of the Polar regions. More than 1.3 billion people live in the basins where the meltwaters of this region are channelled by Asia's ten largest rivers. These water resources are crucial for the biodiversity, irrigated and rain-fed agriculture, hydropower, and global atmospheric circulation. The rapid melting of glaciers, which bear significant effects on downstream communities, is the most extensively recorded effect of climate change².

One estimate states that 58.36% of the land is exposed to severe soil erosion, the bulk of which is found in the Himalayas. The Western Himalayan region of Himachal Pradesh, which is included in the report, is described as being ecologically sensitive and fragile. This mountain State (Himachal Pradesh), with its delicate ecology and significant physioclimatic changes, is susceptible to the vagaries of nature. In recent years, cloudbursts have occurred at an unprecedented rate. Snow avalanches and landslides continue to significantly damage both property and human lives despite the government's ongoing efforts to combat natural hazards through relief and restoration initiatives. The state's lifeline, the roadways, are frequently harmed, stopped, or destroyed by one or more natural disasters³.

According to the report, qualitative weighting was assigned on a scale of 0 to 5 for several dangers, including earthquakes, landslides, avalanches, industrial hazards, construction type, and population density.

By determining the risk severity, a district-level matrix was created. The evaluation also factored in the population density that would presumably be impacted. The matrix comprises an assessment of the risks that construction projects like roads, factories, and hydroelectric projects are likely to bring about. The districts of Kangra, Hamirpur, and Mandi are classified as having “extremely high” earthquake vulnerability, according to the report’s developed matrix. Chamba, Kullu, Kinnaur, and a portion of the Kangra and Shimla districts are classified as having “high” earthquake susceptibility, whilst Una, Bilaspur, Sirmour and Solan, Shimla, and Lahaul-Spiti are classified as having “moderate” and “low” vulnerability, respectively⁴.

In Himachal Pradesh and Uttarakhand, flash floods and landslides brought on by the severe rainfall have claimed the lives of numerous people. Climate-related disasters certainly cause a disproportionate amount of harm in some places since they are considerably more vulnerable than others. In the Himalayan state of Himachal Pradesh, cloudbursts and flash floods have increased in frequency in recent years. However, a significant fraction of the death toll caused by natural disasters can be attributed to growing human interference, particularly in environmentally vulnerable Himalayan zones. According to a recent assessment by the Department of Environment, Science, and Technology of Himachal Pradesh, industrialization has over time altered the ecological balance of several physical processes, making mountain areas even more vulnerable to natural calamities. The disruption of monsoon rain patterns has led to an increase in cloudburst-like events, high-energy cyclones, and droughts. Debris is obstructing the major routes as cars and bridges are being carried away by currents. While death and property destruction are the surface results of severe rains, there are a multitude of secondary consequences with long-term downstream ramifications. For instance, sudden closures of schools and transportation hubs cost businesses lost working hours. Allowing livestock and young trees to perish harms livelihoods, affects family budgets, and strains public coffers.

Himachal Pradesh has fragile, youthful mountains that are a

component of the Himalayan range; in future, these fissures and fractures in the rocks could enlarge and cause a rockfall or slope failure zone, a phenomena in which a slope unexpectedly collapses under the force of rainfall or an earthquake. Environmentalists claim that the state is encouraging large-scale hydropower projects in a sensitive and vulnerable area without considering the cumulative effects of all the projects. More than 140 hydroelectric projects have been given to the Sutlej basin, and catastrophes like those in Chamoli and Kedarnath are about to happen⁵. Floods are a result of urbanization's impact on the soil's ability to infiltrate water. Due to this, landslides and flash floods have become more frequent, rendering the region more vulnerable to natural disasters. In the event that the landslide enters the river stream, floods are more likely to happen. The upper Himalayas used to be covered in numerous glaciers, but as a result of climate change and global warming, they have since receded. A glacier contains a lot of loose sediments since it is a moving mass of ice, rock, and soil. According to geologists, the Himalayas' upper elevations include limitless sediments that are composed of an unstable mix of soil and rocks that retreating glaciers left behind. The rocks and debris can be carried downstream with just a little rain in these conditions. The higher Himalayan region is therefore extremely unfavourable for dams and tunnels due to the greater concentration of sediments. An important research by the Intergovernmental Panel on Climate Change (IPCC) on the consequences of climate change has recently recognised glacial retreat in the Hindu Kush Himalayas as a problem. In Asia's high elevations, particularly the Himalayas, snow cover has reduced since the early 21st century, according to the IPCC assessment, while glaciers have thinned, retreated, and lost mass since the 1970s⁶.

Although cloudbursts and flash floods have become frequent occurrences in the Himalayan hill state of Himachal Pradesh in recent years, increased human meddling, particularly in environmentally sensitive Himalayan zones, is mostly to blame for the deaths brought on by natural disasters. Given the youth and fragility of the Himalayan mountains, which include those in Himachal Pradesh, the formation of cracks and fractures

in the rock could lead to the development of a rockfall or slope failure zone—a phenomenon in which a slope collapses abruptly as a result of heavy rainfall or an earthquake. The anthropogenic interference and climate change have made it even worse. According to a government report, the Keylong and Udaipur section of the district had 12 flash flood episodes as a result of a cloudburst with disastrous effects on the Tozing Nallah. Lahaul-Spiti and Kinnaur are both located in the Himalayan ranges, which are notorious for their geological and biological fragility. Higher Himalayas, both climatically and tectonically, are highly sensitive. It appears that only highways are being built or enlarged without taking proper precautions, such as rock bolting, slope stability, or high-quality retaining walls⁷.

The mountainous regions at present witness a strong drive toward a developmental strategy that ignores the delicate topography and ecosystem of the Himalayas. Environmentalists claim that the proliferation of dams, unchecked construction activity in the name of expanding road networks, and careless tree cutting for such infrastructure projects have made the mountains susceptible and prone to landslides. The Char Dham Pariyojana (CDP) and the Rishikesh-Karnprayag Railway Line projects required deep cutting into the hill slopes and the felling of trees which is a recipe for an unmitigated disaster. The numerous dams constructed in Uttarakhand have already caused massive environmental damage. According to experts, the lack of geological research on the fragility of the Uttarakhand Himalayas and the ineffectiveness of experience and knowledge in the government apparatus are the main causes of the unscientific approach used in the execution of such projects⁸.

The CDP is an 889-km road-widening project costing \$12,000 crore that connects the four shrines of Kedarnath, Badrinath, Gangotri, and Yamunotri. It is Prime Minister Narendra Modi's dream project. According to environmentalist Ravi Chopra, the state authorities and construction companies "simply refuse to acknowledge the fragile nature of Uttarakhand Himalayas." Even when weak zones are known, proper attention and geological inquiry are not conducted. This is due to a lack of

planning, execution, and funding for geological investigations and the protection or treatment of landslide-prone areas. Chopra cites the CDP project as an example, saying that “On National Highway-125, 102 out of 174 fresh cut slopes were determined to be landslide prone. By the middle of December 2019, there had been a total of 44 slope failures. The situation is the same on every Char Dham roadway. According to the report, the Char Dham Project alone resulted in the loss of approximately 47,000 trees and about 700 hectares of forest”⁹.

In addition to geographical factors like fragile lithology, unscientific road widening contributes to landslides. It is very important to understand any unwanted changes in the mountains before doing any developmental works. The hill town of Nainital is now more susceptible to landslides due to rapid urbanisation and anthropogenic activities like the construction of roads, parking lots, hotels, schools, and recreational sites, according to a study conducted by the Centre for Ecology Development and Research, IIT-Roorkee, and Forest Research Institute-Dehradun. 15% of the region in and around Mussoorie is “very prone” to landslides, according to a different study done by the Wadia Institute of Himalayan Geology, Dehradun¹⁰.

WHAT IS MISSING?

Ironically, the newly created mountain state’s development is currently taking place largely in the absence of a comprehensive land use plan, as well as environmental regulations and oversights that are sensitive to mountain demands and contexts. Rising air pollution levels and heavy traffic on inadequately maintained roadways are the results. In places that are known to be seismically sensitive, multi-storey buildings are being built without following proper building codes. Building on the scant lands, they have access to precarious slopes and marginalised populations—whether urban or rural—continue to do. The cheapest locations are occupied by shanty settlements with subpar housing and no infrastructure, which puts them at risk from a range of natural disasters¹¹.

The environment and the livelihoods of Adivasis and other people have received scant attention from governments in recent years. They have discovered ways to get beyond the protections that the constitution and legislation are supposed to provide for these vulnerable groups. India at 75 is likely to be an even more unequal, unfair, and conflict-ridden society than India at 50 without a strong, unwavering commitment to upholding these protections and placing communities at the centre of decision-making¹².

Particularly in India, the rapid growth of the country's economy over the past three decades has made it possible to commodify mountain resources (such as forests, water, labour, tourism, horticulture, and even agriculture) in previously unheard-of ways. Because of this, there has been a change in the class system, and a new middle class with aspirations for the nation is now emerging, which sees the Himalayas' unique physical location as both a barrier and the primary means of trade with the nation state. Thus, the variation between active integrationist movements in Himachal Pradesh, Arunachal Pradesh, and Manipur and secessionist movements in J&K and Nagaland express the same conundrum. The current government in New Delhi may be able to throw a few crumbs but seems unlikely to be able to find a means to address the unique needs of the Himalayan people given its ideological militarism, ethnic sectarianism, and dwindling economic foundation¹³.

India has made significant investments in the construction of dams and the expansion of hydropower, mostly in the Himalayan region, especially to reduce carbon emissions for the sake of development. People do not want to put their homes, farms, pastures, woods, and rivers at risk. The majority of this type of development activity is being done in the Himalayas without consideration for its fragility, seismicity, glacier behaviour, climatic changes, and their combined devastation potential¹⁴. Mega hydropower could change several ecological aspects and make an area more susceptible to the effects of extreme events like cloudbursts, flash floods, landslides, and earthquakes. Himachal Pradesh is working to harness mega hydropower as a significant source of "green" power

that replaces energy from fossil fuels. The State's current 10,547 MW of harnessed hydropower potential might be more than doubled, according to the parliamentary Standing Committee on Energy for 2018–19. One scientific estimate warns that avaricious tapping of the river through all planned projects would impound nearly a quarter of its waters in dams and divert a staggering 72% through tunnels. Kinnaur is a focus point for such development, based on the potential of the glacially-fed Sutlej valley. The researchers highlight how excessive seismicity in the Himalayas has resulted in catastrophic landslides and significant harm to hydropower plants. The cost of power generated was underestimated while the potential was exaggerated. Both centre and state governments are not paying any heed to the opinions of experts. Clearly, it is impossible to accurately quantify the costs to individuals and communities, as well as the loss of pristine forests that cannot be made up by poor afforestation programmes. Himachal Pradesh and other Himalayan States must watch as the ecological underpinning of their regions deteriorates as a result of frequent, significant losses brought on by catastrophic weather occurrences. They might still retain many of their natural resources by changing their course. In the midst of a catastrophic year for tourism, there was regrettably insufficient vigilance against going to dangerous locations, which led to the accident in Kinnaur's Basteri region¹⁵.

CHALLENGES AHEAD

The Himalayan region has been encountering multiple risks and dangers, including extensive soil degradation, unequal land rights, resource grabs, and extreme poverty. Numerous issues with sustainability include poor governance, overuse of natural resources, environmental damage, some aspects of uncontrolled or rapid urbanisation, and the loss of traditional culture¹⁶. The government of Uttarakhand claims that purchasing power costs more than Rs 1,000 crore yearly, making it harder for them to carry out their development obligations as more such projects are shelved. Local environmentalists claim that just a small portion of power

generated by the projected projects being developed by private corporations will be used by the State of Uttarakhand. As a result, the State assumes significant environmental risk on its own without receiving proper compensation for it or taking into account its particular difficulties. Although the Centre supports hydropower projects for being a sustainable source of energy, due to the ecological harm and lower cost of solar energy, it is now opposed to new greenfield hydropower projects in the area. However, a number of environmentalists claim that the Centre has frequently changed its stance and will continue to prioritise infrastructural development in the area, even if it has significant negative impact on the environment¹⁷.

Mountain regions are obviously important, yet sustainable mountain development does not get the focus and priority it needs. For resolving the existing issues, investing in sustainable mountain development is of utmost priority. It encompasses increasing awareness of and support for all facets of mountain ecology and civilization, going far beyond monetary considerations. The development of alpine regions is hampered by the harsh climatic and environmental conditions, isolation, and frequently difficult access. The political, social, and economic marginalisation of mountain people is common, and they lack access to fundamental amenities like healthcare and education.

Mountain communities have limited influence on the laws and decisions that affect their life since they are located far from the centres of trade and power, and their voices are frequently ignored. The difficulties they encounter are made worse by current global challenges like climate change, economic advancements, and population expansion. Mountain landscapes and societies are significantly impacted by urbanisation and migration movements. The vulnerability of mountain ecosystems magnifies the negative effects of excessive development.

Numerous mountain regions are now more vulnerable to disasters as a result of recent environmental, economic, and social changes. Millions of people are impacted by mountain disasters, which not only hurt mountain communities but also significantly influence areas downstream.

Destructive natural processes have a significant negative impact on mountains. In addition to avalanches, landslides, debris and mud flows, and flash floods, shifting tectonic plates also create earthquakes and volcanic eruptions. Such phenomena develop into disasters that cause damage, devastation, injury, and death when paired with human actions, especially the building of infrastructure and settlements in risky regions. Poor mountain road building makes soil erosion more likely and is one of the most significant man made causes of landslides. Surface and groundwater drainage patterns are frequently altered by roads, which raises the risk of instability. Sediment generation is increased by high rates of surface erosion. Surface erosion on roadways with no drainage infrastructure rises by roughly 40%. Sediments have a significant impact on the downstream by changing the ecosystem and water quality of streams.

Due to urbanisation and unchecked construction, the majority of forested areas have lost their significance and, in some cases, their very existence. The environmental protection agency is preparing a green roadway on one side, but the highway widening project in Uttarakhand's hilly region has severely damaged much of the greenery there. Landslides are significantly exacerbated by deforestation. The burden on delicate mountain ecosystems is exacerbated by improper agricultural methods and the clearing of mountain forests¹⁸. Mountain communities have been forced to modify their agricultural methods in order to engage in a larger market economy. Many mountain farmers have given up their traditional, diverse agricultural practises and are relying more and more on one cash crop. Agricultural diversity has decreased as a result of the erosion of indigenous knowledge about regional foods and agricultural methods. The stress on natural resources is increased by such unsustainable development patterns, which also worsen the issues of food insecurity and hunger in mountainous areas. The livelihoods in the mountains grow less resilient and are more susceptible to external economic shocks. These delicate ecosystems are put under additional, dangerous pressure by the outside forces that are increasingly exploiting mountainous regions, such

as industrial agriculture, logging, mining, and tourism businesses. Roads and dams can be dangerous if they are not built and maintained appropriately¹⁹.

CONCLUSIONS AND RECOMMENDATIONS

To reduce the harmful effects of mountain roads, increased funding for road construction and restoration, better route design, and better maintenance procedures are required. The stabilisation of the slope above and below the road cut is especially crucial. So, adequate paving, more drainage channels, vegetative filter strips, out-sloping of the road surface to disperse runoff, and narrower road surfaces to lessen road tread should be included in the design of the road. Roads need to be built away from riparian zones, and care ought to be taken to avoid perilous terrain and save delicate slopes. Therefore, it is especially crucial in mountainous areas to use sustainable development strategies²⁰.

The majority of the Western Ghats region should be designated as an ecologically sensitive region, according to the Kasturirangan report, in order to protect it from the harm caused by development activities. Instead of building resorts and hotels in sensitive areas, it is necessary to promote local stays. The population must band together in order to quickly reverse the exploitation of the nature. Citizens may make sure that the government's actions to protect the ecology are implemented with sufficient care. Sustainable development is a key component of the negative effect problem solution. Both the infrastructure and tourism require a strategy that prevents exploitation from occurring. It is necessary to use less materials like plastic and fossil fuels. This has the potential to cut pollution to some degree. Locals can participate actively in conservation efforts by being made aware of the harm that is caused by practises like excessive tourism, careless construction, and pollution. The devastating floods in Kerala are proof of what happens when sensitive ecosystems like mountains are not preserved.

Due to the upper Himalayas' extraordinary vulnerability to both

tectonic and climate change, the establishment of massive hydro-projects should be avoided in the first instance, or else they should be of small capacity. Only scientific approaches should be used while constructing roads. These actions can help to some extent reduce the damage that landslides do. In Himachal Pradesh, Uttarakhand, natural disasters like landslides, cloudbursts, and flash floods frequently occur. Young people and locals have been urging an end to hydropower construction. The government must listen to what the people have to say.

Rising global temperatures and precipitation may lead to more frequent landslides over moraine-dammed lakes. Although it is common knowledge that there are inherent risks associated with building infrastructure on slopes and unstable terrain, authorities typically choose to ignore these risks in an effort to balance public demands for more infrastructure and services. The increased risk and cost should be considered when the government offers tenders for such projects and infrastructure, and the scientific development advice should be effectively implemented.

It is important to consider if the scale and territorial organisation of governance can be developed to give the specific structure of government that the mountain regions require. The need to include all institutions that provide social, environmental, and economic management as well as regulatory action in the governance process must therefore be acknowledged. The potential for new initiatives will increase as these are further developed. But it would not be feasible to create the political environment that enables proper acknowledgement of the role local communities play without rigorous application of the subsidiarity principle, which in turn requires extensive awareness of this local capacity²¹. The policy must also take into account the concerns of the locals who depend on forests for their agricultural and daily needs.

The widespread usage of marble and tile flooring has been linked to numerous ailments that people have reported experiencing throughout the winter. Such materials, in contrast to the conventional elements of wood, stone, and mud, do not aid in regulating the temperature

throughout the seasons. It is also acknowledged that conventional buildings have endured centuries of earthquakes, snow, and hail. It is increasingly important to resurrect and incorporate historic knowledge into newer ideals of development as more and more of these dwellings continue to drain the environment of its vitality, most visibly evident in the unceasing loosening of soil and drying of natural water sources²².

