KAMAND VALLEY MONOGRAPHS

VOLUME III

Kamand Campus and Its Surroundings

Indian Institute of Technology Mandi

Kamand Valley Monographs

Volume Three

Kamand Campus and Its Surroundings

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Kamand Valley Monographs
General Preface to the Series

Established 2009, the Indian Institute of Technology Mandi is one of the youngest entrants to the IIT League. Notably, it is the first IIT to be located in the Himalayan region. Seldom is a remote mountain valley prime choice of locale for setting up a premier technological institute, going as it does against the conventional strategy of a location clustered around other, equally significant educational institutions. The Kamand Valley, rich in bio-diversity, is located amidst steep, rugged mountains, tree-lined hills and terraced slopes, hamlets and homesteads, flanked by snow fed streams—all held together in delicate balance by a fragile ecosystem. Thus, the very locale confers a two-fold responsibility on the IIT Mandi. For one, it needs to bridge geographic distances and engage in constant dialogue with its educational partners at home and abroad; for another, it needs to resist academic insularity and forge a vibrant relationship with the immediate neighbourhood.

Indeed, it is in the spirit of seeking to explore and to comprehend the neighbourhood in all its expressions—social, political, economical, cultural and ecological—that the Kamand Valley Monographs have been commissioned. As a publication initiative of the IIT Mandi, these monographs are designed to promote an understanding in particular of the ecology, topography, rural habitat and lifestyles, rural practices, flora and fauna, local medical practices, and the like. Public expectations of a premier engineering institution like the IIT Mandi, would point obviously to likely technological solutions to a range of issues affecting daily life in the mountains. Even if they are not of Himalayan proportions, issues like connectivity, health care, water conservation, agricultural techniques and the like call for attention. However, prudence dictates that acute understanding of local life in its entire amplitude will have to precede any change. Any attempt on the part of the IIT Mandi to make inroads into improving the quality of rural life through technological or institutional interventions, has to be backed by meaningful civic engagements. This series emphasizes, therefore, the nature of the understanding that ought to precede any

change. It is meant for the reader at large as well as the professional scientist and technologist. There is little doubt that the earnest academic engaged creatively with the world around him or her in the strict universal sense, will also respond to the challenges posed by the immediate surroundings and go beyond the narrow confines of academic disciplines.

The privileged location of the IIT Mandi in an area of undisputed ecological wealth thus holds great potential for its scholarly community. Remarkably, there is the unique prospect of living in close proximity to the local populace and of gaining deep insights into its enduring legacy of eco-friendly existence, informed as it is by concerns of sustainability and conservation of nature. Such insights prompt us to showcase, as it were, this scenic region of Himachal in all its splendour to visitors from the rest of the country and from around the world.

Admittedly, these considerations have played a significant part in the planning of this publication project, the Kamand Valley Monographs. In calling upon subject experts to visit and to explore the Kamand Campus and its neighbourhood, the idea has been to enlist their help in illuminating both the potential of the Institution in its present location as well as to address the need to prepare a road map for the future. This series of publications complement various other initiatives of the IIT Mandi such as the establishment of a Botanical Garden in its Kamand Campus.

In the main, the monographs seek to trace the history and political economy of the region of Uttarsal, changes in this region in the longue durée as well as in the last half a century; they also attempt to delineate the diversity of flora and fauna, and further, to present a clear guide for the future. Underlying such endeavor is the firm conviction that the IIT Mandi from its very inception should have a sense of its place in the history of this region of Himachal Pradesh as well as a blueprint indicating the direction and scope of its future development and expansion. Taken in this spirit, the Kamand Valley Monographs, therefore, are as much of a chronicle as a compass.

The Editors

ACKNOWLEDGEMENTS

My field studies initiated around the IIT Mandi campus at Kamand have been extremely gratifying as a researcher. This monograph, which is an outcome of my exploratory endeavours, would not have been possible without a favourable and motivating field research environment the constituents of which I wish to highlight and acknowledge for the benefit of my readers.

Firstly, I am extremely indebted to the local inhabitants of Kamand valley for their unconditional and amicable support as well as their eagerness to expose me to the intricacies of the region. I was deeply touched by their patience and humility expressed while responding to my innumerable queries which often revolved around sensitive issues. I also spent long hours interacting with the Forest Department personnel, the Block Development Officer, and the Revenue officials at the Tahsil office for enlightening me on various regional parameters that I would have otherwise overlooked. They have been kind to spare me their valuable time and have facilitated my field studies in more ways than one.

I am grateful to the IIT Mandi for hosting me in course of my field studies. This report is dedicated to the faculty, students, staff and all other residents as well as visitors of the Institute. A special note of thanks goes out to some of the faculty members. In response to my excited and gesticulated verbal 'first' impressions of the region, they suggested that I should write. What started off as sketchy notes in my personal research diary evolved to become something much more engaging! I would like to thank Prof B. Subramanian and Dr.DevikaSethi for insightful editorial suggestions. Their critical and painstaking inputs have certainly been responsible for the final shape this monograph has taken.

The location of an IIT well outside city limits is quite unusual. I do hope that this monograph will serve as a reference for conditioning the development of a sustainable Kamand Campus that grows to become an integral part of its intriguing but fragile natural rural surroundings.