The main causes of flash floods in mountainous areas include snow melting due to climate change and sudden and frequent heavy rainfall owing to cloudburst in monsoon, according to the analysis of various case studies of flash floods in hilly areas such as Uttarakhand, Himachal Pradesh, and Jammu and Kashmir. These force rivers in steep locations to overflow and generate flash floods. It is clear that both cloudburst and heavy rainfall contributed to the numerous flash flood incidents that occurred in the mountainous regions, including Uttarakhand, Himachal Pradesh, and Jammu & Kashmir. Rainfall continues to be the most likely cause of flooding in these three hilly, flood-prone locations because of cloudbursts and snowmelt. It has been established that flooding has a variety of repercussions on both human activity and the environment. Non-structural measures must be used in conjunction with structural measures, notably bioengineering projects. The only way to ensure the proper use of preventative and mitigation techniques is through their simultaneous deployment²³.

In order to reverse the hunger trend and address the causes of food insecurity in highlands, closing the hunger gap between lowland and upland populations, the FAO (Food and Agriculture Organization of the United Nations) study has urged for strong political commitment and effective initiatives. It is crucial to create a supportive, enabling institutional and political environment so that people in the mountains can have access to services like training, information, credit, healthcare, and adequate infrastructure. In mountain areas, where family farming and smallholder agriculture, forestry, and animal husbandry are the predominant farming systems, these factors include family farming,

smallholder agriculture, and zoo-keeping. According to Dharmalingam Venugopal of the Nilgiris Documentation Centre, investments and technical assistance are also required to diversify and enhance mountain agricultural systems by fusing indigenous knowledge and traditions with cutting-edge methods²⁴.

To conclude, it can be said that the Himalayas are unquestionably rich in ecological, recreational, educational, and scientific value. There are a number of issues with sustainability in the area. The current patterns indicate that the region's interventions are not sustainable, and additional unscientific resource extraction is hastening the region's environmental destruction. To re-establish proper balance between corporate interests and ecological requirements, a new paradigm that takes socio-cultural notions into account is required. The region urgently needs appropriate policies and their implementation to fully utilise its natural resources for sustainable development. Apart from that, there is an urgent need for a paradigm shift in the entire scientific community²⁵. It is necessary to create a new generation of scientists who can integrate knowledge systems while operating at the intersection of social and natural sciences. These reasons make it more important to incorporate mountains into educational curricula, at least in those institutions situated in the country's mountainous regions.

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TEMPORALITY AND PERSONHOOD AMONG NAGAS OF NORTHEAST INDIA

KEKHRONGU-U DAZO

THE CONCEPTUALIZATION OF TIME

In most societies, time is conceptualized in two ways. It is understood in terms of the flow of personal life in the everyday, and also in terms of the cycles of planetary movement, of the seasons and the calendar. In *Time and Narrative* (Vol. 3), Paul Ricoeur¹ makes a distinction between 'lived time', which refers to the former, and 'cosmic time' which refers to the latter. Lived time is time as experienced, ordered in terms of a past, present and future; cosmic time is the objective temporality of successions, of events arranged in cyclic order. The two conceptualizations of time, however, are not mutually exclusive, but pre-suppose each other, and this happens in two forms. One is the historical imagination, which Ricoeur understands as "neither a fragment of stellar time nor a simple aggrandizement of the communal dimensions of the time of personal memory"². The other is the mythic imagination, the 'primary function' of which is "to order the time of societies and of human beings who live in society in relation to cosmic time"³. Myth, in his view, unites the cycles of the planets, celestial cycles, cycles of the biological recurrence of seasons, and the linear flows of life in the everyday. According to him, the operator that connects myth and human life and makes the unity of different durations possible is ritual: "it is through the mediation of ritual that mythic time is revealed to be the common root of world time and human time"⁴. Rituals, and the festivals

in which they are embedded, order the experience of the time of everyday through the structure of a festal calendar, thus rearticulating the linear as the cyclic. This is how myth and ritual contribute to 'the integration of ordinary time, centered upon the lived experiences of active, suffering individuals, into the time of the world outlined by the visible heavens'⁵.

Cyclic and linear conceptualizations of time are usually understood to be opposed and mutually exclusive. Thus, Nancy M. Farriss⁶ writes: "According to a cyclical conception, time is a perpetual repetition, corresponding to the diurnal and the seasonal rhythms of the natural world, and the past therefore is infinitely repeatable. In a linear conception, time advances along a path as an irreversible chain of events"⁷.

The cyclic conception of time has been associated with non-Western and pre-modern societies, in which life is supposed to be circumscribed by ritual; whereas linear time – and its narrativization as history – is associated with modern Western-type societies. Thus, as Edmund Leach⁸ puts it, "our modern sophisticated view tends to throw the emphasis on the second of these aspects of time". Contrastingly, in "some primitive societies' time ..." is experienced as something discontinuous, a repetition of repeated reversal, a sequence of oscillations between polar opposites: night and day, winter and summer, drought and flood, age and youth, life and death. In such a scheme the past has no 'depth' to it at all, all past is equally past; it is simply the opposite of now"⁹.

Underlying this distinction between Western and non-Western concepts of time are, as Farriss¹⁰ explains, two important assumptions. The first of these is that the Western concept of time as linear emerged from technical developments such as writing and literacy: both organize the signs of language into linear sequence, with meaning unfolding as the sequence continues till it comes to the point of completion. Supporting this is the way intellectual thought in the West has been linearly ordered, based on cause-and-effect sequences. The second assumption is that the concept of time as linear emerged from 'the historicist theodicy' of the Judaeo-Christian tradition¹¹. Such conceptualization of time, thus, is a product of developments since modernity in Europe. One of its chief effects

has been to create a notion of time as horological, uniform in its progress and measurable by chronometric means, which served to unify time in order to meet the demands of an increasingly organized industrial production system. The Judaeo-Christian concept of time was compatible with this way of thinking: the church day was marked primarily by seven hours which were termed as 'canonical hours' and each of these hours was announced by the sound of the bell¹².

The scripture makes a clear distinction between 'eternal' and 'temporal'. In the Bible, Paul wrote to the Corinthians, "While we look not at the things which are seen, but at the things which are not seen: for the things which are seen are temporal; but the things which are not seen are eternal"¹³. The Christian theological understanding of time is that the former is worldly and the latter belongs to God. There is neither beginning nor end in eternity or in the divine scheme of things: as the Psalmist says 'from everlasting to everlasting'¹⁴, and the book of Job says that a person's days are numbered¹⁵ and the number is 'threescore years and ten'¹⁶. Hence, the biblical concept is of time constantly moving towards the end of the world or the last day signalling the end of time, which constitutes the core idea in Christian eschatology¹⁷.

Farriss, however, does not agree with these assumptions entirely, holding instead that 'linear and cyclical conceptions can coincide within the same cognitive system and often, perhaps usually, do'¹⁸. Her argument seems to bear weight when we look at the conceptualization of time in Naga culture¹⁹, where the festival cycles and the calendar support a cyclic view of time while practices like the erection of stone monuments, Feasts of Merit, forms of body-dressing like tattooing and the wearing of distinctive shawls indicate a notion of personal biography analogous to the historical view of time. We will return to this argument in the section below on linear time in Naga culture. To complicate matters further, there is in the traditional Naga concept of time the almost total absence of autobiographical time: if you ask, for instance, a Naga elder²⁰ his age, he will tell you the name of the festival during which he was born or the agricultural activity that was carried out during his birth. He will connect

it with various social events that are a part of collective memory.

Following Evans-Pritchard, Nancy D. Munn argues that time is ... 'perceived' through a lens of cultural concepts referring to activities rather than experienced through immersion in the activities. But time also consists of the 'rhythms' of basic activity cycles linked to natural cycles as well as each season's distinctive 'tempos'. In this sense, time is understood as 'motion or process, not static units or concepts functioning' to reckon time²¹.

According to Malinowski, the Trobriand Islanders of North-West Melanesia classified time roughly into three groups: The astronomical, the meteorological, and the cultural. The first is based upon the observation of the stars, sun, and moon; the second upon recurrent changes in wind and weather; the third on human seasonal pursuits²². As we will see, the Nagas too relied largely on these three major elements for time-reckoning. For the Nagas, time is understood in terms not of individual experience but the collective experience of the community. This is crucial in understanding the correspondence between the notions of personhood and time, as memories of the community's past generate a distinct communal identity shared within that cultural space. The Naga understanding of temporality is structured in the performance of traditional rituals. In this way, their understanding of time is part of the larger practice of preserving and transmitting the cultural knowledge and customs of the community. The preservation is attained through ritual practices and the ritualized acts of reiterating the dances, songs, and tales – for instance, in the Morung. These collective performances actually work to implant in everyone's mind the values of the community that are unique to their specific village. And, as we have already stated, it is in performing these rituals that one becomes differentiated as belonging to a specific tribe, clan, or even village.

CYCLIC TIME IN NAGA CULTURE: THE FESTAL CALENDAR

The yearly cycle of the Nagas can be roughly classified into the triple structure that Malinowski notes among the Trobriand Islanders, that is, astronomical, meteorological and cultural. The sun and the moon play a significant role in the Naga lunar-solar system²³. The measurement of time is done by the collective observation of nature, as opposed to the universal homogeneity of time in the Gregorian calendar. The day ends with the setting of the sun and a new day begins with the dawn ushered by the crow of the rooster. A story of the Pochury Naga tribe²⁴ describes how Tusatshu, who was possibly an ancestress, kept track of time when her husband abandoned her in the forest: “whenever the cock crowed she would know a new day has dawned”²⁵. The location of the sun and the position of one’s shadow serve as a reference for the time of the day. For everyday activities, the direction of the sun is usually the key to know when to eat the midday meal and when to leave for home after the day’s work in the fields is complete. Time is also reckoned by the waxing and waning of the moon. All agricultural activities and festivities are usually timed just after or before the attainment of the full moon. However, it has to be kept in mind that the process in which time is reckoned is different in every Naga village²⁶. Generally, among the Chakhesangs, *Siikriinye* or *Tsiikhenye*²⁷ is celebrated at the end of January or in the first week of February. In their calendar, festivals are celebrated based on the day of the full moon. *Ngunye* festival, which marks the start of the jhum cultivation, is celebrated on the third day after the full moon in the month of April. While among the Sakraba²⁸ village from Chakhesang tribe, *Siikriinye*, or the sanctification festival that marks the onset of a new agricultural cycle, is celebrated on the second day after the full moon in the month of February or March. If it falls in the month of February, the festival will be observed on the fifth day after the full moon.

The second pattern is the meteorological notion of time. The temporality of agricultural activities depends on many things, of which season is the most important factor. Conversely, seasons are demarcated

based on the activities carried out during the period. Malinowski views time-reckoning as a means of 'coordinating activities', dating events, and gauging the length of time spans²⁹. There are four seasons, but they can be roughly divided into three categories depending on the growth of the vegetation: the dry, the wet, and the windy. Among the Nagas, these seasons are given utmost importance. For instance, according to Sakraba village, just before the onset of the windy season, when cherry, apple and peach trees blossom, is the time for the sowing of maize and chilli seeds. The seasonal changes in trees as well as the call of various birds signal the onset of seasons. Similarly, the call of the bird *sunjojo* is a sign to sow maize, while those of *hetu*, *tsunkhuru* and *khasotsapu* signal the time to sow rice. As in other Naga tribes, the calendar of the Chakhesang Nagas is based on the work that is carried out during a particular season. Time-reckoning is a significant practice that helps the Nagas know when to cultivate crops and perform rituals accordingly. Hence, the time of sowing is reckoned based on both the movement of the celestial constellation, seasonal signs and the call of animals and birds.

Let us now turn to the third pattern, that is, the cultural. The annual calendar is structured on the basis of the various festivals that fall in specific months. The festivals are based on the agricultural activities associated with the season, which is itself determined by both planetary configurations and changes in nature, so that the astronomical, meteorological and cultural patterns are inextricably interwoven with each other. The onset of these agricultural activities and festivities are normally announced by call of birds. The annual calendar, however, is not uniform for all tribes, but may vary widely. As an example, we will look at the Chokri³⁰ annual calendar.

The Chakhesang year is divided roughly into 12 months, with each month consisting of thirty days. Like other Chakhesang people, the Chokri name their months after the principal festival. The year begins with a month that falls between March and April and ends on a month between April and May. The duration of each month is tentative and not fixed. In Chokri language *nye* means festival and *khri* means month. Every village

has its own way of reckoning months, and the version below is from Sakraba village which was collected by the researcher during her field research which took place in segments during the period 2015-2018. The Chokri month is given along with the Gregorian month it corresponds to, and the festival and/or the activity it is associated with.

1. *Thurinyekhri* (December/January): *thuri* literally means rice. This is a festival that marks the harvesting of paddy.
2. *Siikriinyekhri* (January/February): *Siikriinye* is a sanctification festival, and the *genna*³¹ performed during it is to ensure good health of the community.
3. *Khriikhri* (March): It literally means new moon. It is an intercalary month, to make adjustments to the calculation of the year. With the coming of the new moon after *Khriikhri*, a new year begins.
4. *Ngunyekhri* (April): *Ngunye* is celebrated after the sowing of the jhum cultivation. It is celebrated to appease the spirits for protection of the crops.
5. *Tukhanyekhri* (May): *Tukhanye* is the festival that marks the end of leisure, when everybody in the village prepares for the work that is ahead of them. On the first day of the festival, the first rooster to crow is sacrificed by the village priest early in the morning. There is no specification of the exact time to begin this ritual. In this festival, all the men in the village who are old enough to carry a spear go to the village spring and take bath. This is done to purify themselves before any living creature pollutes the water. They begin the ceremony by wearing new clothes and invoking the blessings of the spirit for strength, long life and good harvest.
6. *Tukhuswukhri* (June): *Tukhuswu* means rice transplantation, and the month is the time for cultivation of paddy.
7. *Chushokhri* (July): *Chushokhri* signals the time for the village priest to bless the new crops³² before they are collected and brought home.
8. *Chunyekhri*/*Khuthonyekhri* (August): *Chu* means 'millet', so *Chunyekhri* means the month of the millet festival. *Khuthonye* is

the festival that marks the completion of terrace cultivation. The festival is intended to appease the spirits so that they bless the crops. It is a time of relaxation when people regain the energy expended in the work of cultivation.

9. *Turhinyekhri* (September): In essence, the word *turhi* means 'craft'. So, *Turhinye* is a festival in which women weave and men make handicrafts. This is the only festival that does not prohibit work. In this festival, everyone in the village cleans the *ketsieba*³³ and the roads leading to the paddy fields.
10. *Thurishokhri* (October): This refers to a *genna* performed before the harvest by the village priest, in order to appease the spirits to protect the paddy (*thuri*).
11. *Ucedukhri* (November): The exact meaning of the word is not known, but it refers to the time of the year when new houses are built and old houses are renovated by performing a *genna*, which is initiated by the village priest.
12. *Khilunyekhri* (December): The main purpose of *Khilunye* is to perform a *genna* at the village gate for the long life of the villagers and protection from all calamities and disasters. This *genna* is performed by the village priest, after the completion of all agricultural activities.

There is, as we have stated, considerable variation in the calendars of different tribes. While there are 12 months in the Chakhesang year, the Chang Nagas reckon only 11 months and fill the gap with an intervening time called *Naklid*³⁴, which derives from *nak* meaning 'dark' and *lid* meaning 'month'. For the Lothas, who have a 12 month calendar, an intercalary thirteenth month is inserted every three or four years to correct the calculation. As for the *Naklid* of the Changs, it is taboo to speak about this intercalary month³⁵. The Lothas' month *Rongrongyi*³⁶ is literally the harvesting month when the villagers are busy going back and forth carrying the crops to the village. Likewise, *Ndri*³⁷ is the month when *ndri* flower is in full bloom³⁸. In my conversations with village elders of Sakraba village³⁹, I found no unanimous agreement on the exact month when the

new year begins. According to them, *Khrisikhri*, which literally means a new month⁴⁰, is understood as an intercalary month when an adjustment to the calculation of the year takes place. The Chakhesang Nagas believe that with the coming of the new moon after *Khrisikhri*, *Tukhanye*⁴¹ is celebrated leading to the start of a new year. This means that the new year for the Chakhesang Nagas might fall in the month of May.

Hutton records that the Sema or Sumi Nagas have 12 months in a year with no intercalary month, except in the Dayang Sema villages. However, he also states that "...the Sema finds it difficult to say offhand either the number of months in the year or their names, and can only get them in order by a deal of thought. Even then, he generally gets the number wrong, and one is often assured that there are ten months in the year or sometimes even thirteen"⁴². In an earlier passage, he notes: "...the reckoning is both vague and rather arbitrary as it is not written or recorded in any way, it can be roughly corrected from time to time by the arbitrary rulings of the 'old men who know,' the unofficial and decidedly untrustworthy trustees of the calendar. It is regarded as *genna* for the younger men to attempt to keep the reckoning"⁴³.

Hutton's puzzlement and the condescension with which he treats the 'trustees of the calendar' are typical of the outside observer who fails to understand the logic of local practice. As the variations and the tentativeness of calendrical divisions show, the structuring of the year is based not on a rigid and objective system but one that is attuned to the contingencies of practice. As Clifford Geertz notes of the Balinese lunar-solar calendar, the "fact that it is (loosely) anchored makes it rather more handy in agricultural contexts, so that planting, weeding, harvesting, and the like are usually regulated in terms of it"⁴⁴. What appears as arbitrary to the European anthropologist, whose idea of the structuring of the year is based on the objectivism and homogeneity of the Gregorian model, is practically expedient for his Sema informants, and as definite for them as the Gregorian calendar is for him. The calendar, writes Bourdieu, is 'one of the most codified aspects of social existence'; but the coding does not necessarily follow a logic that is rigorous or uniform. The anthropologist's

rationalization of calendrical practice in terms of a schema that can be neatly assembled on paper may differ radically from how the informants understand it, leading to what Bourdieu calls the 'synoptic illusion'. In comparing the anthropologist's rationalization and the cultural knowledge of the informants, Bourdieu writes: "... a calendar substitutes a linear, homogeneous, continuous time for practical time, which is made up of incommensurable islands of duration, each with its own rhythm, the time that flies by or drags, depending on what one is *doing*, i.e. on the *functions* conferred on it by the activity of progress"⁴⁵.