RinkiSarkar

February 2016

About the Author

Taking a break from botany trails near Kandi Pass in the upper reaches of Kamand

RinkiSarkar is an independent researcher based in New Delhi. Her research work focuses on livelihood and environmental issues pertaining to high altitude human inhabited natural landscapes of the Western Himalayas. After completing her doctoral studies at the Delhi School of Economics a decade and a half ago on the role of public transport in mitigating urban environmental concerns, she undertook an arduous journey to a remote mountain village in Chamba district for exploring and experiencing the wonders of a famed sacred Deodar tree in a rural belt known as Bharmour. It appeared that the monumental pine tree, which towers over an ancient temple complex, has been protected for centuries. The expedition was essentially driven by curiosity, local folklore, and reverence for resilient human and natural ecosystem communities surviving amidst precarious environmental extremes. However, this exhilarating encounter left a lasting impression on her; fortuitously, it translated into her abiding long-term research interest in the human and natural dynamics of the region. Thereafter, these areas have become, as it were, her permanent mountain observatories for tracking and mapping the nature, pace and consequences of rural development and environmental change so that conservation concerns can be deciphered and addressed in innovative and meaningful ways.

She has done extensive field studies for mapping socio-ecological trends across the entire geographical expanse of the Himachal and Uttarakhand mid-Himalayas between 1800 and 3000 meters encompassing nearly 200 representative villages, 5000 residing households and 700 local forest patches in the vicinity, accessed by villagers. Though an economist by training, her research studies have increasingly assumed an interdisciplinary, socio-ecological approach; this orientation facilitates a holistic analysis of an interconnected ecosystem that coexists in proximity to expanding human habitations in this region. Her field research methodology entails intensive open-ended personal engagement and observation techniques by trekking into the landscape besides living with the local community for nurturing an entrusted social network. This technique, which has evolved over the years, enables her to gather 'ground-truthing' evidence on various dimensions of the natural environment and to mingle with the local community for authenticating the past, the present and their perceptions of future. Traversing through documented archival records and long-term monitoring through periodic field visits form an integral part of her longitudinal research methodology that enables her to obtain gainful insights into the varied dimensions and drivers of socio-ecological change.

In the past, she has been associated with premier academic centres of research such as the Centre for Development Economics at the Delhi School of Economics, the Planning Policy Research Unit at the Indian Statistical Institute Delhi, the Centre for Interdisciplinary Studies in Environment and Development at the Institute for Social and Economic Change Bangalore, and the Centre for Research in Economic Development at the FUNDP University of Namur, Belgium where she pursued her post-doctoral studies. Currently, she works independently and believes firmly that her evidence-based research findings can serve as vital inputs for designing and testing context specific development alternatives and policy interventions. In keeping with these inclinations, she perseveres to initiate self-driven research studies and teaching workshops on issues of relevance by approaching and collaborating with the State and other stakeholders, enabling in the process attempts to bridge the ever-present gap between research and actual policy action.

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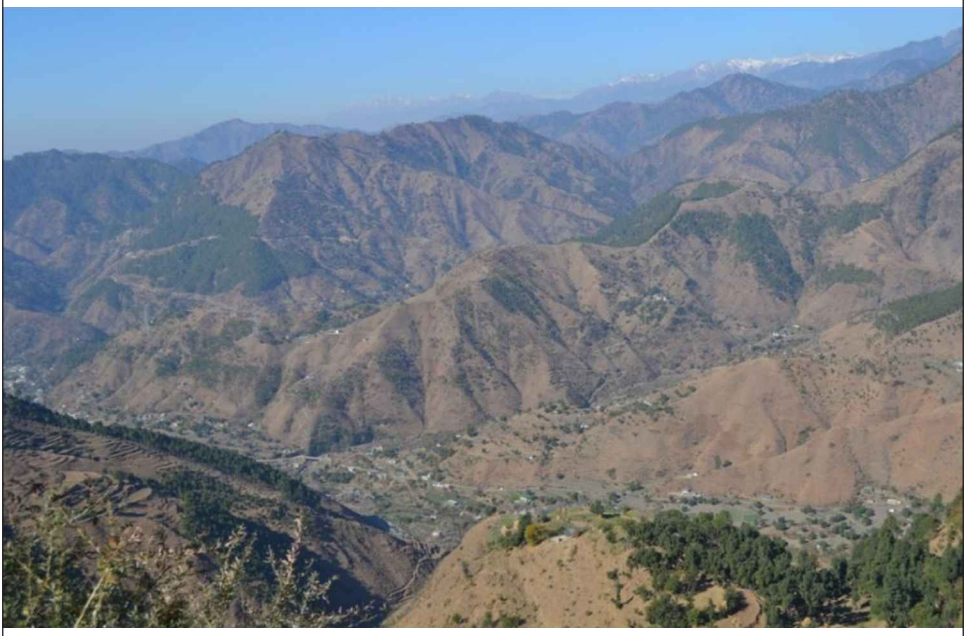


Kamand valley and surrounding ranges

We have come to this world to accept it, not merely to know it. We may become powerful by knowledge, but we attain fullness by sympathy. The highest education is that which does not merely give us information but makes our life in harmony with all existence. But we find that this education of sympathy is not only systematically ignored in schools, but it is severely repressed. From our very childhood, habits are formed and knowledge is imparted in such a manner that our life is weaned away from nature and our mind and the world are set in opposition from the beginning of our days. Thus the greatest of educations for which we came prepared is neglected, and we are made to lose our world to find a bagful of information instead.