It is the difference between theoretical reflection – what Bourdieu calls 'objectification' – and a practical knowledge arising out of the dispositions of the habitus that link objective codes and subjective acts. In the structuring of the year based on activities rather than homogeneous units of time, what is emphasized is the *quality* of specific periods and not their *duration*. For a Gregorian system based on Judaeo-Christian notions of teleology and eschatology, in contrast, what is emphasized is the question, does time exist and can it be measured objectively? This is what lies at the heart of Augustine's aporetic reflections on time, as Paul Ricoeur notes in *Time and Narrative* (volume 1), "The solution to the aporia of the being and non-being of time through the notion of a threefold present continues to be fragile so long as the enigma of the measurement of time has not been resolved"⁴⁶. Among the Nagas, as Geertz writes of the Balinese, calendrical notions "...are largely used not to measure the elapse of time, nor yet to accent the uniqueness and irrecoverability of the passing moment, but to mark and classify the qualitative modalities in terms of which time manifests itself in human experience"⁴⁷.

The calendrical schema, Geertz continues, "cuts time into bounded units not in order to count and total them but to describe and characterize them, to formulate their differential social, intellectual, and religious significance"⁴⁸. The point is also made by Nancy Munn, who, drawing on the work of Henri Hubert, writes: "The calendric periodization of time, established in religio-magic practices, segments time but does so qualitatively: Periods are defined by specific social activities or 'facts' whose

particularities and varying intensities give 'active qualities' to these categories of duration. Calendars do not so much measure time as give it rhythmic form"⁴⁹.

For the Nagas, time is not experienced as objectively structured moments, and this was brought home to me when I happened to ask an elder from Sakraba village his age. Uncertain about the date on which he was born, he could only tell me that it was perhaps in January as he was born just before the *Siikriinye* festival. Regarding the year, it was possibly 1945, during the Second World War when the Japanese soldiers arrived in the region. Clearly, the significance of time even for his personal life was in terms of public memory, either as the cycle of seasons or as a momentous occasion – in a word, its *quality*.

The ritualization of agricultural activities is one way of investing calendrical divisions with quality and significance. As we have seen among the Chokris, months are associated with festivals and the performance of ritual *gennas*. In some Chakhesang villages, the ritual task of initiating the sowing and harvesting of crops is assigned to specific individuals selected by the village. Customarily, a man is appointed to inaugurate sowing, while a woman inaugurates harvesting. This task is considered to be sacred, and persons who take up this role should not eat tabooed food⁵⁰, which would bring harm to the village. This role also restricts the person from doing things which might bring bad luck to the village⁵¹. This appointment is normally short term, as the stringent food taboos and restrictions on activities are difficult to observe for longer periods. In the case of the Sakraba village only one person is appointed to perform this job. He is called *Tsiakra*, literally meaning 'the first person to sow the seeds', and is appointed for a period of one year.

The non-linear conception of time among the Nagas is evidenced in a belief regarding generational relations, which we have referred to above. The Nagas' understanding of their ancestors is that they are still around to guide the village and it is even possible to interact with them. A small portion of the food cooked is usually left aside for the ancestors. Similarly, after every festival, the feast-giver has to offer a portion of the food to

them. This construction of the relationship between the ancestors and their living descendants clearly indicates how the past and the present are perceived as nonlinear in the Naga society. It is believed that when they die, people go to the village of the dead, which is not in some other world but in that of the living. It is just another village which is demarcated by a cave or a river⁵². Among the Sakraba village, when someone dies, it is customary to put in the grave some food and agricultural tools and seeds needed to start a new life in the village of the dead. Nagas believe that the spirits of the dead visit the village of the living, but not the other way round as the demarcation between the land of the dead and that of the living is a liminal space which no living person may enter. Only a shaman or seer can enter the village of the dead and come back alive, which he must do to converse with the dead about the future of the village. There is also a belief that the spirits of the ancestors reside in the memorial stones erected for them.

LINEAR TIME IN NAGA CULTURE: RITES OF PASSAGE

The cyclic conception of time is, as we have stated above, commonly understood to be incompatible with the linear conception of time: "While not actually defined as mutually exclusive, the two modes are presented in terms of an either/or opposition that is not productive at this stage of our understanding"⁵³. In every society, the past serves as a resource for the present and future – of course, to varying degrees of adjustments with the cyclical view. Therefore, as Farriss argues, they may coincide in the same culture. They coincide, perhaps, in dialectical fashion: awareness of the passage of time inserts the everyday in the structure of recurrence, just as the structure of recurrence establishes the symbolic contours of everyday existence. This understanding seems to be implicit in a passage in Geertz's essay on time in Balinese culture, where he reflects on human awareness of time: "There are many ways in which men are made aware, or rather make themselves aware, of the passage of time – by marking *the*

changing of the seasons, the alterations of the moon, or the progress of plant life; by the measured cycling of rites, or agricultural work, or household activities; by the preparation and scheduling of projected acts and the memory and assessment of accomplished ones; by the preservation of genealogies, the recital of legends, or the framing of prophecies"⁵⁴.

While Geertz's first two clauses that I have italicized refer to a pattern of eternal recurrence, the last two refer to time's passage. Geertz's meaning could be that these are alternative and mutually exclusive ways of reckoning time, or it could be that they coexist in dialectical relation: I take it to mean the latter. Maurice Bloch, in a discussion of the essay, holds that Geertz points to but underplays such a double-conception: "It seems therefore misleading to say that the Balinese have a non-durational notion of time. *Sometimes* and in *some* contexts they do, sometimes and in other contexts they do not, and those where they do not ... cannot honestly be called unimportant"⁵⁵.

Naga culture clearly shows the coexistence of both conceptualizations, time as recurrence and time as progress. In the following paragraphs, we will discuss some of the practices that evidence the latter conception.

Perhaps the most important of these is the tracing of genealogies through origin stories. All Naga tribes have origin stories that trace their descent from an ancestor figure or from a specific location. Thus, the Aos and Semas believe that they originated from the earth at Lungterok, a place sacred to their collective histories. In recent times this has been celebrated in a poem by Temsula Ao, who traces their ancestry to three men and three women who emerged from the earth. This poem is titled "Stone People of Lungterok":

... the progenitors
And forebears
Of the stone people⁵⁶

When an Ao scholar, Putongzuk Longchar questioned this origin story based on their migration history, he was fined by the Ao village councils. "Since then, Ao authors have become somewhat cautious in disputing the myth of Lungterok or six stones"⁵⁷. The anecdote shows the persuasive

force of the origin stories in shaping ideas of Naga personhood, even at a time when the traditional notions seem to have lost their relevance. Many tribes, such as the Angamis, Lothas, Tangkhuls and Maos, trace their origin to Meikhel, a village ten miles south-east of Kohima. A Mao Naga story traces their origin to an ancestress Dzllia Mosla, who was impregnated at Makhel by a cloud and gave birth to spirit, man and tiger. After her death, the siblings lived together for a while and then went their separate ways. There are heroic tales of individuals who represent their tribes in collective memory. A Zeliang story recounts the victory of Asa over Haipome, the territory of a dreaded two-headed creature, and how Asa became one of the most powerful kings in Zeliang history⁵⁸. Similarly, a Rengma folk tale tells the story of a famous warrior named Nzonthegipu who defeated many kings. With no mortal strong enough to challenge him, he decided to challenge the gods. His sense of invincibility got the better of him and he was never heard of since then⁵⁹. A Sangtam folk story presents the marriage between a spirit and Venthsen, who gives a Feast of Merit to the entire villagers with the help of his spirit wife⁶⁰. While one may question the historical authenticity of such stories, they do represent an understanding of time as durational, linking the present to an imagined past; or, to put it more precisely, they construct a past that serves as a symbolic resource for the present. Cosmogonies, or stories of origin, writes Eliade, return the community to a mythical time in an endless cycle: "The sacred time periodically re-actualized in pre-Christian religions (especially in the archaic religions) is a *mythical time*, that is, a primordial time, not to be found in the historical past, an *original time*, in the sense that it came into existence all at once, that it was not preceded by another time, because no time could exist *before the appearance of the reality narrated in myth*"⁶¹.

Yet, as the anecdote about the Ao scholar who disputed the Lungterok myth shows, the dividing line between history and myth can become blurred when the construction of personhood is staked on the conception of time. On this view, stories of origin constitute both cycles of recurrence and the progression of time linking present and future to imagined pasts.

The practice of tattooing of the body is another important way in

which linear time is factored into a consciousness of cyclic time. Naga tattoos are literally inscriptions on the body that narrate the person's embodied history. They serve as marks identifying a person's tribe, clan or village. They also record personal accomplishments, a history that is literally *bio-graphia* or the writing of a life. Among some Nagas tribes, tattoos signify the achievements of a warrior in head-taking while some others believe that their tattoos would provide a safe passage on their journey to the afterlife⁶². Some Naga tribes such as Chang Naga women are tattooed during every stage of their lives. A diamond shaped tattoo is inked on the forehead of young girls about two years before they reach puberty. This is believed to prepare the girl to become mature, and she can get married two years after this is done. Ayinla Shilu Ao recalls how girls of her grandmother's generation had tattoos inscribed continuously for five years of their growth into maturity: 'first on the calves, then chin, chests, fronts of the shoulders, knees, wrists and stomach'. On getting married, 'the wrists were the only parts of the body that could be tattooed'⁶³. The practice of tattooing transmits a vast body of knowledge and serves to map the milestones in the history of individuals and of the village. This is one of the ways in which the Konyaks and the Aos document the history of their village.

Yet another device by which Naga cultural practices indicate the passage of time are stones, which serve as records of migratory histories and origin myths. Naga stones tell, or told, many types of stories. Some stones mark the origin and dispersal of tribes and sub-groups, while some are characters in legends of war...; then there are the magic stones that generate tales about those who use or abuse them. Social memory is also inscribed in the large memorial stones dragged and set up to mark the performance of a feast of merit, while smaller stones stand as memorials to characters in tales and legends⁶⁴.

In the Ao and Sema origin story referred to above, Lungterok, from where they believe they have originated, literally means 'six stones'. Similarly, the stones of Mekhel are associated with the ancestors of the various tribes before they dispersed. While among the Angami origin story,

the place of origin is believed to be from Khezhakeno village⁶⁵.

These may be imagined accounts, but there are actual stone monuments that stand as their testaments. Thus, the Angami story is corroborated by an actual stone that still exists at Khezhakeno village.



FIGURE 1: *TAWUTSO* MEANING MAGICAL STONE (PHOTO BY KEKHRONGU-U DAZO)

At Chunglimti, even today one can find the ‘six stones’ or Lungterok, from which the Aos originated. As Michael Oppitz writes: “The land of the Nagas is liberally strewn with such stones – monoliths among the Angami, say, natural rock formations among the Ao – which have become the subject of myths and legends, or are attributed with special powers”⁶⁶. Today, these stones provide a spatial image of the past events which are perpetuated by memory. (See Figure 2 and 3).

Figure 2 shows such stone monuments found at Khezhakeno village, while figure 3 shows two stones bound together symbolizing Sopf!nuo and her son. Sopf!nuo was a beautiful girl of Rukhroma village, who, as legend has it, died with her son in a forest when she was going to her father’s house. She appeared in her father’s dream, and told him: “if I become a piece of wood, I will become rotten and mingle with the earth; so I must become a stone”⁶⁷. Stones erected in stone-pulling ceremonies mark achievements of individuals, or are memorials to their ancestors. Thus, a person who has successfully given a Feast of Merit is allowed to pull a stone to commemorate his new status.



**FIGURE 2: STONE MONUMENTS AT KHEZHAKENO VILLAGE.
(PHOTO BY KEKHRONGU-U DAZO)**



**FIGURE 3: SOPFIINUO AND HER SON AT RUKHROMA VILLAGE.
(COURTESY: OFF TRACK-NAGALAND)**

The Feast of Merit, in the way it is structured, is also an indication of the passage of time. Each time the feast is given, the giver is entitled to wear a particular type of shawl and have a particular type of horn erected on the roof of his house. This sequential structuring, signifying the personal growth of the giver's status in time, is an indication of how biography is factored into the construction of personhood even as it is downplayed in the larger cultural context. The feast can be offered as many times as the feast-giver decides. A man in Sakraba village performed the feast of merit 12 times⁶⁸. After the eleventh time both husband and wife were honored with the clothes of young people symbolizing their return to youth, which is considered the greatest honor for a feast-giver. Thus, the linear time of the progression of Feasts of Merit is symbolically re-articulated as cyclic recurrence.

If the origin stories, tattoos and stones connect the present to a real or imagined past, the Naga practice of dream as divination links the present to a foretold future. Hutton in *The Angami Nagas* notes that, "of all forms of second sight dreaming is the favourite and the best. The Angamis have almost a science of dreaming, and it is practised in particular by old women, who take fees for dreaming"⁶⁹. Dreams come to individuals, certainly, but their interpretation is coded in accordance with a collective semiotic that is as objective, to use Hutton's metaphor, as a science. The collective interpretation of dream is yet another instance of how the personal is downplayed in Naga conceptions of time and personhood. As Michael Heneise states: "Dreamers can draw truths about the world from a spirit-mediated realm of knowledge. At a first level, dreams reveal signs that may be interpreted in the course of remembering and publicly narrating. It is incumbent upon the dreamer to remember their symbolic arrangement and to consult a memorised lexicon of meanings accrued through personal experience and through the shared experiences of others"⁷⁰.

Dreams pertain to the future as an indication of what decisions to take in the course of everyday life, thereby linking the two. The night before the men of the village go on a hunt, every hunter consults his dream to know if the expedition will be successful. In the naming of newborn

babies, choosing a site for a new house, or a new field for cultivation, determining the reason for a drought or calamity – in all such instances the services of a professional dreamer are sought. Dreams also play a significant role in marriage negotiations. The Naga dream was a form of collective conduct that bound present and future in the social constitution of personhood, just as the origin stories and memorial stones bound present and past: “The anthropological study of dreams, which generally focuses on the interpretive practices that surround dream narration, can elucidate local notions of personhood, cosmology, and the myriad ways communities appeal to the supernatural when navigating everyday social problems”⁷¹.

Dreaming of someone wearing new clothes is a sign of impending death; dreams of cutting hair or pulling out a tooth are signs of impending illness; dreams of being shabbily dressed foretell humiliation; dreams of dead persons foretell danger, to warn of which the spirit of the dead appears. It is not in the practice of Nagas to ignore bad dreams like these, and it is considered imprudent not to take steps to avert the eventuality foretold. The practice of dream as divination exists in the everyday life of the Nagas even today⁷². The church prayer groups often relate their dreams to the church congregation in order to convey the message of God. Bound to a cyclic conception of time, which the sacred nature of the dream suggests, Nagas of the past, as Farriss says of the Maya, did not simply accept the inevitable and become “helpless spectators”⁷³. In their genealogies of origins and heroes, their records of personal achievement, their rites of knowing the future, and ritual strategies to turn that future to their advantage, they tried to modify in the course of everyday life the inevitable recurrences of cyclic time. The *gennas* that are performed are another instance of this convergence of the sacred and the everyday in the linear inflection of cyclic time. A *genna*, primarily, is a ritual act undertaken every time the outcome of something is uncertain: before sowing or harvesting, at the beginning of a new month or a new season, during a time of drought or epidemic disease. As part of the sacred it refers to the mythic time of cycles, as the recurrence of different types of *genna* throughout the annual calendar shows. Yet, as a means of averting

negative outcomes in reality, it refers to the course of everyday existence and its mundane activities. Such a double articulation, bringing into coincidence linearity and cyclic recurrence, characterizes the Naga conceptualization of time.

Colonization and Christian conversion has inevitably impacted the cultural practices of the Nagas. Like any other Naga practices, the Naga notion of time has also undergone change to accommodate the new meanings. However, the traditional understanding of time has not lost its significance but continues to exist alongside the modern conceptualization of time. This is because the Naga traditional customs and festivals are still practiced in a symbolic form. As a result of conversion to Christianity, in which time is understood as linear and eschatological, the two concepts of time exist alongside each other, much as the way personhood is reconstituted. For instance, the agricultural festivals are still celebrated among the Nagas without the rituals. Likewise, the tracing of genealogies through origin stories is another example. The anecdote that I mentioned earlier about an Ao Naga scholar who was fined by the Ao village council because he disputed the myth of Lungterok, shows the persuasive force of the origin stories in shaping ideas of Naga personhood, even at a time when the traditional notions seem to have lost their relevance.

CONCLUSION

Culture, as Clifford Geertz has argued, is what connects a society's construction of personhood to its conceptualization of time and the conduct of its members in the domains both sacred and everyday. Our basic argument in this paper has been that the Nagas traditionally had a double conception of time, as both cyclic and linear. The stress, however, was on the cyclic, just as the stress in conceptions of personhood was on dividuality. The two are related: to believe in the recurrence of time, either as supernatural order or fate, is to emphasize acceptance of the irreversible rather than attempting to revert it through individual will. But no human society can survive under the absolute irreversibility of events, and the

absolute suppression of the will to change one's state of existence. It is in the life lived from day to day, the linearity of time, that the Nagas sought, as Farriss writes of the Maya, to "keep time and the cosmos in orderly motion"⁷⁴.

The conception of cyclic time derives primarily from the Naga festal calendar, which, of course, was not uniform but varied from tribe to tribe. The calendar arranged all activities pertaining to everyday existence – working on the fields, sowing, harvesting, weaving shawls and making artifacts of daily use – in punctual units that recurred from year to year. Two important characteristics emerge when we examine the calendar. The first is that these units, or months, are not necessarily of the same duration, and the number of months in a year differs from tribe to tribe. The second is that the divisions that mark them off are provisional, and it is difficult to say precisely when one month ends and another begins. These two characteristics indicate the major difference between the Naga calendar and the Gregorian calendar, which is assumed to be universal with divisions that are fixed and rational. To the mind of a Eurocentric observer like Hutton, this was a most confusing state of affairs compared to the rationality of European time conception. But Naga time reckoning, as we have argued, followed a different logic or rationale: it was the logic of practical action, which took into account the contingencies of natural conditions the outcome of which could never be fully anticipated nor accounted for. The Naga calendar was, given the Naga's cosmological environment, pragmatic, and adjustments in the cycle of recurrence were a way of following what works best.

It was because of such imperative that Naga time consciousness had to insert the linearity of day-to-day existence within the irreversibility of cyclic time. Some of the components of the sacred – dreams and *gennas* – expressed this double articulation in its most succinct form: structuring human activity in terms of recurrent patterns or codes, they were also the means of negotiating the problems of daily life. Other components of Naga cultural practice, such as the recitation of origin stories and legends, the erection of stone monuments and the Feasts of Merit, expressed the

consciousness of the passage of time linking past, present and future in the progress of both individual and collective life. It was in the fine balance of these two conceptions of time, the linear and the cyclic, that the Nagas adjusted their quotidian relation to the time and order of the cosmos, and their existence as persons in the collective life of the tribe.

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14. KJV, Psalm 90:2
15. KJV, Job 14:5
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17. Apostle John paints a vivid picture of the end of the world in the book of Revelation (or sometimes referred to as the Apocalypse).
18. Farriss Nancy M (1987) *op cit.*, pp 566-593, 569.
19. I collected data from the Chakhesang tribe. The villages I went during the years w015-2018, for my data collection are Sakraba, Khezhakeno, and Thiipiizu village.
20. Like most other Naga elders, even my own father does not know the month or year of his birth. According to his parents, he was born during the harvesting of job's tears (*coix lacryma-jobi*) which falls in the month of March. Among the Nagas, another major event to calculate their age is the arrival of the Japanese soldiers in the Naga Hills. My father was about three or four years old when the Japanese arrived. Hence, he claims that he was born in the year 1940.
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23. Ibid. pp. 203-204.
 24. The name of this tribe, which was officially recognized only recently, is derived from the names of the villages to which they trace their origin, Sapo, Kechuri and Khury (Bareh 2001).
 25. *Fables From the Misty Mountains: Folklore of the Nagas*. (2009): LSB publication.p. 168.
 26. The reckoning of time varies from village to village, and even within the same village from year to year, based as it is on natural conditions. Thus, the inhabitants of a village which has a colder temperature may be struggling through a harsh winter while those of a warmer village may be already encountering a new month which allows them to start their new agricultural activities.
 27. *Tsikhenye* is a Khezha word referring to *Süikriinye*. Some of the languages which are spoken by the Chakhesang tribes are Chokri, Khezha and Sapu.
 28. Sakraba is a village in Chakhesang tribe. Chakhesang is a tribe in Nagaland.
 29. Malinowski, 1927. *op cit*. p 203.
 30. There are three major linguistic groups among the Chakhesang Naga tribes, of which the Chokri language is one of them.
 31. Meaning forbidden or prohibited.
 32. Green vegetables and other crops
 33. Seating areas between the village and the field
 34. I learnt from Chollen, a Chang friend, that in recent days *Naklid* falls in the month of July.
 35. This intercalary month is normally not counted as a month. It is believed that this period of time does not belong to human beings but the spirits.
 36. corresponding roughly to October.
 37. corresponding to February .
 38. Mills 1927, p. 226
 39. Sakraba is a small Chakhesang village which is located in Phek District of Nagaland in the Northeast of India. The elders of Sakraba village (there was no fixed number; sometimes five or six people would gather and other times there would be just one of them) whom I had met and interviewed every once a year from 2015-2018 are all male. In my effort to include some women in the interview, most of them had either asked me to talk to their husbands or had referred me to the male elders in the village by just saying “men would know better” or “men have better memory”. Interestingly, in another Chakhesang Village (Thipuzu), an elder who was also the chairman of an important Chakhesang cultural organization warned me that I should only get my information either from them or from people approved by them who are mostly male.
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49. Munn 1992, *op cit.* p 95.
50. For instance, animals killed by wild beasts
51. They cannot work in their fields thirty days prior to the first sowing and reaping. They are forbidden to hunt, or to touch rats, mice, squirrels and other animals killed by beasts of prey.
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COMPULSIVE MIGRATION TENDENCIES IN MOUNTAINOUS
REGION OF PAURI GARHWAL DISTRICT:
AN INVESTIGATION INTO DEPLETING SOCIO-
ECONOMIC PHENOMENON

PIYUSH SRIVASTAVA and SHASHIKANT KUMAR

ABSTRACT

The increasing phenomenon of centralization has changed settlement patterns, particularly in the hill region. The changes in urbanization, employment, and opportunities in urban areas have accelerated both national and inter-state migration of people across regions. The study examines the causes and impact of out-migration on the socio-economic character of the region in the Himalayan mountain region, specifically focusing on Pauri Garhwal District, Uttarakhand state, India. Different news media, government official and local bodies reports have been consulted in this study. Data analysis of census and different official data was conducted to find out the sample area of the study. A subsequent field survey has been conducted to find out the causes of the out-migration in the study villages by interviewing local people.

The reports on out-migration in Uttarakhand state (2011) show that there were 1,048 uninhabited villages and 734 villages become vacant or uninhabited between 2011 to 2017. In addition, more than 565 villages¹ have a declining population of 50% till June 2021. From the policy viewpoint, this research is focused on migrants and residents to develop the mechanism to improve the socio-economic condition.

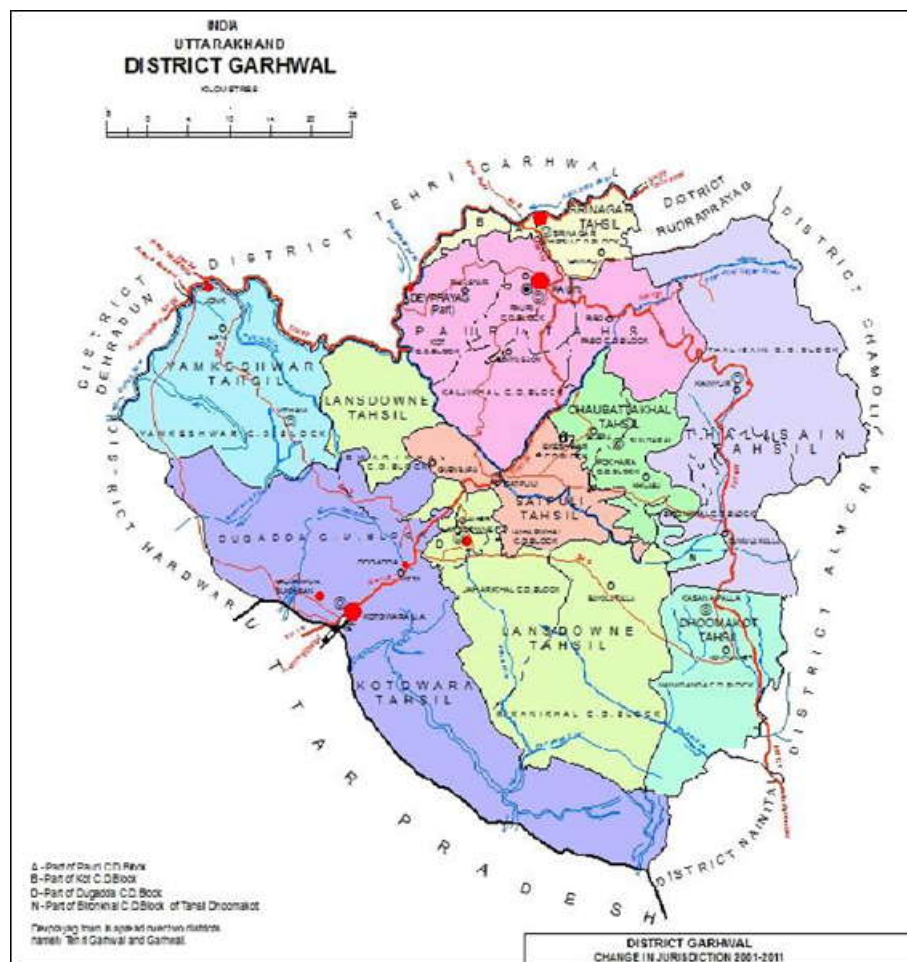
Keywords: *Ghost Villages, Migration, Pauri Garhwal, Socio-Economic development.*

INTRODUCTION

Migration is a socio-political and socio-economic prodigy that impinges on the migrants and their left-behinds and the place. Along with the hope of improving living standards, migration has some adverse effects on the region and villages. In 2017, the government of Uttarakhand established a commission to study and control the state's migration problem. Some studies on the effects of migration in Uttarakhand state were conducted by the Migration Commission and the NIRD (National Institute of Rural Development) in 2018. These studies were valuable for researchers and various stakeholder groups. This research would be a contribution from the perspective of planning and for the people of Uttarakhand who are facing the impact. "More than 5 lakh people have migrated from Uttarakhand in the last 10 years, revealed an RTI reply, The RTI also says that 3,946 villages are the ones from where people have migrated 'permanently'".² Migration from mountain regions is the result of both push and pull factors caused by a lack of economic progress and poverty forcing people to move away. whereas urban areas keep attracting migrants for employment opportunities.

PAURI GARHWAL DISTRICT: THE STUDY AREA

Pauri Garhwal is one of the hill districts in Uttarakhand's Pauri Division. The district is 5,230 sq. km in area, making up 10.17% of the state's total land area. It is surrounded by Almora and Chamoli districts in the east, Nainital District and Uttar Pradesh state in the south, Hardwar and Dehradun districts in the west, and Tehri and Rudraprayag district in the north. The district encompasses picturesque valleys and hills situated between the Bhabar plains and the tall Himalayan ranges. Pauri District has 13 Tehsils and 15 Development Blocks on an administrative level.³



Source: (Office of Registrar General and Census Commissioner, India 2011)

FIGURE 1: STUDY AREA: PAURI GARHWAL DISTRICT

Sub-District Population Change

Since the last 3 decades (1991 onwards), there has been a consistent decline in the rural population and an increase in the urban population. Urban resources including space, roads, employment, food, drinking water, and cleanliness, to name a few, are already under stress due to rural in-migration. As the villages disappear, the metropolitan areas get bigger. Children, women, and elderly people are the only ones who remain in villages, while adults of working age migrate to urban areas in pursuit of better economic prospects. After completing their school, many youngsters go to the metropolis in the expectation of finding better prospects

that are not available in their villages since they are no longer engaged in unprofitable agriculture.

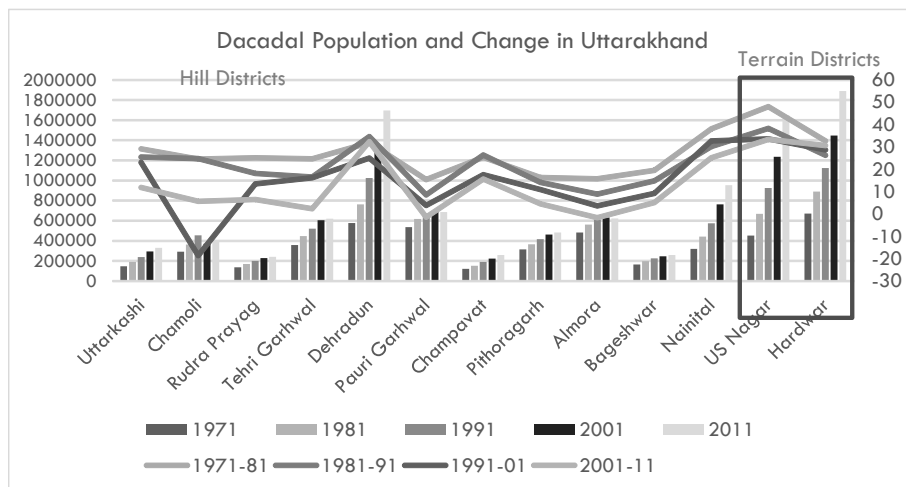
TABLE 1
DECADAL POPULATION AND CHANGE OF PAURI GARHWAL DISTRICT
POPULATION 1901 – 2011

<i>Census</i>	<i>Population</i>			<i>Percentage difference over Decades</i>		
	<i>Rural</i>	<i>Urban</i>	<i>Total</i>	<i>Rural</i>	<i>Urban</i>	<i>Total</i>
1901	276697	7063	283760	—	—	—
1911	307479	9459	316938	11.12	33.92	11.69
1921	311091	9511	320602	1.17	0.55	1.16
1931	345963	6819	352782	11.21	-28.30	10.04
1941	386823	11044	397867	11.81	61.96	12.78
1951	404710	17923	422633	4.62	62.29	6.22
1961	454820	27507	482327	12.38	53.47	14.12
1971	518181	34847	553028	13.93	26.68	14.66
1981	575208	62669	637877	11.01	79.84	15.34
1991	590358	81183	671541	2.63	29.54	5.28
2001	607203	89875	697078	2.85	10.71	3.80
2011	574568	112703	687271	-5.37	25.40	-1.41

Data Source: Author (Based on Census 2011)

Migration Trends Analysis of Pauri (2001- 2011)

Between 2001 and 2011, population change was negative in the two hill districts of Almora and Pauri. Over the past ten years (2001-2011), there has been a combined absolute drop of 17,868 people in the two districts. Even while this may not seem like a big number, India seldom sees a fall in the overall population. In Uttarakhand's other hill districts, such as Pauri Garhwal, Bageshwar, Chamoli, Pithoragarh, Rudraprayag



Source: Author (Based on Census 2001 - 2011)

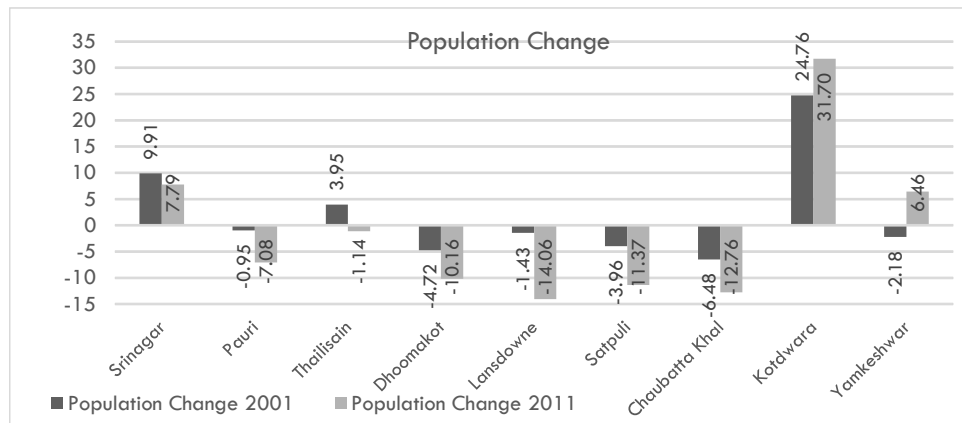
FIGURE 2: DECADE CHANGE OF POPULATION IN UTTARAKHAND'S DISTRICTS 1971 TO 2011.

and Tehri Garhwal, there has been a low population increase. Based on Census data between the year 1971 to 2011, Figure 2 displays the decadal change in population by the district. A negative change in the population may indicate a population decline due to several causes, such as excessive mortality, low birth rate, low replacement level and outmigration. Between 2001 and 2011, the state's hill districts saw a much less yearly population increase than the plains districts (0.70% in the hill districts against 2.82% in the plains districts). As a result, from over 53% in 2001 to roughly 48% in 2011, fewer people were residing in hill districts. Comparing 2011 with 2001 Census, hill districts had a decline in the decadal population growth rate, while in the plains districts, there was an increment in decade population

Demographic changes in Villages

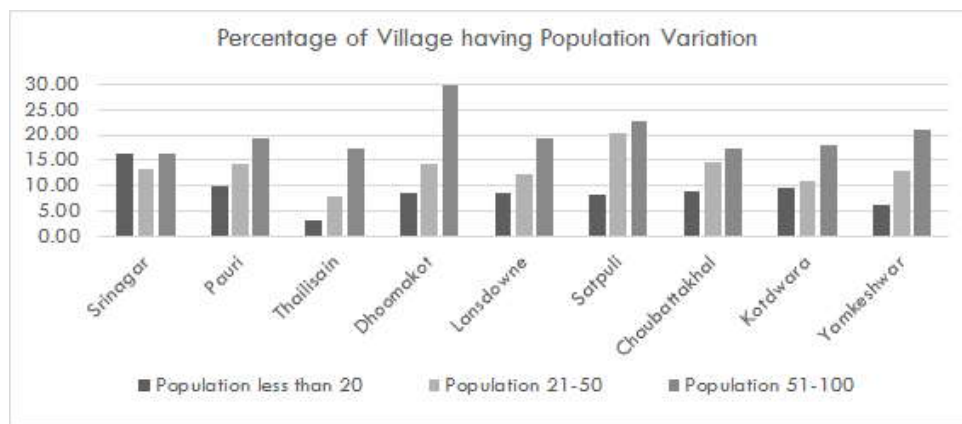
According to the census 2011, there were a total of 3,440 census villages and 3,117 inhabitant villages, whereas a total of 299 (9.5%) villages where the population was less than 20 and 611 (19.6%) villages having households less than 20 in the district. In addition, a total of 454 (14.56%) villages where the population is between 21 and 50, and 609 (19.5%) villages have household numbers between 11 and 20 in the district. Small inhabited villages are more than 50% in numbers where the population is

less than 200. Both secondary and primary data, shows the sex ratio is higher than the state and national average in the district than in rural areas of the Pauri district. While Srinagar and Kotdwara are also denoting the increasing ratio of males and females. This positive change in the sex ratio indicates the factors like girl childbirth rate and migration due to marriage.