Rabindranath Tagore: Personality, 1917

1. IMPRESSIONS OF A WINTER SOJOURN

My first exposure to the serene natural surroundings of the IIT Mandi campus at Kamand, on a frosty December morning in 2011, left me spellbound and awestricken as my reflective thoughts swayed instinctively towards Rabindranath Tagore's perspectives on education. His essay 'My School', which formed a part of our school curriculum, had cast a deep impression on my mind. Even during those formative years, I felt I could empathize with his open criticism of conventional teaching systems that were regimental, detached from reality, and hence more of an imposition on evolving young minds, stifling healthy curiosity. That was decades ago. While I pondered over his experiential learning methods under a well-canopied Peepal tree, the penetrating rays of sunlight on the proposed North campus site caught my attention. The prospect of a premier centre of learning amidst this natural rural landscape gave me immense mental satisfaction. What better way to pay homage to a living legendary figure and great visionary on his 150th birth anniversary, I thought.

North campus site from Salgi on the left bank of Kataulakikhad, 2011

Part of an emerging global community of pioneering innovative educators in the early part of the 20th century, Tagore envisioned an education system that was deeply rooted in one's immediate surroundings but also connected to the cultures of the wider world (O'Connell 2003: 2). He emphasized the significance of freedom in education, virtues of aesthetic development, rigours of intellectual growth, and the efficacy of openness in education unaffected by petty vanities. He consistently upheld inherent values ingrained in an education system that fostered an intimate relationship with one's own proximate cultural and natural environment. Through various creative and institutional ventures, he demonstrated how the overall environ

could serve as potential live field laboratory for learning and experimentation. He advocated that the teaching curriculum should revolve organically around nature with classes held in open air under trees so that students could spontaneously appreciate and seek inspiration from plant and animal life in seasonal flux.

Morning rays of sunlight illuminate the North campus site

His innovative ideas received impetus during an accidental rural tenure. Tagore, who hailed from an aristocratic family with great cultural and intellectual leanings, was put in charge of the family's rural properties in East Bengal sometime during 1890.But what caught his immediate attention was the great gulf between city elite and the uneducated peasantry in the vicinity of his country-side home. This revelation left him feeling deeply concerned; it spurred him on to promote rural uplift through education. A phase of intense engagement with rural communities followed suit. His first experiments in adult education were initiated during this period.

Subsequently, his quest for sustained rural transformation resulted in more formal institutional outcomes. In 1901 he started a small school in a poor rural hinterland of West Bengal, known as Shantiniketan. Later it developed into the VishwaBharati University for higher learning. A rural reconstruction centre called Sriniketan was an integral part of this institutional environment set up to design and implement measures targeted at long-term improvement of rural living conditions. Tagore conceived this training centre for enabling villagers to cope with their local problems rather than to rely on uncertain, short-term or template benefits doled out by government agencies. Towards this end, the institutional framework of Sriniketan had various outreach mechanisms for equipping the local population with the requisite tools. Siksha-shatraan was an innovative type of school that was created in

1927 for grooming a new generation of children from neighbouring villages so that they could use their skills for active involvement in welfare programs by engaging with marginalized rural communities in meaningful ways. In 1936, the Lok-sikshasamsad, an organization for non-formal education, was developed as a special wing of Sriniketan to benefit those who had no access to usual educational opportunities. Siksha-charcha was established the next year for grooming village school teachers to spearhead Tagore's ideals and notions of alternate education.

Tagore's emphasis on the pioneering role of education and his creative institutional endeavours for promoting rural development seemed to echo contemporary notions of 'participatory' or 'inclusive' development processes which stalwarts like AmartyaSen have been propagating for countries like India. Tagore devoted nearly forty years in strengthening these institutions that were deeply rooted in his own paradigm of education and his genuine concern for rural reconstruction. Reflecting on Tagore's ideals, I could already envisage a whole gamut of opportunities awaiting a premier educational institution of higher learning due to its location in Kamand valley and consequent potential social benefits that could flow to the surroundings.

2. KAMAND: THE LOCALE

The IIT Mandi campus, located in the quintessential rural confines of the Sadar Administrative Block, is about thirteen kilometers away from the hustle and bustle of Mandi town. The northern stretch overlooks Salgihamlet and is adjacent to Arned and Nandal revenue villages. Khani and Khutachi revenue villages are perched on mountain slopes above the campus. To the south, Karah village borders Namlaypanchayat, and the flat campus area is situated above the confluence of the river Uhl and Kataulakikhad, a local stream which meanders along the valley from its origin in the Parashar catchment. The distinct northern and southern segments of the campus are surrounded by deciduous forests on sloped mountain terrain. The dense vegetation consists of a multiplicity of trees and shrubs that are not of high quality commercial timber value but cater to a host of traditional local uses necessary for day-to-day existence. These forests are a major source of firewood, fodder, fibre, furniture and fencing material as well as datun for oral health. Some tree species or even parts of trees form an integral part of the religious rituals of the region.