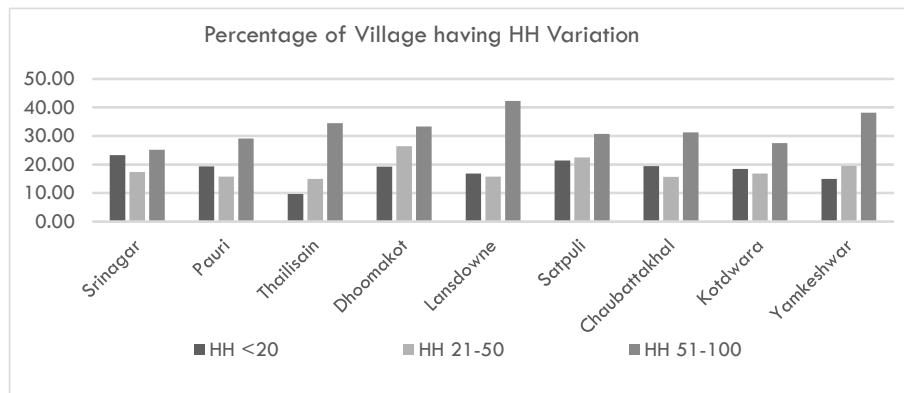
Source: Author (Based on Census 2001 - 2011)

FIGURE 3: DECADAL POPULATION CHANGE IN PAURI GARHWAL SUB DISTRICTS 2001-2011



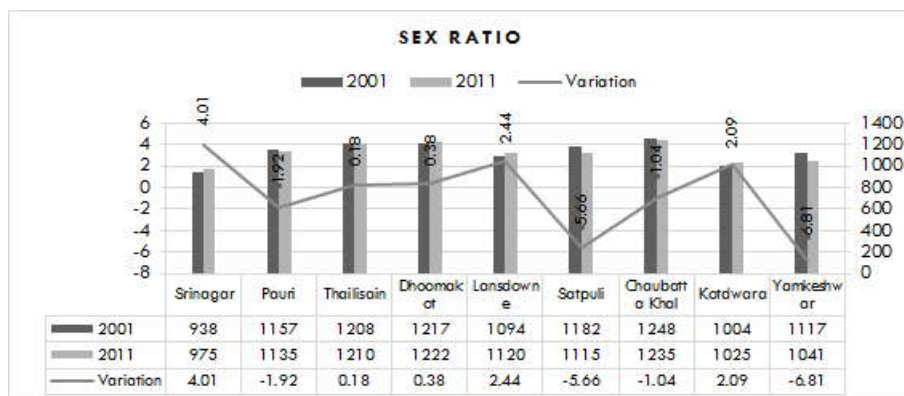
Source: Author (Based on Census 2001 - 2011)

FIGURE 4: PERCENTAGE OF VILLAGE HAVING POPULATION VARIATION IN SUB DISTRICTS OF PAURI GARHWAL DISTRICT



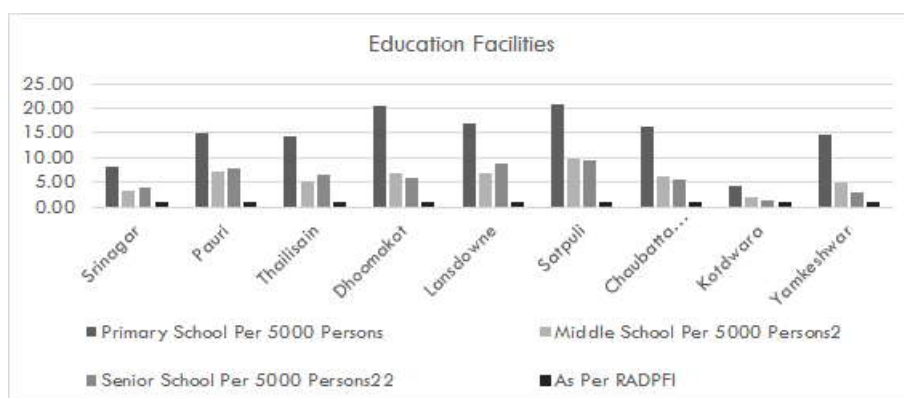
Source: Author (Based on Census 2001 - 2011)

FIGURE 5: PERCENTAGE OF VILLAGE HAVING HH VARIATION IN SUB DISTRICTS OF PAURI GARHWAL DISTRICT



Source: (Office of Registrar General and Census Commissioner, India 2011)

FIGURE 6: SEX RATIO 2001 AND 2011 IN PAURI GARHWAL SUB DISTRICTS



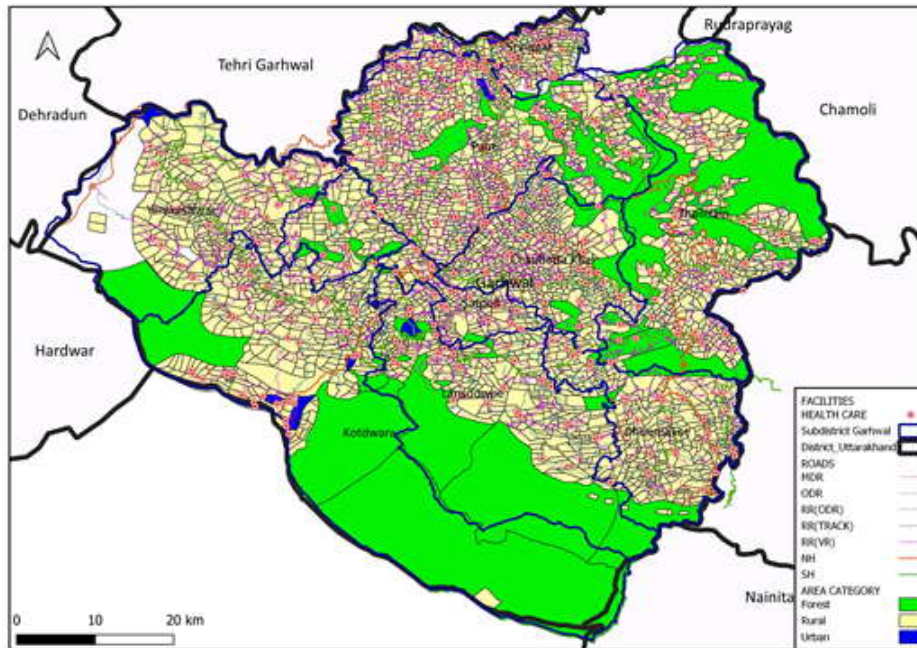
Source: Author (Based on DCHB Pauri 2011)

FIGURE 7: NUMBER OF PRIMARY, MIDDLE AND SECONDARY SCHOOLS AS PER RADPFI STANDARD POPULATION.

CHANGES IN SOCIO-ECONOMIC PHENOMENA

Education

The Number of Schools per capita are insufficient in number as per RADPFI guideline in the district. Uttarakhand assigned 18.9% of its expenditure on schooling in the year 2020-21. This can be better than the common financial allocation (15.9%) for schooling through states. below the State Budget for 2020-21 allotted Rs. 3,131 crores, Rs. 4,737 crores and Rs. 620 crores to basic, secondary and higher education, respectively. The literacy rate in the district is 82.02%, which is higher than the state average of 78.82% and much higher than the national average of 74.02%, which indicates the better use of educational infrastructure in the district and sub-districts.



Source: Author, Based on PMGSY National GIS Open Data

FIGURE 8: LOCATIONS OF HEALTHCARE CENTERS INCLUDING PHCs, SUB CENTRES, CHCs, AND DISTRICT HOSPITAL.

Health

Pauri District has a good network of hospitals and health centres. As of April 2020, the District had 1,480 sub-centres, 72 primary health centres, 5 community health centers, and a District Hospital in rural district areas. (*numbers exclude urban health infrastructure*). There is a shortage of PHCs in the village areas in the district as per the data. There are vacant positions in the health centres, Hospitals and healthcare centres are working with only approximately 50% of staff capacity in the district. AIIMS (All India Institute of Medical Science) Rishikesh is the major destination for the local people for treatment. In the State Budget 2020-21, Rs 300 crore has been allocated for the establishment of a medical college in Haldwani, Almora and Dehradun and also to ensure the filling of vacant positions.

PHYSICAL INFRASTRUCTURE

Road Network

In Uttarakhand, the ministry has approved 09 Stretches to the NHIDCL for a whole length of 104 km, which is calculable for Rs. 2,735 crores. In addition, 313 km are under DPR State Budget 2020-21. Uttarakhand has allotted 3.1% of its general expenditure on roads and bridges, which isn't always as much as the typical allocation with the aid of using states (4.2%). In June 2020, the government approved Rs.340 crores for National Highways in Uttarakhand.⁴

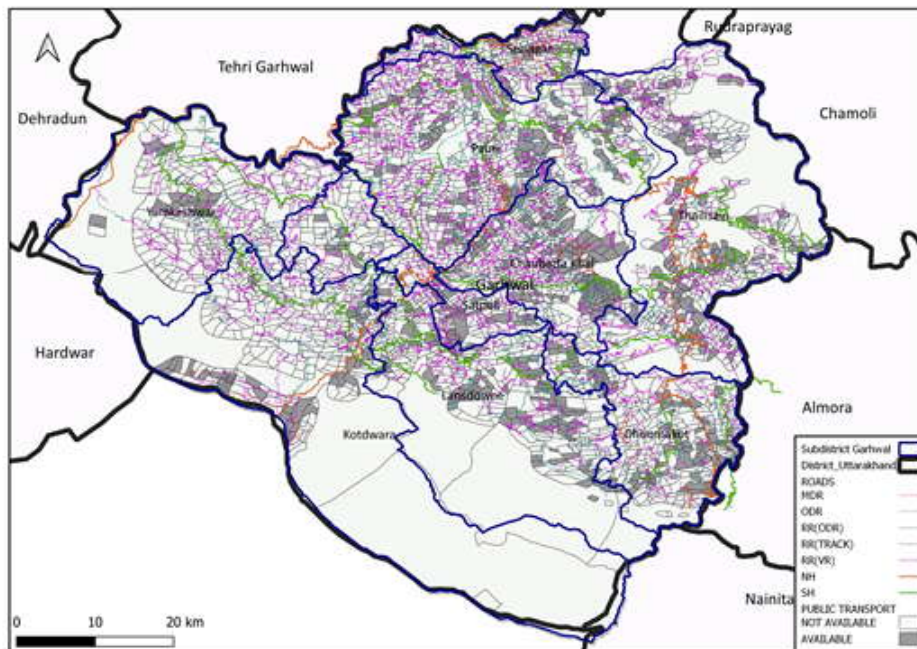
Irrigation

Agriculture in the District is largely dependent on rainfall. The total cultivable area in the District is 89.8 thousand hectares, of which 82.1% is in the hills and 17.9% is in the Plains. The irrigation intensity in the District is 8.65% of the total net sown area, 27.44% of the total district area is cultivable and 91.44 % area is unirrigated and dependent on rainfall and seasonal drains or streams for agriculture and horticulture.

TABLE 2
NUMBER OF HEALTHCARE AND AVAILABILITY OF HEALTHCARE PERSONS

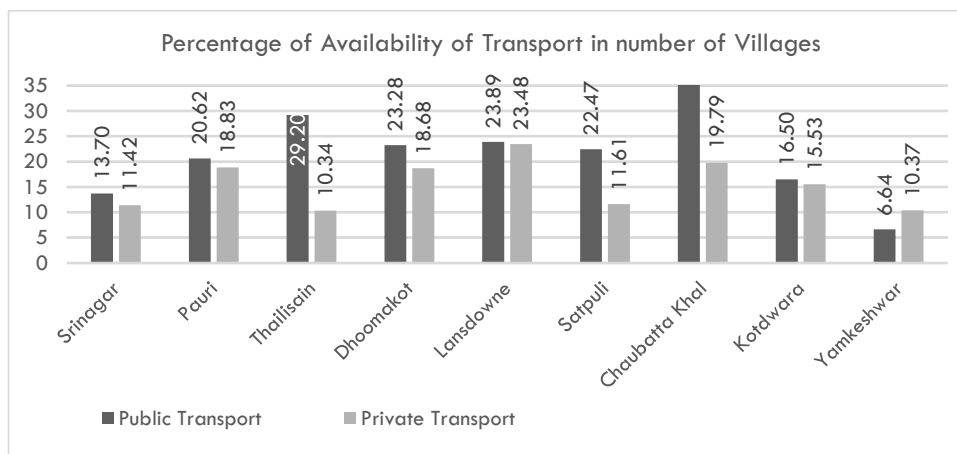
Community Health Centre	5	Community Health Centre	72	Primary Health Centre	1480	Primary Health Sub Centre	1575
Community Health Centre Doctors In Position	20	Community Health Centre Para Medical Staff Total Strength	51	Community Health Centre Para Medical Staff In Position	184	Primary Health Sub Centre Doctors Total Strength	244
Community Health Centre Doctors Total Strength	34	Community Health Centre Para Medical Staff Total Strength	265	Primary Health Sub Centre Doctors In Position	127	Primary Health Sub Centre Para Medical Staff Total Strength	3054
Community Health Centre Doctors In Position	31	Primary Health Centre	72	Primary Health Sub Centre Doctors Total Strength	244	Primary Health Sub Centre Para Medical Staff In Position	1575
Community Health Centre Para Medical Staff In Position	31	Primary Health Centre Doctors In Position	88	Primary Health Sub Centre Doctors In Position	127	Primary Health Sub Centre Para Medical Staff In Position	1575
Community Health Centre Para Medical Staff Total Strength	51	Primary Health Centre Doctors Total Strength	106	Primary Health Sub Centre Doctors In Position	127	Primary Health Sub Centre Para Medical Staff Total Strength	3054
Community Health Centre Total Strength	51	Primary Health Centre Doctors Total Strength	106	Primary Health Sub Centre Doctors Total Strength	244	Primary Health Sub Centre Para Medical Staff Total Strength	3054
Community Health Centre Total Strength	51	Primary Health Centre Doctors Total Strength	106	Primary Health Sub Centre Doctors Total Strength	244	Primary Health Sub Centre Para Medical Staff Total Strength	3054

Source: Author (Based on DCHB Pauri 2011)



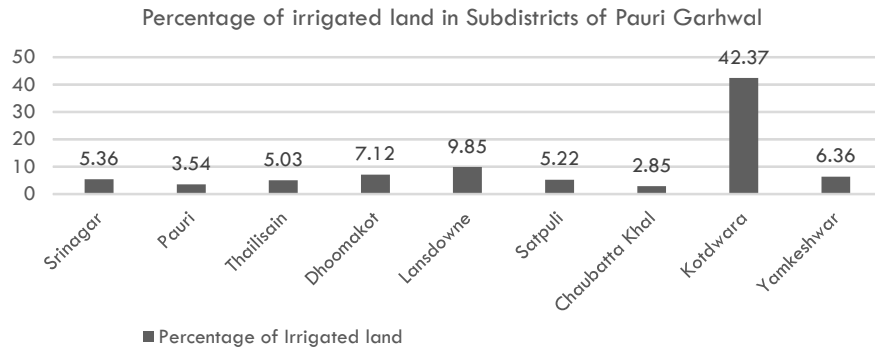
Source: Author (Based on DCHB Pauri 2011)

FIGURE 9: ROAD NETWORK PAURI DISTRICT (SOURCE: PMGSY NATIONAL GIS OPEN DATA)



Source: Author (Based on DCHB Pauri 2011)

FIGURE 10: AVAILABILITY OF ROAD TRANSPORTATION IN THE PAURI SUB-DISTRICTS



Source: Author (Based on DCHB Pauri 2011)

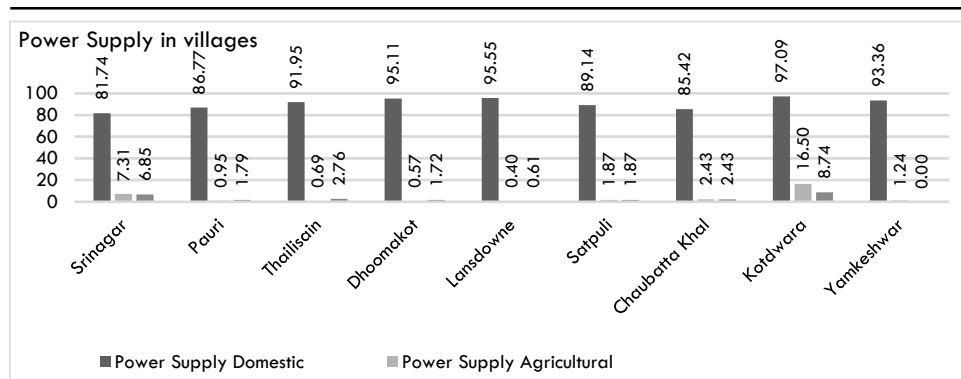
FIGURE 11: PERCENTAGE OF IRRIGATED LAND OF SUB-DISTRICTS OF PAURI GARHWAL DISTRICT

Drinking Water

Despite the fact that there is a lot of water in the slopes and hills in the form of natural streams, channels and rivers, the greatest issue in the area is drinking water. Because of different reasons like non-monetary preparation, capital asset deficiencies, non-collaboration from nearby individuals, non-achievability because of geological areas and so on, these water assets are taken advantage of to full limit for drinking water, water system, power generation etc. regardless of the accessibility of various stream channels and regular water sources in the district

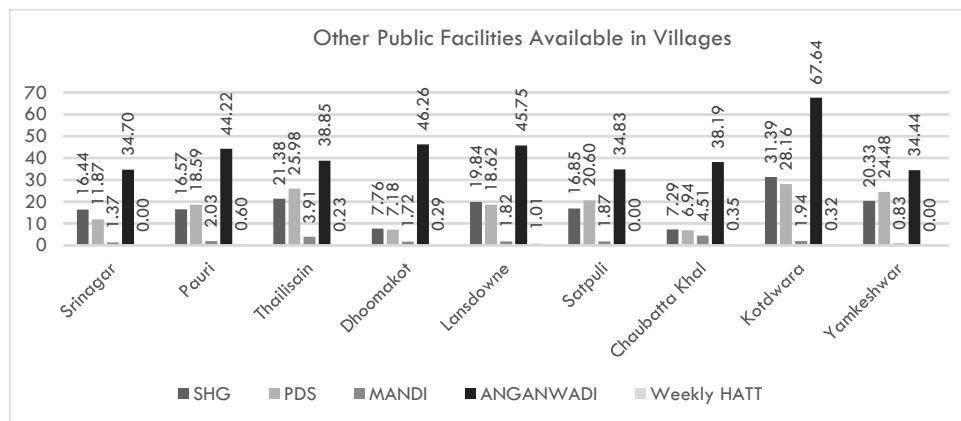
Power Supply

According to the UPCL 13.4 lakh rural households have been electrified in the state and Pauri district has electrified up to 100% of its villages for domestic uses. But the triggering part of the power sector in Pauri District is that only 3.1 % of villages get power supply for Agricultural use and 2.8% of villages getting the same for commercial purposes. "Whatever official figures claim, the reality is most of the villages in Pauri, Uttarkashi, and Chamoli are enveloped in darkness. In some villages, one can see some electric poles but there is no power supply"⁵



Source: Author (Based on DCHB Pauri 2011)

FIGURE 12: POWER SUPPLY IN PERCENTAGE OF NUMBER VILLAGES IN SUB DISTRICTS OF PAURI GARHWAL DISTRICT



Source: Author (Based on DCHB Pauri 2011)

FIGURE 13: OTHER PUBLIC FACILITIES AVAILABLE IN PERCENTAGE NUMBER OF VILLAGES IN PAURI GARHWAL DISTRICT

ECONOMIC CHANGES AND ITS IMPACT

The primary, secondary and tertiary industries make up the majority of the economy. Agriculture, livestock, forestry and logging, fishing, mining and quarrying are all part of the primary sectors. Manufacturing, electricity, gas, water and other utilities, and construction make up the secondary industry, and transportation, storage, tourism, trade, repair, hotel and restaurant services, financial services, real estate, housing and professional services, government and other services make up the tertiary industry. Table 2

below shows the Yearly Growth in GSDP and Per Capita GSDP over Previous Year at Current Prices. The decadal growth of GSDP has declined in primary sectors and gained in the tertiary sector in Pauri district as compared to percentage contribution. Agriculture sectors including horticulture and livestock are facing a major declining rate of approximately more than 9% in the district.⁶

Occupation

A major part of the population depends on cultivation and labor work for livelihood in the district. Total 38% population is dependent on main or marginal labor work employment. Rest of the population is depending on tertiary and secondary sectors in the Pauri District. Another major sector in the district is government employment in Armed forces and teaching. Total 13% of working population is employed under government agencies and departments.

Primary Sector

Agriculture, horticulture, ranch, fishing and other related activities, forest products, quarrying and mining are all part of this sector. Approximately 39% of the population is dependent on agriculture and related industries, but the contribution of this sector has declined dramatically over time. Farmers are increasingly seeing agriculture as a defeat proposition. This is due to the nature of rainfed agriculture, poor crop performance, and traditional agricultural techniques. In many cases, everything that grows on the farm is for personal use, not for commercial purposes. Only 9% of the area is populated and about 58% of the area is covered with forest. Land holding Pattern indicates that number of people who are small farmers is declining in the numbers and small scale land holders are increasing in the district which point to the sale of the land in the region.

Secondary Sector

Manufacturing, design and processing are all part of this industry. It produces about 30% of the district's GDP and has grown since 2004-05.

The establishment of the Industrial Growth Center SIDCUL in Shigadi, Kotdwara is a major contributor to this. According to the MSME Ministry's Industry Profile in the Pauri Garhwal district, there were 6,272 registered units in Pauri in 2016, providing regular and temporary employment to approximately 20,000 people.

Tertiary Sector

Hotels, restaurants, tourism, excursions and travels, and different offerings are all included. This enterprise accounts for around fifty-four percent of the district's GDP. This suggests that all the populace is hired in a salaried role or works within the carrier enterprise.

Per capita annual income is 1,09,073 in the district, but approximately 60 percent of the working population is getting less than five thousand which is only 50% of the PCI of the District. That indicator is also denoting the declining trend in primary sector and tertiary sector workers getting much less payment than the state and district average and majority of population is below poverty line.

TABLE 3
YEARLY GROWTH OF GSDP AND GSDP PER CAPITA OF UTTARAKHAND

<i>Year</i>	<i>GSDP</i>	<i>Per capita GSDP</i>
2012-13	14.12	12.60
2013-14	13.27	11.76
2014-15	8.29	6.85
2015-16 RE	9.13	7.68
2016-17 PE	10.80	9.32

Source: (Department of Economic Statistics, Uttarakhand 2018)

TABLE 4
DISTRICT PERCENTAGE CONTRIBUTION TO DOMESTIC PRODUCT
(AT CURRENT PRICES) OF VARIOUS SECTORS

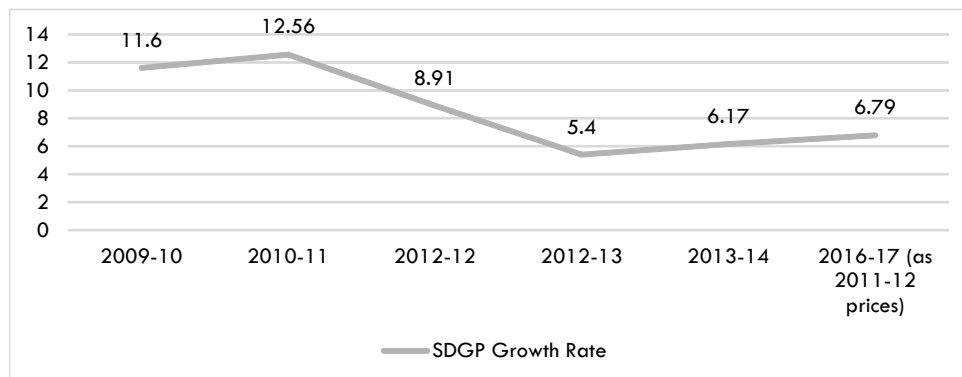
<i>Name of The district</i>	<i>Primary sector 2004-05</i>	<i>Secondary sector 2004-05</i>	<i>Tertiary sector 2004-05</i>	<i>Primary sector 2013-14</i>	<i>Secondary sector 2013-14</i>	<i>Tertiary sector 2013-14</i>
<i>Pauri</i>	24.69	23.34	51.97	15.59	30.24	54.17
<i>Uttara khand</i>	23.48	27.02	49.50	15.61	35.06	49.34

Source: Author (Department of Economic Statistics, Uttarakhand 2018)

TABLE 5
RATE OF ANNUAL GROWTH OF GROSS DOMESTIC PRODUCT
(IN % AT CONSTANT PRICES)

<i>Name of district</i>	<i>2009-10</i>	<i>2010-11</i>	<i>2012-12</i>	<i>2012-13</i>	<i>2013-14</i>	<i>2016-17 (as 2011-12 prices)</i>
<i>Pauri</i>	11.60	12.56	8.91	5.40	6.17	6.79
<i>Uttarakhand</i>	11.61	16.44	9.37	5.61	5.65	6.95

Source: (Department of Economic Statistics, Uttarakhand 2018)



Source: Author, Based on (Department of Economic Statistics, Uttarakhand 2018)

FIGURE 14: RATE OF ANNUAL GROWTH OF GROSS DOMESTIC PRODUCT OF PAURI GARHWAL DISTRICT (IN % AT CONSTANT PRICES)

TABLE 6
DETAILS OF MICRO & SMALL ENTERPRISES AND ARTISAN UNITS IN PAURI GARHWAL DISTRICT, 2018-19

<i>S. No.</i>	<i>Type of Industry</i>	<i>Number of Units</i>	<i>Investments In(Lakh Rs.)</i>	<i>Employment</i>
1.	Agro based	653	1817.42	1527
2.	Cotton textile	20	6.27	40
3.	Ready-made garments & embroidery	820	1065.49	1828
4.	Wood/wooden-based furniture	900	598.60	5580
5.	Paper & paper products	47	180.59	188
6.	Leather-based	01	1.00	05
7.	Chemical/chemical based	12	152.20	71
8.	Rubber, Plastic & petro based	03	500	35
9.	Mineral based	03	3.00	37
9.	Metal-based (steel based)	450	3822.49	1935
10.	Engineering units	239	120.37	717
11.	Electrical machinery and transport equipment	322	117.85	761
12.	Repairing & servicing	803	876.83	2628
13.	Others	1999	10593.22	4004
	Total	6272	34254.53	19356

Source: (Department of Economic Statistics, Uttarakhand 2018)

TABLE 7
PER CAPITA INCOME OF PAURI GARHWAL DISTRICT

<i>Pauri Garhwal</i>	<i>2012-13</i>	<i>2013-14</i>	<i>2014-15</i>	<i>2015-16</i>	<i>2016-17</i>
	71,927	82,149	89,247	98,086	1,09,973

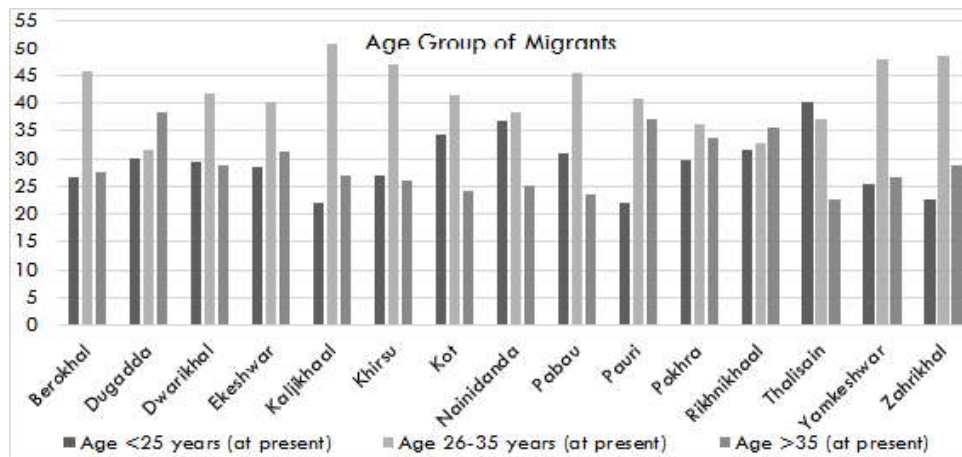
Source:(Department of Economic Statistics, Uttarakhand 2018)

TENDENCIES: A PRIMARY INVESTIGATION

Data on semi-permanent and permanent migrants has been analysed in this section. Over the past ten years, a total of 47,488 people from 1,025(32%) gram panchayats have been resettled on a semi-permanent basis, but they still regularly visit their homes in the villages. There have been 25,584 (4.5%) permanent migrants with 821-gram panchayats (26%) in the last ten years. According to the data, there are more semi-permanent migrants in Pauri district than permanent migrants.⁷

Age Group of Migrants

The age group of migrants is not only indicating youngsters, but people of every age group are also migrating from rural areas. The age of the migrants from the village panchayats is examined in this section and nearly 42% of migrants are in the working age category, i.e. between the ages of 26 and 35.



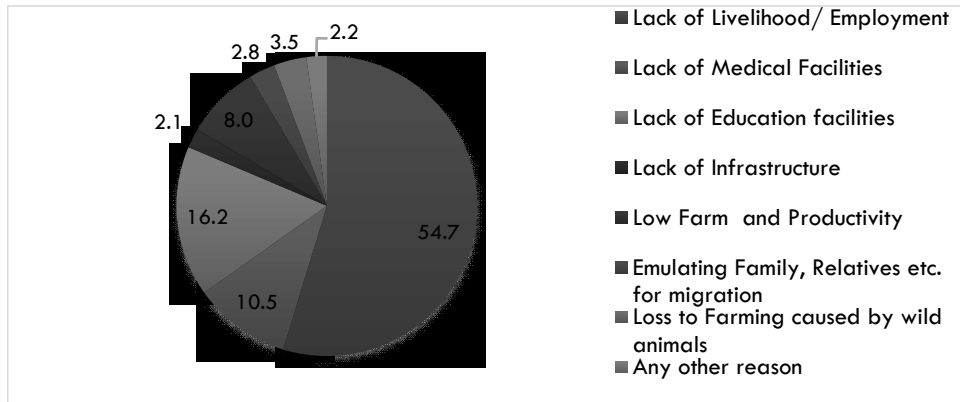
Source: Author

FIGURE 15: AGE GROUP OF MIGRANTS IN BLOCK OF PAURI GARHWAL DISTRICT

Cause of Migration

After the Primary data analysis, the main cause of migration is lack of livelihood/ employment opportunities or better livelihood in destination areas followed by education, health and infrastructure. The following

figure shows percentage of people who migrated from rural areas because of problem of employment, 11.3 percent of medical facilities and lack of education facility causes 15.9 percent.

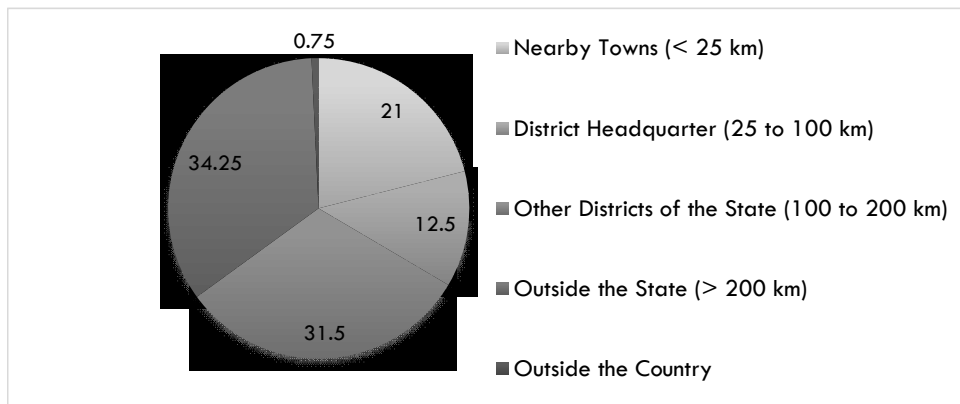


Source: Author

FIGURE 16: CAUSE OF OUT-MIGRATION IN THE PAURI GARHWAL DISTRICT

Destinations of Migrants

The data analysis shows the destination of migrants from gram panchayats. Approximately 36 % of migrants have gone to other districts of the state for assorted reasons, while 34% have migrated outside the state for temporary and semi-permanent settlement purpose.



Source: Author

FIGURE 17: DESTINATION OF MIGRANTS IN PAURI GARHWAL DISTRICT

FINDINGS

A negative change in the population indicates a population decline brought on by several circumstances, including excessive mortality, a birth rate that is lower than the death rate, or outmigration (or some combination of these). According to this study, migration is to blame for the dwindling population in a few rural and mountainous parts of the Pauri district. The aforementioned claim about rural, hilly areas seeing outmigration is supported by village data. Urban blocks like Pauri are also reflecting the same migratory factor in the block, whereas rural blocks like Bironkhal, Dugadda, Kaljjikhal, Kot, and Rikhnikhal show higher number of unoccupied villages in the district.

While looking into sex ratio of the sub-districts data of Srinagar, Lansdowne and Pauri there are some areas where male population is much more than female. This indicator reflects the male population's migration towards urban areas in search of better employment opportunities and better facilities. According to the Census 2011, rural sub-districts are having higher sex ratio than state and district average.

There are plenty and enough education and training institutions in the district including primary and technical fields. Literacy rate in the district is 82.02%, which is higher than the state average of 78.82% and is much higher than the national average of 74.02%, which indicates the better use of educational infrastructure in the district and sub-districts. But this is also one of the major causes of the out-migration in the district. People are well educated and trained in various fields of the industrial department but there is less or no opportunity as per their ability and educational field of employment and livelihood.

Pauri has a good network of hospitals and health centers, but there are vacant positions in health centres, hospitals and healthcare centres are working with only approximately 50% of staff capacity in the district.

The whole District is well connected with a wide range of road transport networks with MDR, ODR and village roads but climatic disasters are making transportation very tough in the region. Lack of public transport and accommodation is also one of the causes leading to people moving

towards the urban areas from the villages.

The power sector is one of the areas where development is needed in agriculture and irrigation. The majority of villages are not having sufficient supply of electricity in the area for commercial as well as agricultural use.

Agriculture in the District is dependent on rainfall. The irrigation intensity in the District is 8.65% of total net sown area, 27.44% of the total district area is cultivable and 91.44 % of area is unirrigated and dependent on rainfall and seasonal drains or streams for agriculture and horticulture.

The possible cause of the decline in the growth rate in the primary sector is the lack of modern agricultural education and people's interest in urban settlements. In the district, 38% population is dependent on main or Marginal labor work employment but there is no other option than MNREGA.

Secondary and tertiary sectors are also facing a declining rate in the growth of SGDP because of COVID-19 in the current situation. Per capita annual income is Rs. 1,09,000 in the district but about 60 percent of the working population is getting less than Rs. 5,000 per month (Rs. 60,000 per annum) which is only near 50% of Per Capita Income of the District average. The survey result also indicates a declining trend in the primary sector and tertiary sector. Workers are getting much less payment than the state and district average and the majority of the population is below the poverty line. This is also one of the possible causes of out-migration from the rural areas to urban centers and other districts where wages are higher than the native place.