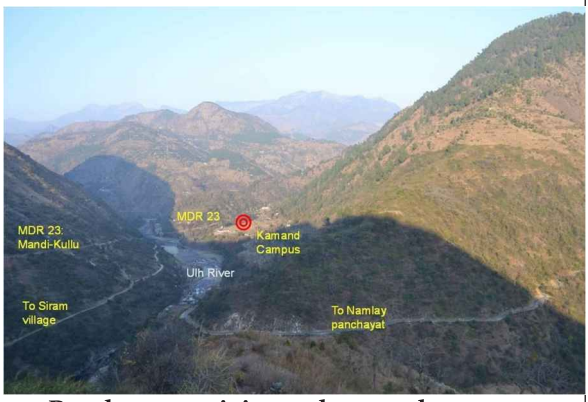
Kamand campus and its immediate rural confines

Traces of abandoned terraced fields that exist across the campus sites point to an evolving land use pattern. The area was essentially agricultural land, cultivated by the local community. However, during the early 1960s, a State-sponsored animal husbandry farm replaced these agricultural holdings in response to rural development policy initiatives to improve local cattle breeds. The flattened terraces are evidence of modern tractor farming operations that were initiated to raise special grass fodder for all the in-house superior and imported breeds of cattle and horses reared by the farm. Oral history accounts reveal that most of the local farmers who lost their land to the dairy farm were passive oustees unaware of

long-term lucrative implications of land ownership. Many were not even compensated. They surrendered their lands without much hue and cry by putting thumb impressions on documents. Over the years, the activities of the animal husbandry farm waned due to apathy and neglect, turning into a defunct institutional entity. In the course of field interviews locals lamented that despite pledging their lands to the State, village communities benefitted little from the activities of the farm.

The natural green buffer zone separating North and South campuses

For accessing the campus site, one has to embark on Major District Road (MDR) 23 from Mandi town. The winding road gathers altitude passing through urban and semi-urban settlements of Purani Mandi, Bhiuli and Khaliar. Thereafter, the mountain trail becomes predominantly rural along the villages of Bijni, Runj and Katindi converging on to Kamandpanchayat across the river Uhl.



Road connectivity and natural resource endowments around Kamand campus

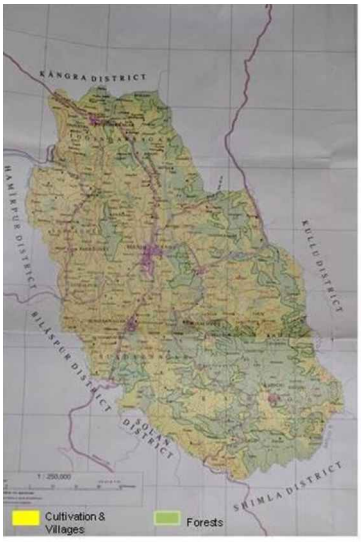
In the monsoon season of 2011, I had accidentally ventured into this region in course of my journey from Mandi to Kullu. Incessant rain and precariously rising water levels of the river Beas at Pandoh left me no choice but to abandon National Highway 21 for a detour along MDR 23. This was the only other alternate single lane road connecting Mandi town to Kullu via Katindi, Kamand, Kandi and Bajaura. At that time there was nothing much that struck me except for the resonating

symphony of cicadas as we drove along oak (Quercus) and deodar (Cedrusdeodara) forests. The overcast sky and impending nightfall had blurred my vision. All that mattered was the urgency to reach Kullu town my final destination. I raced along in haste, oblivious to the region's deep historical and socio-cultural roots as well as well as to the rich biodiversity. It was an unusual stroke of luck the following winter that drew me back to the rich landscape of Kamand valley. The favourable circumstances sparked my desire to unravel some of these multifarious regional dimensions in meaningful ways. Therefore, I spent a few fulfilling days in the hospitable company of articulate local inhabitants, sharing hearth and home, listening with rapt attention to passionate accounts of their folklore, their rituals as well as the minutiae of their day-to-day lives. I realised that the region is steeped in myth and history with local existence linked intimately to the surrounding natural environment. I was curious to unearth and to explore all of it. In the more contemporary context, what was equally pertinent was the urgency to unfold the implications of a rapidly changing scenario for the region.

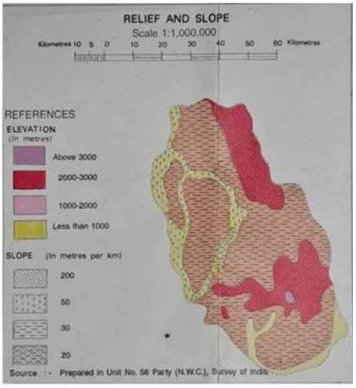
3. HISTORY OF MANDI DISTRICT

Situated along the foothills of the Middle Himalayas, Mandi district forms the geographic centre of Himachal Pradesh. A large part of the district's terrain is not as inhospitable as some of the trans-Dhauladhar mountain districts in the State. Thus, it is more densely populated with larger tracts of flat cultivable land. As per the 2011 census, Mandi is the second most populous district in Himachal Pradesh with a population of 9.9 lakhs.

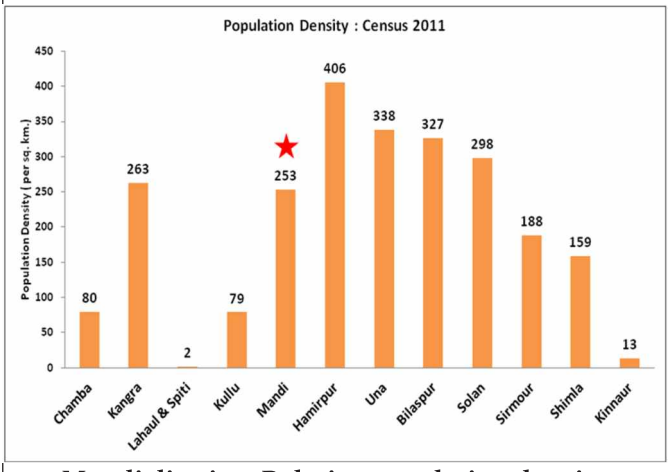
This demographic context imparts a great deal of political significance to the district. As many as ten assembly constituencies have been allocated to the region. Given the volatile nature of politics at the State level in Himachal, where political supremacy invariably oscillates between the BJP and the Congress party, the outcome of election results in Mandi can play a decisive role in tilting the scales in favour of one party or the other. By and large, Mandi has always been a stronghold of the