According to the data, there are more semi-permanent migrants in the Pauri district than permanent migrants. But this number is also triggering for the region, 4.5 % of rural migrants have settled themselves permanently and visit their villages occasionally. The age group is not only indicating youngsters, but people of every age group are also migrating from rural areas. The age of migrants from the village panchayats is examined in this section. Nearly 42% of migrants are in the working-age category, i.e. between the ages of 26 and 35. The primary data analysis, shows that the main cause of migration is lack of livelihood/

employment opportunities or better livelihood in destination areas followed by education; health, and infrastructure.

The data analysis shows that the destination of migrants from gram panchayats are in major nearby urban cities or state capital. Approximate 36 % of migrants have gone to other districts like Hardwar, Dehradun, and Udham Singh Nagar of the state for better livelihood, while 34% have migrated outside majorly in megacities like Delhi, Mumbai, and the state for temporary and semi-permanent settlement purposes.

SCOPE FOR PLANNING INTERVENTIONS

- I. Special Area plan and cluster planning are proposed, as per the study findings and surveys for the betterment of the migration development in the region. In hilly and mountainous places, ecosystem-aware differentiation strategies are crucial for tying together sustainability and natural resources. Therefore, in order to maximize system benefits and ensure the best possible use of natural resources for sustainable production systems, it is necessary to implement creative and integrated management techniques in various eco zones or areas.
- II. The implementation of an integrated agri-horti-silvi-livestock system is accelerated by the employment of traditional and contemporary approaches for planning water and land use for resource efficiency and need-based planning. To ensure sustainability and a means of subsistence, the agricultural and forestry systems must be balanced. There is need to maintain grain production in difficult terrain to ensure family food security, and also encourage diversification in favor of high-value, low-volume fruits, vegetables, flowers, aromatic and medicinal plants, and plantation crops to provide income. The marketability of their specialized crops through a unique programme on infrastructure, marketing, and processing in the hill areas, should be enhanced.
- III. Promoting and facilitating off-season weather-sensitive cash crops,

risk-free good quality seedlings of vegetables, flowers, and even their cultivation in such playhouses is to be encouraged in order to take advantage of the favourable ecological settings in the H&M areas.

- IV. Setting priorities for research into suitable technologies, as well as improving and developing already-existing technology. Rich natural resources and other possibilities are necessary for the mainstreaming of the underdeveloped hill economies for prosperity. There is increased importance of innovation in supply chain management through collaboration between the public and commercial sectors to boost the agricultural economy. Cooperatives could be formed, because agriculture dominates the village's economy and there is a lot of land available
- V. Micro Small and Medium Enterprises (MSMEs) need to be encouraged As a result, many social issues afflicting cities, like uncontrollable population growth, unemployment, the expansion of informal settlements, and attacks on foreigners by locals in the a struggle for limited resources, would be regulated.
- VI. Due to the transition from conventional agricultural revenues to non-traditional agricultural incomes as well as income from the tertiary sector, it is necessary to boost both agricultural and non-agricultural incomes.
- VII. Village-specific plans need to be formulated in detail for groupings of villages and submitted to the state or federal governments for financing or implemented through outside organizations. Strategies may be made for groups of villages with comparable land use, topography, out-migration and in-migration rates (if any), environmental conditions, transportation, and water supply for drinking and irrigation.
- VIII. A major cause for concern is the changing climate, especially in the Pauri district where a sizable portion of the rural regions is situated in a subtropical area. The agrarian economy would be the most negatively impacted by climate change, thus the

Uttarakhand State Action Plan on Climate Change's recommendations should be implemented; otherwise, more people may leave the district's rural regions as the rural economy continues to worsen.

CONCLUSION

To enable targeted socio-economic development of the rural regions affected by out-migration, the workforce of various departments has to be reoriented, motivated, and trained. These departments should concentrate their efforts on boosting the village or village panchayat-level economy in different districts during the next five to ten years, especially in village panchayats where there has been significant out-migration. The local populations living in the villages must also reorient themselves to concentrate on growing the local economy, which would result in the development of more livelihoods and lessen outmigration.

A procedure for supporting growth centres has just been approved by the Uttarakhand government. The creation of growth centres must coincide with rural development in the district. The district's chief development officer and district magistrate must take the lead in developing and implementing plans to strengthen the district's rural economy. Cluster-based planning and spatial planning policy-based development strategies are recommended for the district.

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ROLE OF NATIONAL GREEN TRIBUNAL IN PREVENTION AND CONTROL OF AIR POLLUTION IN INDIA

DIKSHA and ALOK KUMAR YADAV

ABSTRACT

There has been growing awareness about the issue of pollution in our nation over the past few years. Air pollution is a threat that no longer just affects major or urban areas. It has also expanded to numerous small towns and cities during the past ten years. Since the National Green Tribunal is one of the official bodies to regulate this threat, it cannot be denied that NGT plays crucial and significant role in reducing air pollution. This paper, in its limited scope, evaluates the National Green Tribunal's efforts to combat air pollution and to discuss the challenges that have obstructed the progress of those efforts. It discusses the provisions of statutes contained in the National Green Tribunal Act. The article then goes on to examine with the help of case laws, the role of National Green Tribunal to control air pollution. Further, the authors have also recognised the problems that prevent the National Green Tribunal from attaining its objective of a clean, pollution-free environment.

INTRODUCTION

In India, the problem of air pollution is currently continuously escalating and remains unchecked. It has now gained wide attention and has the potential to adversely affect both the nation's economy and the overall welfare of its residents. It is a fact that it is not confined to major or metro urban areas, where the risk of contaminated air exists. It has spread throughout more modest urban areas and towns during the past ten years, including Patna, Muzaffarpur, Ranchi, Jharia, Ghaziabad, Kanpur, Allahabad, Faridabad, Alwar, etc. The three towns Motihari, Siwan and

Darbhanga of Bihar are among the most polluted places in the country, the air quality index level being in the “severe” category above 400 marks. AQI of Motihari, Siwan and Darbhanga is 419,417 and 404 respectively, according to the daily AQI bulletin issued by the central pollution control board.¹ Section 2 (a) of The Air (Prevention and Control of Pollution) Act, 1981 terms “air pollutant means any solid, liquid or gaseous substance [(including noise)] present in the atmosphere in such concentration as may be or tend to be injurious to human beings or other living creatures or plants or property or environment”. Further, as per Section 2 (b) “air pollution means the presence in the atmosphere of any air pollutant”²

The public authority has established regulatory institutions, such as the Central Pollution Control Board (CPCB), State Pollution Control Boards (SPCBs), and quasi-judicial institutions, such as the National Green Tribunal, which generally cooperate in order to combat contamination. The National Green Tribunal has been mainly concerned with the issue of air pollution.³ It is clear from the court’s approach to issuing strict regulations and directing the administrative authorities to take action against rule violations. The Tribunal has also made other rulings, demonstrating its commitment to uphold the obligations to control air pollution. However, despite the authority’s efforts, the issue of air pollution appears to be far from being resolved. In order to bear in mind air pollution across the country and identify the challenges in doing so, the authors seek to analyse the role of the National Green Tribunal with the aid of case laws.

THE NATIONAL GREEN TRIBUNAL

The National Green Tribunal (NGT) was established by the NGT Act of 2010 as a specialised organisation for the effective and speedy settlement of disputes involving the preservation and protection of the environment, forests, and other natural resources.⁴ The introduction to the Act stipulates that the body has been constituted to fulfil the obligations cherished by Article 21 of the Constitution.⁵ On October 10, 2010, the National Green

Tribunal (NGT) Act became effective. The National Environment Tribunal Act of 1957 and the National Environment Appellate Authority Act of 1997 were both outmoded systems, therefore this court was established to replace them. These demonstrations preceding the foundation of the National Green Tribunal and the National Green Tribunal Act set out the system for building up the environmental courts.⁶ India became the first developing nation to establish a dedicated environmental tribunal, moving up in the world rankings from New Zealand and Australia.⁷ The National Green Tribunal has five locations where hearings take place, including New Delhi (Principal Bench), Bhopal (Central Zone Bench), Pune (Western Zone Bench), Kolkata (Eastern Bench), and Chennai (Southern Bench), with New Delhi serving as its principal location. The National Green Tribunal (NGT) comprises of a full time chairperson, judicial members and the expert members, There must be a minimum of 10 and a maximum of 20 full-time judicial and expert members in the NGT.⁸ The National Green Tribunal (NGT) has emerged in recent years as a significant institution for environmental protection and issuing stern orders on matters pertaining to deforestation, pollution, waste management, etc.

The National Green Tribunal has a number of significant powers, which include:

- Through the creation of an alternate conflict resolution system, NGT offers a path for the advancement of environmental law.
- It assists in reducing the burden of environmental litigation in the higher courts.
- For a variety of environmental disputes, NGT offers a quicker, less formal, and more affordable alternative.
- The National Green Tribunal decides civil disputes in related with the seven environmental legislation listed below:
 - I. Water Act (Prevention and Control of Pollution), 1974
 - II. Water Cess Act (Prevention and Control of Pollution), 1977
 - III. Forest Act (Conservation), 1980
 - IV. Air Act (Prevention and Control of Pollution), 1981
 - V. Environment (Protection) Act, 1986

VI. Public Liability Insurance Act, 1991

VII. Biological Diversity Act, 2002

The National Green Tribunal has jurisdiction over all common climate-related complaints that fall under the purview of the laws listed in Schedule I of the National Green Tribunal Act, including those involving the Air (Prevention and Control of Pollution) Act of 1981. The Wildlife (Protection) Act of 1972, the Indian Forest Act of 1927, and other State-approved laws pertaining to woods, tree protection, etc., are not included in its scope of authority despite the fact that they may directly affect air pollution.

The National Green Tribunal is not bound by the multifaceted procedural laws such as the Code of Civil Procedure, 1908 and the Indian Evidence Act, 1872, instead it shall be guided by principles of natural justice.⁹ Environmental activists will, therefore, find it easier to present facts and issues before the NGT (as opposed to going before a court), including pointing out technical issues with a project or suggesting alternatives that could minimise environmental damage but have not been considered. The precautionary principle, the polluter pays principle, and the principles of sustainable development will all be used by the NGT while passing orders, decisions, and awards.¹⁰

NGT AND AIR POLLUTION: ISSUES AND CHALLENGES

“Right to clean air stands recognized as part of the right to life and failure to address air pollution is denial of the right to life.”

(National Green Tribunal, 2018¹¹)

Air pollution remains one of the biggest threats to India’s environment and is a serious impediment to economic development. A study¹² estimated that air pollution in India accounted for 1.7 million premature deaths in 2019, which is nothing less than 17.8 percent of the total deaths recorded in the country that year. Air pollution refers to the release of pollutants into the air, which are detrimental to human health and the planet as a whole. According to the World Health Organization (WHO), each year air pollution is responsible for nearly seven million deaths around the

globe. Nine out of ten human beings currently breathe air that exceeds the WHO's guideline limits for pollutants, with those living in low- and middle-income countries suffering the most.¹³ In India, urban air pollution is a major problem.¹⁴ The Indo-Gangetic plain was considered the most polluted region in 2021, with 63 Indian cities ranking among the top 100 most polluted cities.¹⁵ High air pollution is apparently shortening people's lives in South Asia by an average of 5 years, and by as much as 10 years in some areas of the region, in addition to ecological problems. "Persistently hazardous levels of air pollution have caused a major public health crisis in South Asia that demands urgent action," said Martin Raiser, World Bank Vice President for South Asia.¹⁶ It is a harmful externality that comes from a variety of sources, such as garbage burning, electricity generation, heavy industries, vehicle exhaust and suspended dust. India's cities have the infamous reputation of consistently ranking among the world's most polluted cities.¹⁷ Air pollution continues to be the world's largest environmental health threat. Worldwide, poor air quality accounts for 93 billion days lived with illness and over six million deaths each year. The total economic cost equals to over \$8 trillion dollars, surpassing 6.1 percent of the global annual GDP. Exposure to air pollution causes and aggravates several health conditions which include, but are not limited to, asthma, cancer, lung illnesses, heart disease, and premature mortality.¹⁸ Air pollution most severely impacts already vulnerable populations. More than 90% of pollution related deaths occur in low-income and middle-income countries.¹⁹ Children under 18 years old, pregnant women, and older adults all have increased risk of developing or worsening health conditions from air pollution exposure.²⁰ According to the World Air Quality Report prepared by IQ Air, Delhi ranked 4th out of 50 of the world's most polluted cities in terms of PM2.5 levels in 2022. Out of 131 countries, India ranked 8th with a population weighted average PM2.5 level of 53.3 $\mu\text{g}/\text{m}^3$ in 2022.²¹ While there are many policies, programmes and organisations working to tackle air pollution, their on-ground implementation is half-hearted. Programmes remain largely on paper due to lack of funding. One of the reasons is that air pollution is still not a high-priority issue for

policymakers. Participants at the round table agreed that this is related to lack of public awareness. An all-India survey by the *Association for Democratic Reforms* in 2018 in 524 constituencies on the governance issues that mattered most to the public found that air pollution was only 17th on their list of priorities, with just 11 percent of respondents mentioning it.²²

One of the specifically environment dedicated body is National Green Tribunal which works for the preservation of environment. Schedule I of the Act provides that NGT deals with the disputes and concerns related to air pollution. The NGT is a “quasi-judicial body” with restricted autonomy. It is not like a normal court, but it has authority comparable to that of law enforcement organisations. All issues can be resolved by the courts, NGT has the authority to make administrative agencies follow the law. NGT was established to reduce the workload on traditional courts. A legal court may hear an appeal over NGT’s conduct. For instance, depending on the type and seriousness of the offence, NGT can only make recommendations for punishment in situations of crime and other offences. However, as a court of law is the final authority, such sentence can be questioned there. The NGT’s role seems restricted in this circumstance as well. It is clear that the NGT is not the same as writ Courts because it does not have the power of judicial reviews.²³ The Court finally decides that the NGT should have *suomotu* powers because of its unique nature, as well as because Parliament intended to vest such powers in it.²⁴ The Act has restricted the tribunal’s authority to cases involving “substantial questions of environment,” such as where “harm to public health is broadly measurable,” “major environmental damage,” or “point to sources of pollution.” The environment cannot be left to an individual’s discretion, especially when it comes to determining whether or not environmental damage is significant.²⁵ The Act does not provide the Tribunal jurisdiction over all environmental laws, including the Wildlife Protection Act of 1972, the Indian Forest Act of 1927, the Scheduled Tribes (Recognition of Forest Rights Act) of 2005, and numerous other state laws. The Wildlife (Protection) Act of 1972 and the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act of 2006 are two

significant laws that fall outside the purview of the NGT. Due to the important forest rights issue being closely related to the environment, this limits the NGT's authority and occasionally interferes with its ability to function.²⁶

The effectiveness and efficiency of the statutory authorities, such as the CPCB and SPCBs (boards), which are in charge of carrying out the National Green Tribunal's orders, is one of the main issues. They must not act inefficiently, and in order to do so, it must be ensured that its members are competent and have the required set of skills. However, there have been situations in the past where the choice of these statutory bodies' members has been challenged because it directly affects how those bodies operate. In a case involving the same issue, *Rajendra Singh Bhandari v. State of Uttarakhand*,²⁷ the Tribunal stated that the Chairperson and Members should have practical knowledge and experience in the field of environment protection as the statutory requirements as mentioned in the "Air Act" and "Water Act." The "Special" knowledge cannot under any circumstances be acquired through informal learning; it must be obtained through official academic training and certification in the field of environmental protection. It gave comprehensive instructions for the states to follow regarding the selection and tenure of chairpersons and member secretaries, the infrastructure of the boards, etc. It also ordered the states and UTs to reconstitute the pollution control boards. In *Techi Tagi Tara vs. Rajendra Singh Bhandari*,²⁸ the Supreme Court reversed the tribunal's ruling ordering the state governments and the union territories to reconstitute the SPCBs despite agreeing with its reasons. According to the National Tribunal Act, the tribunal has jurisdiction over all civil disputes involving significant environmental preservation or protection issue. Additionally, it adds that choosing the Chairpersons and Members should not be seen as a key environmental issue. Therefore, as the National Green Tribunal lacks jurisdiction over the aforesaid matter, it went beyond its scope of competence in the current case to command the state governments. Evidently, the Supreme Court's decision demonstrates the National Green Tribunal's limited authority. The National Green Tribunal

must have the power to hear cases involving the selection of the chairpersons and member secretaries of the SPCBs because these matters indirectly affect the environment. In addition, Section 14(1) stipulates that the National Green Tribunal Act, 2010 only has jurisdiction over civil matters that involve a significant environmental question, excluding criminal proceedings. The National Green Tribunal's authority is excessively constrained by the wording of the stated provision, which prevents it from advancing the cause of cleaner air. Therefore, it must be suggested that the National Green Tribunal's jurisdiction be expanded to include both criminal cases and matters involving the appointment of pollution control boards. The lack of fundamental infrastructure facilities and human resources has been another issue before the National Green Tribunal. For a nation the size of ours, the tribunal's four zonal benches, four circuit benches, and one principal bench are insufficient. As a result of the tribunal's accessibility issues, a significant number of individual claims involving air pollution either go unregistered or are filed with civil courts. In addition, the tribunal's lack of judicial and expert members has made it very difficult for even those benches to operate effectively. The National Green Tribunal Act,²⁹ section 4(I), states that the tribunal shall be led by a Chairperson who shall be joined by at least 10 Judicial Officers and 10 Members who are experts in this field, albeit this number shall under no circumstances exceed 20 members. The tribunal is currently operating with only 4 judicial and expert members each, which is less than the minimum number required. The number of cases that were pending increased as a result, forcing the tribunal to hold case hearings via video conference. Due to the current state of circumstances and the government's lax attitude, the National Green Tribunal Act, significant flaw in its provisions needs to be corrected.

Section 6(1) of the National Green Tribunal Act,³⁰ gives the Central Government the authority to designate the chairman and members (both judicial and expert). This section clearly states the tribunal's reliance on the executive. Therefore, it is advised that in order to improve the tribunal's situation, executive intervention must be reduced. This can be accomplished

by creating a separate agency that will be in charge of monitoring and regulating the conditions under which the tribunal operates. The National Green Tribunal and other tribunals in general were examined by the Supreme Court in the case of *Roger Mathew vs. South India Bank*.³¹ The Supreme Court went on to say that leaving the management of tribunals up to different ministries led to poor management and disorganised policy-making. The creation of a National Tribunal Commission was, therefore, stressed by the apex court in order to have an impartial assessment on how the National Green Tribunal operates. This commission will be in charge of overseeing key departments and operations, including the appointment of members, the payment of wages and allowances, the establishment of a dispute resolution process, and the removal of Chairpersons and other members. The National Tribunal Commission's founding process was finally established by the court in order to maintain and safeguard the efficacy and efficiency of the National Green Tribunal.

Another hurdle before the tribunal is the effective implementation of its orders. The National Green Tribunal Act does not provide the tribunal with any appropriate institutional mechanism to enforce its orders or to ensure that the regulatory authorities such as SPCBs and CPCBs comply with them. There have been various instances of non-enforcement of the orders of National Green Tribunal in the past. Several orders of the tribunal relating to air pollution in Delhi, solid waste management, illegal mining, etc. remain unenforced even today.³² Therefore, it is suggested that a provision be included in the National Green Tribunal Act so as to provide the tribunal with a proper mechanism to implement its orders. In the meantime, the tribunal while passing an order should fix responsibility on the executing authorities and lay down strict conditions for implementation of such orders, also ensure the accountability of the concerned authority if it fails to follow the directions laid down in the order.³³ The aforementioned issues must be appropriately addressed if the National Green Tribunal is to be prepared to handle the deteriorating air pollution situation. If not resolved, each of these problems has effectively hampered the operation of the tribunal up to this point and will do so

going forward. For this reason, the National Green Tribunal Act needs to be amended, and other essential actions must also be taken.

ROLE OF NGT IN CONTROLLING AND PREVENTING AIR POLLUTION

The National Green Tribunal has consistently adopted a strict and vigilant methodology in matters relating to air pollution.³⁴ Usually, concerned turn toward the judiciary in India in times of crisis. The National Green Tribunal (NGT) was established in 2010 under the National Green Tribunal Act “for the effective and timely disposal of issues connected to environment preservation,” and as such, urban air pollution comes squarely within its purview. The more technical and interdisciplinary character of environmental challenges led to the establishment of this specialised environmental court. The National Green Tribunal (NGT) in order to control air pollution considered the key sources of air pollution and issued orders banning open land burning of solid garbage³⁵, dust emissions from related activities like construction work, air pollution from traffic and industrial emissions³⁶, stubble burning contributes to air pollution.³⁷ Handling garbage and biomedical waste near hospitals have more risk of diseases due to air pollution³⁸. Lack of sufficient green belt to absorb the dust and carbon dioxide generated, is another issue. The NGT suggested measures to control air pollution in its orders for regulating traffic, transitioning to battery-operated vehicles, removing encroachments and hawkers, creating no-vehicle zones to sensitive areas like schools, hospitals, planting more trees, implementing noise and dust control measures at strategic locations and sprinkling water.³⁹

The Principal Bench in New Delhi also serves as the bench for northern India, while four regional courts have been established across southern, western, central, and eastern India. The Tribunal is responsible for upholding the environmental rights entrenched in the Constitution and has the authority to apply the three internationally regarded environmental jurisprudential principles of sustainable development, precaution, and polluter pays while deciding cases (under Section 20 of

the NGT Act). In terms of the Tribunal's engagement with urban air pollution, there are generally two sub-categories. The first category includes situations where the ambient air quality of a region was in question. In this example, there are a number of causes of air pollution, some of which are mentioned in the application⁴⁰ and others of which are not (referred to as "category 1 cases"). The second type of circumstances, or "category 2 cases," is when a particular action, like burning waste⁴¹ pollutes the air nearby. It is interesting to examine these categories in greater depth because the NGT seems to have developed unique rules for handling both types of cases.⁴² In order to effectively reduce air pollution, local and national jurisdictional borders must work closely together in addition to addressing the problem's individual origins. Regional collaboration can assist with the implementation of affordable collaborative plans that capitalise on the interdependence of air quality.⁴³

SIGNIFICANT JUDGMENTS OF NATIONAL GREEN TRIBUNAL ON AIR POLLUTION

Although the National Green Tribunal has been in existence only for ten years, it has already been successful in issuing some significant judgements. *Vardhaman Kaushik and Ors vs. Union of India*⁴⁴ is one of these judgments. The tribunal acknowledged that there are three key sources of air pollution. The first is the open burning of solid garbage, including agricultural waste, and plastic. The second is significant dust emissions from related activities like construction work. The third is air pollution from traffic and industrial emissions. The tribunal in the same judgement emphasised how diesel automobiles are a significant contributor to declining ambient air quality. The NGT issued a number of directives and judgments over a 4-year period, including a ban on polluting companies, rules for traffic flow, requests for the government to create action plans, and demands for specific actions on dust management and waste disposal, among other things. After taking into account all of these facts, the National Green Tribunal issued an order banning:

1. Diesel-powered vehicles that have been operating on NCR and

Delhi roads for more than ten years.

2. Petrol-powered automobiles that have been on Delhi's and the NCR's roads for more than 15 years.

In addition, the tribunal in this case considered the pollution brought on by construction projects and industrial emissions, and as a result, ordered the authorities to apply the polluter pays concept to polluting organizations and construction sites. Hearings in the afore mentioned lawsuit made it clear that Delhi is only the tip of the iceberg and that other states are also suffering from the effects of air pollution. The National Green Tribunal subsequently commanded the relevant agencies to carefully gather and monitor data in order to examine the quality of the air and provide guidelines for reducing air pollution. The data gathered in accordance with this directive revealed the appalling status of the air quality in different Indian states and towns. The Tribunal was able to identify the main sources of air pollution because to this extensive data. The matter was finally resolved by the Tribunal in 2018 with a directive to the Central Pollution Control Board to form a two-member committee to investigate any violations of its directives in the case. In addition to these issues, this instance highlighted India's outdated Air Quality Monitoring (AQM) technology. The founding of the Central and State monitoring committees was prompted by the bad state of the air and the inadequate criteria put in place to manage pollution.

The Delhi Government was recently ordered to immediately shut down more than 4,770 industrial units that were operating illegally in residential areas of Delhi in the matter of *Mayank Manohar & Paras Singh vs. GNCTD & Ors.*⁴⁵ The tribunal also ordered the Delhi Government to adopt stringent measures to collect compensation for the illegal operation of such units in accordance with the law aside from prosecution. The tribunal has considered the issue of air pollution produced by companies in various instances and has also given several directions for industries and pollution control boards to follow while also taking the principles of sustainable development into mind. However, it has also cracked down hard in instances of gross disobedience for environmental standards. For

the past few years, Kolkata, renowned as the “city of joy,” has seen an alarming degree of pollution. In the case of *Subhas Datta v. State of West Bengal*⁴⁶, the Eastern Zone Bench of the National Green Tribunal addressed the problem of air pollution in Kolkata and Howrah. The Expert Committee’s conclusions, which suggested actions for reducing air pollution in both cities, impressed the tribunal. The Tribunal issued an order directing the authorities to phase out commercial vehicles that may have exceeded the work cycle of 15 years or more after considering the committee’s recommendations. It also emphasized that entry of automobiles that did not meet the required standards in both locations must be regulated and issued instructions accordingly. Furthermore, it stipulated that “any vehicle driving inside the twin city borders registered outside of its territorial bounds shall not be permitted to remain in the city for a period to be defined, which shall in no event be longer than one week.” However, two years after the aforementioned verdict, the tribunal was disappointed with the state government’s strategy for carrying out its directive. As a result, the Tribunal decided that the state had disobeyed the previous order and brought a contempt case against it, penalising the government with a fine of 5 crore rupees. The National Green Tribunal has made significant progress since its inception in the last 10 years and has rendered many notable decisions on various air pollution-related topics. It is evident from the few cases mentioned above that the tribunal has made every effort to reduce air pollution. There are, however, obstacles that must be removed in order for the tribunal to proceed without difficulty on the path to cleaner air. In the case of *Ashwani Kumar Dubey vs. Union of India & Ors*,⁴⁷ the Issue was related to Air pollution by Thermal Power Stations in Districts of Sonbhadra in Uttar Pradesh and Singrauli, Madhya Pradesh.⁴⁸ The Tribunal ordered the polluting units to act within the allotted time frames and provide Performance Guarantees CPCB to the extent determined by the oversight Committee, which was led by a former high court judge. The Tribunal ordered the health secretaries of MP and UP to provide reports on the health of the residents of the affected areas and trends in diseases related to pollution within two months, and to create

long-term plans for providing potable water through pipelines and other means on a priority basis and to be carried out according to strict deadlines. The western zone seat of National Green Tribunal in Pune, in the case of Charudatt Koli vs. Sealord Containers Limited⁴⁹, stated that air pollution control and air quality management should be acknowledged as a matter of public health and accorded the weight it deserves. It further directed that remedial steps be taken for control of air pollution in the outskirts of Mumbai.⁵⁰ There was concern over the air pollution caused due to emissions of Volatile Organic Compounds (VOC) due to loading, storage and unloading of the chemicals then, the pigging operation which was practiced for cleaning the inner sides of the chemical conveyance pipe line, through internal brushing action, conducted before every change of chemical which was stored in the storage tanks, also caused excessive emissions of remaining chemicals in the pipe line into the environment. Further that during the change of chemical which could be stored in a particular storage tank, the cleaning and purging operations resulted in the water and air pollution.⁵¹ The Tribunal had originally asked the public sector refineries to prepare an integrated action plan and submit it to the CPCB. The regulatory body submitted a report with opinions on the Tribunal-approved action plan. Significantly, the Tribunal ordered the refineries to provide the petitioners with interim compensation for their additional health-related expenses. It was concerned with remedial measures to be taken to bring the air quality of 102 cities identified as 'non-attainment cities', which do not meet the National Ambient Air Quality Standards.⁵² The Tribunal was concerned with pursuing legal action against states that failed to provide the Central Pollution Control Board (CPCB) with an action plan. Despite the fact that 89 of the 102 "non-attainment" cities have filed an action plan, only 46 have been accepted, with the others still being scrutinized.

National Ambient Air Quality Standards (NAAQS)

The National Green Tribunal concluded that by incorporating the word “any” in the definitions of the terms “air toxins” and “air contamination,” the governing body intended to give them a significant meaning. This entails that the 12 boundaries specified by the National Ambient Air Quality Standards (NAAQS) cannot and should not be the sole basis for the specialised organisation of the air quality to determine whether there is any air contamination. Consequently, the need to enhance the air quality of 102 urban areas designated as ‘non achievement urban communities’, which do not satisfy the National Ambient Air Quality Standards (NAAQS), was raised in a news item identified with the news thing distributed. The Central Pollution Control Board (CPCB) had entrusted the Tribunal with the responsibility of taking action against any states that had not submitted an activity plan. In essence, the Tribunal agreed that states that fail to submit activity plans by April 30, 2019, will be required to pay climate compensation of Rs. 1 crore each, and states that fail to fix deficiencies in real-world designs that were presented by April 30, 2019, will be required to pay Rs. 25 lakhs each.

National Green Tribunal on Stubble Burning

The act of burning stubble by farmers is one of the key sources and reasons for exhaustion of air quality and air contamination separately. “Farmers are burning stubble under compulsion” the National Human Rights Commission (NHRC) said in a statement.⁵³ National Human Rights Commission (NHRC) said that it is due to the “failure” of the four state governments (Delhi, Uttar Pradesh, Haryana and Punjab) that it is happening, resulting in the poor quality of air in the region.⁵⁴ A recent case, Smt. Ganga Lalwani vs. Association of India & Ors⁵⁵, recognised the issue as the avoidance of stubble burning contributing to air pollution, particularly in the NCR. The court obviously disapproved of the methods used and labelled them as inadequate, noting that “the reality remains that there is unfavourable effect of ingesting of such build up on air quality generating air contamination linked diseases which occasionally might

be fatal.” Reference will be made later that due to air pollution, there were 15,000 deaths in the NCR region in 2016. It then went on to coordinate the state and federal governments to establish on their respective websites the dates of the fire occurrences, the officials responsible for the subjects for all zones, and the actions taken to remedy disappointments on a regular basis.

In the case of *Vikrant Kumar Tongad vs. Climate Pollution (Prevention and Control) Authority*⁵⁶, the court has extensively looked at the ecological dangers associated with produce consumption, including air pollution and problems with general health. It was observed that there are specific, explicit voluntary aims available for using horticulture build up rather than consuming it. It also directed the state governments to make efforts to warn farmers about the dangers of yield consuming and further requested that they provide the ranchers with the proper specialised and financial assistance in order to persuade them to stop such practices. The council recommended the states to take corrective and forceful actions under the current enactments in such circumstances if people continue to default and don't follow the guidelines.

National Green Tribunal on Solid Waste Management

The inadequate handling of solid and plastic waste by the relevant authorities has also significantly contributed to air pollution in our nation. In the case of *Almitra H. Patel & Ors. vs. Union of India*⁵⁷, the tribunal took a step forward and prohibited all open land burning of rubbish, including fires started at landfill sites. The dumping and disposal sites were determined to be a significant source of air pollution as well as a persistent and direct cause of numerous ailments. It observed that the only practical answer is to treat the trash in accordance with the regulations of 2016 in order to improve the situation and transform it into a source of electricity, fuel, and benefit for society as a whole, in accordance with the Principles of Circular Economy. In order to ensure that the Rules of 2016 are implemented efficiently and effectively and without any gaps, the tribunal issued extensive directives.

One of the main causes of air pollution is without a doubt is open-air rubbish burning. As observed in the aforementioned instance as well, the National Green Tribunal has categorically opposed this approach. In the case of *Saloni Singh vs. Union of India & Ors.*⁵⁸, the tribunal made the following observation while considering the issue of non-compliance with solid and plastic waste management rules: "It is, therefore, clear that wherever there is a significant generation of solid and liquid waste and gaseous emissions, the Water Act and the Air Act are attracted so that regulatory functions can be exercised." There is every reason to believe that significant railway stations, which the Railway Administration itself has designated as such, produce solid trash, discharge liquid waste water, release gaseous pollutants, and do all these things simultaneously, barring any evidence to the contrary. Applying this standard, it must be decided that, without evidence to the contrary, the Water Act and the Air Act regulate such stations. Such significant railway stations cannot be completely excluded from or exempted from the regulatory regime. Therefore, all significant railroad stations must obtain approval to establish, expand, and operate under the Water Act and the Air Act within three months; otherwise, the State Board will take the required legal action under the Water and Air Act's provisions".

CONCLUSION

As a result of the efficient application of NGT, environmental justice has advanced more rapidly in India. Although people's trust in the NGT is growing, there may be a lot of strain on the NGT because it requires additional staff and because it wants to resolve cases within six months. The NGT has issued a number of directives for the benefit of environmental protection and for justice for those harmed by environmental damages as a result of the consequences of sensitive environmental issues that arise from both natural and man-made sources. Two key categories emerged from the judgments examined: industry operations and nature. These industries deal with a wide range of topics, including impact assessments,

environmental clearances, small industrial units, consent, operating standards, nature preservation, forests, tree cutting, green belts, wetlands, landscape, and building. We may make the following conclusion based on current research: since industry operations and nature were the subjects of more petitions for environmental justice, greater focus should be placed on the linked issues of environmental clearances and monitoring activities. As emphasised in Article 21 of the Indian Constitution, the judiciary is accessible for the common man as part of his right to live in a pollution-free environment. This is demonstrated by the way the concerns have been addressed and justice provided by the NGT. The principle of public trust, which requires the State to behave as a trustee of the natural resources for the benefit of all people, has been highlighted as being important. One of the qualities of any effective environmental court is that it is "Responsive to Environmental Problems."

The National Green Tribunal (NGT) is a great initiative taken by the Central Government of India. Unquestionably, the National Green Tribunal has been one of the most significant and effective regulatory bodies trying to reduce air pollution. It is evident from the previous discussions that the tribunal did everything within its power to control air pollution. It has addressed the key causes of increase in air pollution, ranging from industrial pollution to stubble burning, and has published a variety of instructions to solve them in accordance with the principles of sustainable development. However, the implementation of such standards has occasionally been delayed or ineffectual. There are additional problems that make it difficult for the tribunal to accomplish its aims, such as gaps in the National Green Tribunal Act, the unprofessional conduct of the CPCB and SPCB, and the government's lackadaisical attitude toward the tribunal. Despite these problems, the National Green Tribunal has emphasized reducing air pollution and occasionally adopted a dynamic working style to quickly settle the cases it is hearing. The Supreme Court has ruled repeatedly that the right to a clean environment is a requirement under Article 21 of the Indian Constitution. Therefore, the government must fulfil its responsibility and help the National Green Tribunal achieve

its objective of a clean environment by eliminating the loopholes in the National Green Tribunal Act and creating an independent body, known as the 'National Tribunal Commission' to supervise the functioning of the tribunals.

NOTES

1. Sunday *Times of India*, Lucknow, November 13, 2022, With 'severe' AQI, 3 Bihar towns India's most polluted <https://economictimes.indiatimes.com/city/patna/with-severe-aqi-3-bihar-towns-indias-most-polluted/articleshow/95479984.cms>.
2. The Air (Prevention and Control of Prevention) Act, 1981, 2, No. 14, Acts of Parliament, 1981 (India).
3. Aiman J. Chishti, NGT Forms Joint Committee for Plan to Control Air Pollution around AIIMS in Delhi, Live Law (March. 20, 2023, 8:36 PM), <https://www.livelow.in/news-updates/ngt-committee-measures-air-pollution-aiims-delhi-224164>.
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