DISTRICT MANDI



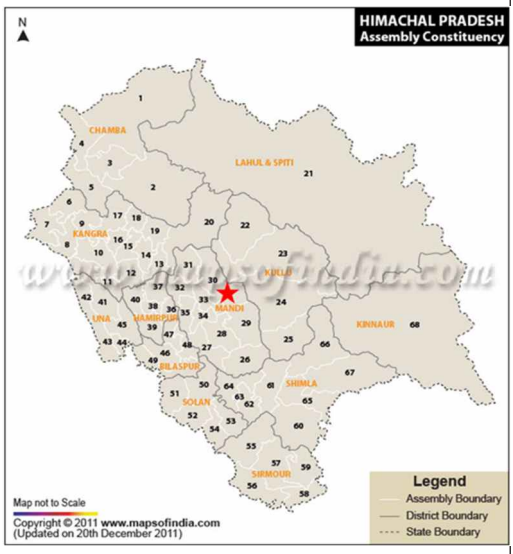
Physical features favourable for cultivation and habitation
Source: Survey of India, District Planning Map series



Mandi district: Relative population density

Congress party. It is by accident that eminent politicians have hailed from this district. This is a noteworthy factor that has influenced the trajectory of Mandi district's development in many ways.

Historically, the district is an amalgamation of the erstwhile Suket and Mandi riyasatsor principalities. It has been the seat of political power for many generations of the Sen Dynasty which originally belonged to Nadia district in West Bengal (Singh M.G. 1999: 40). They fled to the hills to escape persecution by Muslim dynasties sometime during the 12th century; in course of time they succeeded in establishing their independent capitals across dispersed locations in the region by conquering local fiefdoms. BahuSen, was the first of this dynasty to explore the Mandi region as potential political base. AjberSen, the 19th descendant of the Senmonarchy founded Mandi town much later toward the 16th century as the administrative capital of a much larger political unit, brought about by progressive consolidation of territories controlled by petty local chieftains who were overpowered and subjugated. It is believed that the name Mandi is associated with Mandavya Rishi who is said to have meditated at Kilsar, a place in the vicinity of the present Mandi town.



Mandi district: Distribution of assembly constituencies

Over the years, Mandi as a centre of political authority has emerged to become a town of considerable economic and religious significance. By virtue of its strategic location, Mandi has always served as an entrepot town connecting the plains to high altitude mountain settlements across the Dhauladhar ranges. In fact, the eminent English historians Hutchinson and Vogel attributed the name 'Mandi' to mean a market place because of its location on ancient trade routes connecting Ladakh and Yarkhand to destinations such as Hoshiarpur and Punjab in the plains. They reported that the sheer passage of hundreds of mules

carrying goods each year through Mandi town, stimulated exchange even though the State itself had little interest in the Yarkhand andLadakh trade (Minhas P. 1999:159). This legacy of Mandi as an important commercial hub continues even today. The town is situated at the junction of important transit routes such as National Highway 21 and National Highway 20 that connect Kullu, Lahaul-Spiti and Kangra districts to metropolitan centres in the plains.

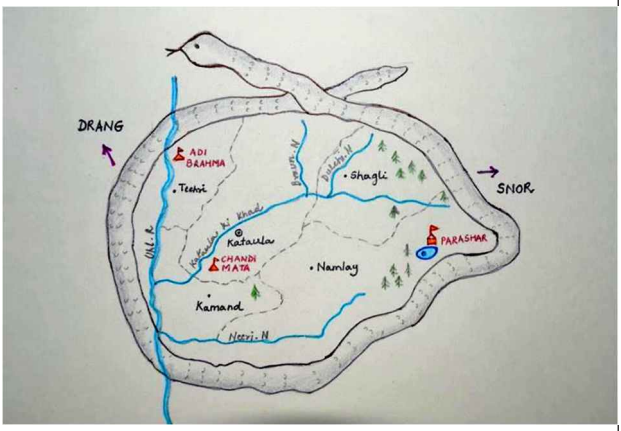
Mandi town is also an important religious centre for Hindus. It is often considered to be the Varanasi of the hills. Its development as a sacred entity has been reinforced from time to time by the rulers of this principality who were known to be great builders (Singh M.G. 1999: 42). In order to give expression to their desire for pomp and grandeur, and in part to please their subjects, rajas of the Sendynasty constructed ornate temples, forts and palaces across their kingdoms. Several of these monuments stand testimony even today to their aesthetic sensibility. Scattered across Mandi town are as many as eighty-one temples dedicated to various deities of the Hindu pantheon. The annual Shivratri festival, which is celebrated around February or March, is a religious fair glorifying the sacred importance of the town. During these festivities, hundreds of local deities from different regions in the district converge on the town. Ardent devotees carry these deities in richly decorated palanquins in solemn procession.

Mandi Shivratri festival in March: A congregation of local deities
Source: http://www.himachal-pradesh.org/ShivratriFair.aspx

The seven-day festivities draw a huge throng of devotees from all over the district and beyond, transforming the place into a virtual market-centre as well. During the fair, traders lay out their wares that consist of local products as well as general merchandise from Kangra, Kullu, Shimla, Bilaspur and the Punjab. Thus, the Shivratri festival is an occasion that epitomizes the unification of Mandi's economic and religious significance.

4. UTTARSAL: MYTHS AND BELIEFS

Kamand campus lies in the hinterland of Mandi town, known as Uttarsal in traditional local parlance. The region essentially consists of revenue villages in the Parashar catchment, lying in Teehri, Shagli, Kataula, Kamand and Namlaypanchayats of today. Sal in the local dialect stands for serpent. Folklore has it that Uttarsal was the domain of a giant serpent commanding a boundary as long as its length, and marked off from the neighbouring belts of Snor and Drang. Other local narratives ascribe the origin of the name Uttarsal to the encircling mountain ranges that resemble a giant serpent (Field studies 2011).



An iconographic depiction of Uttarsal as per folklore unearthed during field interactions

In the hills, there are frequent references to serpents or nagas in local folklore as well as in ritualistic spheres. Artisanal creative manifestations of serpents on house façades and especially on temple doors, walls and ornamental brackets are fairly common. These traditions are linked to the indigenous cult of nature worship prompted by the fear of the unknown (Berremen 1999: 94). It is believed that the earliest deities in the region were nature deities like serpents, tree spirits, mountain spirits, forest spirits and the like (Singh M.G. 1999: 51). Human existence amidst extreme and harsh conditions of mountain environments was entirely dependent on nature for sustaining livelihood in a myriad of ways. Therefore these nature deities had to be propitiated and revered in tune with accepted beliefs that vagaries of weather, natural calamities or the outbreak of fatal diseases could be averted by fervent appeal to nature powers. Mountain springs-the main source of potable water-are believed to be under the control of snake godlings. Even today, locals have unswerving faith in such deities and their power to grant rain in times of drought or to prevent human and livestock diseases. Consequently, these nature powers are ardently worshipped to thwart

all threats to survival systems of highland communities. This legacy of nature worship persists even today and Himachal Pradesh is held to be the principal centre of serpent worship in India (Singh M.G. 1999: 21).

Sacred peepal trees are fairly profuse all along the Kamand valley landscape. This species of trees is worshipped and regarded as embodiment of Lord Vishnu. In popular belief, Goddess Lakshmi dwells in the tree specifically on Saturdays. The ritual of tying a red thread around the tree is practiced by women who desire male offspring. For this reason, felling a peepal tree is regarded as heinous sin. Such religious beliefs and rituals have led to the chance conservation of this keystone

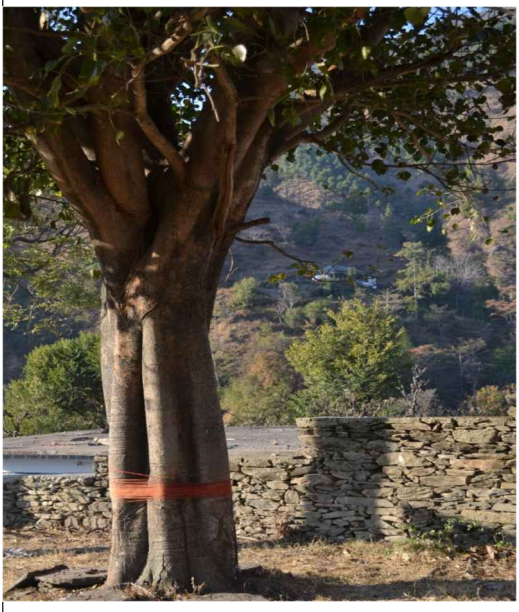
species central to sustaining the ecosystem by being host to several varieties of insects and fruit-eating birds.

Serpent engraving:
Parashar temple

Knotted serpents:
Chandimata temple, Kataula

Serpents adorn a balcony:
Adi-brahma temple, Teehri

Evidence of serpent as nature deity across Uttarsal



Peepal tree adorned by sacred red thread
Narayan temple complex, Kataula

5. UTTARSAL THROUGH THE AGES

The early history of Uttarsal is rather obscure. Some evidence of past times can be unearthed from local legends or folk retellings of myths—often celebrated in song and allied forms of devotional chanting. Since time immemorial, the Himalayas have been viewed as the abode of the Gods. Therefore, extant records, though meagre, pertaining to the pre-historic times tend to abound in rich ethnographies of the Gods and not of the mountain people (Fisher 1985: 100). Interactions with local inhabitants, during field studies in Kamand valley, reaffirmed these spiritual imaginings. It is believed that Uttarsal was infested by invincible demons or asuras who tormented the region by their destructive bent. They were constantly at war with the devis and devtas who ultimately vanquished them and wiped them offthe face of the universe, symbolising thus the victory of good over evil. During this period, hermits or rishisworked in tandem to pacify the demons in order to usher in peace through their superior powers obtained through penance and meditation. These pious rishiswere later deified and worshipped by the local populace. Shrines dedicated to these sages can be found in various parts of the upper Beas valley such as Seraj and Uttarsal.

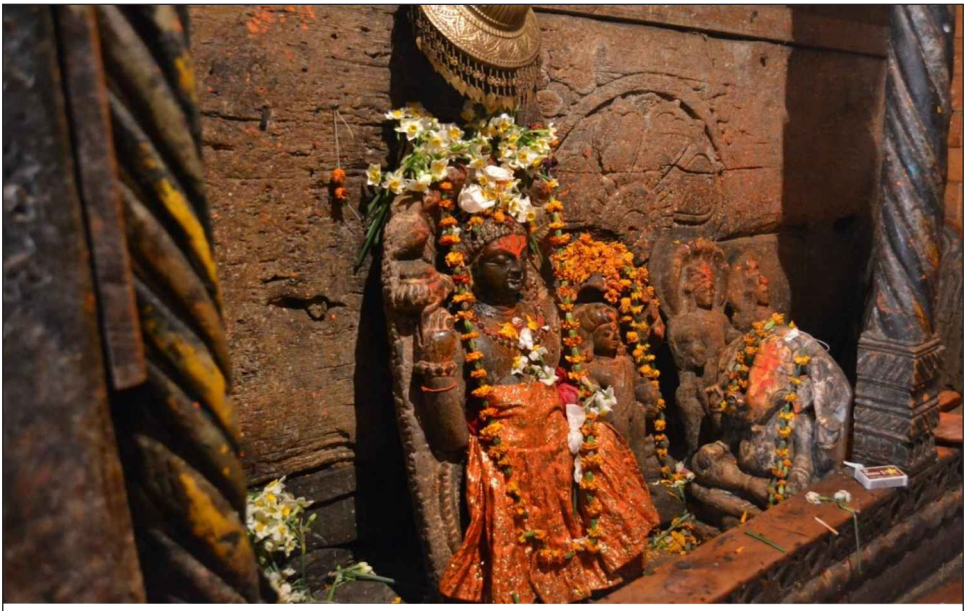
The demons and gods at war depicted through local art in the hills Devi-koti temple frescoes, Chamba district

References in Hindu epics and ancient monastic records perhaps provide the earliest preliminary evidence of human habitation in the Himalayas which could date back to the second century B.C. (Fisher 1985: 100). These accounts are mostly annals of military history, often shrouded in myth, though information on lifestyles is occasionally interspersed with battle narratives. As per these references, the ancient period, in the Himalayas, was marked by an influx of settlers seeking refuge in the undulating mountain landscape to escape repercussions of powerful dynastic empire consolidations in the plains. Other settlers

were simply remnants of wandering nomadic warrior tribes whose prime motive was survival through plunder and crime. Some of these tribes that are mentioned in epic and other accounts include the Kiratas from Central Asia, the Khasas from the North-West, the Kolis from the South and the Kanets who are believed to be the original inhabitants of the region (Fisher 1985: 100; Singh M.G. 1999: 15). Their ensuing isolation lasted till the advent of Hindu immigrants who claimed descent from Rajput warrior nobility in the plains. They sought shelter in the Himalayas in the face of fearsome religiouspersecution by conquering Muslim dynasties, in particular between the 13th and the 16th centuries. Over time these immigrants became the overwhelming majority.

More reliable historical accounts of human settlement in the Himalayas came much later with the British, between the late 18th and the early 20th century. These narratives formed an integral part of their immaculately documented gazetteers and other official records which they diligently maintained in course of their exploratory travels all across the Himalayas. Their narratives depicted a fragmented political landscape characterized by dispersed rural habitations under the rule of petty chieftains known as Ranas or Thakurais. Geological features such as a ridge or a stream usually defined the territory under their control, tending to cut off one community from the other. Thus, topography stood in the way of native chieftains expanding their very localised and fragmentary domains. Further, these inhospitable and remote Himalayan kingdoms held little prospect of loot for invaders from the plains, whose predatory gaze was focused on the fertile riverine lowlands (Fisher 1985: 101). Thus, over centuries, petty kingdoms waxed and waned in the uplands, oblivious of emerging Indian and Chinese empires in the plains.

Rather than indulging in territorial annexations, the Ranas and Thakurs laid more emphasis on religious aspects of life to legitimize their claims to kingship. Religion was an institution of governance in itself, and each village was identified by its local deity known as devi or devta,inherited from traditional times. These deities were believed to have the power to threaten life and livelihood unless placated from time to time. Such threat perceptions ensured passive compliance with social norms. Each deity exercised influence over a fairly well defined



Idol of Parashar rishi in the sanctum of the Parashar temple

territory within which a village evolved as a cohesive social unit with strong ties amongst the inhabitants and with the local deity in particular (Singh C. 1998: 209). Even today, local deities hold powerful sway in Himalayan villages.

During these medieval times, the highland barons of Himachal Pradesh lived in strategically located mountain fortresses. These towering defences enabled them to oversee and control cultivable areas under their domain (Singh M.G. 1999: 63). Besides serving as watchtowers, these overpowering tall monuments, visible from quite a distance away, were skilfully designed to ward off the enemy by sealing off entry points. For instance, access to the fortress could only be gained by means of a square recess in the floor, connected by a notched tree trunk of an entire mature

Chaini-koti. Seraj (Kullu district)

LANDMARKS OF HISTORY

Kataula village chieftain's residence:

The two storey structure that exists today replaced the 'koti' style multistorey structure, akin to Chaini-koti, because it did not withstand the Kangra earthquake of 1905 due to structural lapses

Evidence of Koti style chieftain homes in Seraj and Uttarsal

Deodar tree that served as a temporary ladder. Whenever there was any perceived threat of invasion by the enemy, the ladder was promptly pulled up to secure the building after all the villagers were safely inside (Singh M.G. 1999: 63). Based on timber reinforced dry stone masonry, these stunning structures are an outcome of one of the earliest earthquake-resistant indigenous construction techniques, practiced in response to the tectonically active Himalayan belt. The fact that some of these buildings have survived despite being exposed to innumerable tremors of varying intensity is proof enough of the structural engineering skills possessed by village inmates in those days. These earthquake-safe monuments were constructed entirely out of locally available material and designed to be particularly resistant to lateral sheer. The design features imparted strength and flexibility to the structure in order to minimize the impact of seismic shocks (Rautela P. et al. 2007: 15). Known as Koti in local parlance, these magnificent structures with intricate stone and wooden engravings on the façade and elsewhere glorified the nobility who owned the mansion as well as the village deity. The deity's exclusive enclosure was intentionally placed at the apex location of the building so as to signify the crucial protective role of religion in medieval hill societies.

In course of my field studies in the Kamand valley, I found evidence of one such fortress belonging to the local chieftain of Kataula village. During the reign of the Mandi kings, Kataula was one of the more important fiefdoms of Uttarsal and a royal khansuma or rest-house. Interaction with locals revealed that the fortress was a splendid multi-storied edifice that functioned as the abode of the Rana, and also as the shrine of the local deity, Chandimata. The monument could not withstand the seismic shocks of the 1905 Kangra earthquake due to structural design snags and it toppled over. Today, there is nothing left of it, and a new structure has been put in its place.

In Mandi, the reign of petty chieftains continued over several centuries and the consolidation of dispersed political power took a very long time. The genesis of this movement was initiated by BahuSen, one of the monarchs of the domiciled Sen Dynasty, sometime during the 13th and the 14th centuries. He quarrelled with his brother SahuSen, the King of Suket, and left with the ambition of setting up his own principality. However, it was only after a protracted struggle that his

descendants were able to suppress the local feudatories (Singh C. 1998: 23). Political restructuring reached its peak during the 16th and the 17th centuries and was finally completed under AjberSen, the 19th descendant of Bahu Sen. He set up his capital at Mandi town.

Suppression of the petty chieftains enabled the Kings to have direct access to local level resources in the periphery (Singh C. 1998: 25). Uttarsal was one such hinterland of Mandi town with potential for such exploits. In order to enhance their control over the hinterland, the rulers of Mandi had to carve access corridors in the region so as to overcome physical barriers imposed by the rugged terrain. Field interactions pertaining to the local history of the Kamand valley revealed how the access path from Mandi town to Uttarsal and Drang was judiciously planned, keeping in mind water sources and rest-houses at regular intervals. These regions were tapped for several commodities required by the rulers, and for other resources necessary for replenishing the State treasury. For instance, the King's daily supplies of potable water came from an underground mountain stream in Uttarasal, known as Halgarhkibai. The water, rich in essential minerals, was regularly transported on foot by recourse to begar or forced labor (Field studies 2011). The rock salt mines of Guma and Drang in the neighboring belts of Uttarsal proved to be extremely lucrative for the King's coffers. The excavated salt, sold to the principalities of Suket, Bilaspur, Bushahr and Seraj, accounted for nearly one-third of Mandi state's total revenue receipts (Singh C. 1998: 162). Land revenue from the hinterland was also an important source of income for the state. The primarily non-agricultural Khatri community, known to possess considerable business acumen, was deputed to collect land revenue from the peasants on a regular basis. The King bestowed jagirs or land grants to the Khatris in appreciation of their efforts. As the King's subsidiaries, they too amassed land in the periphery; this was partly on account of these land endowments and partly by seizing land forcibly from the peasantry for non-payment of land revenue dues (Singh C. 1998: 214).

But the greatest source of revenue—that far outstripped all other sources—was income generated by leasing out forests to the British for timber extraction. This catered to the British goals of colonial expansion through shipbuilding, rail network extension, and construction

activities around new hill towns that they patronized and created (Singh C. 1998: 148). This endeavour was initiated around 1880, and within a decade the State of Mandi lost a lot of its mature Deodar forests. The alien British administrators introduced better felling methods and innovative mechanisms for transporting logs along river currents. Until then local inhabitants had never envisaged the possibility of harnessing the fury of Himalayan rivers. The fate of forests in Uttarsal was quite similar. Felled logs were transported downstream along the Uhl and the Beas rivers towards the timber depots of Pathankot (Field studies 2011).

For all the above reasons, the hinterland of Uttarsal assumed importance during this period. In 1881 a new mule road was commissioned from Mandi to Kullu via the Dulchi pass, with a suspension bridge across the Uhlriver (District Census Handbook, 1991). This was perhaps the first road alignment through the Kamand valley and a precursor to the present MDR 23 which skirts the IIT Mandi campus. Local inhabitants narrated how their forefathers had to pay a toll tax of one paisa if they wished to use the suspension bridge in those days (Field studies 2011). Toll receipts collected in this manner went to the state exchequer.

In the early 20th century, Mandi remained under British influence and management while the King of the Sen Dynasty reigned as a titular head. In 1921, the states of Mandi and Suket (which formed a part of the Punjab Hill States) were delineated and placed under the direct control of the British administered Government of India. JoginderSen was the last of the ruling Kings. After independence, when Himachal Pradesh became a Chief Commissioner's province and functioned as a Union Territory, the present district of Mandi was formed by the amalgamation of the two princely States of Mandi and Suket. The district's configuration has remained the same even after Himachal Pradesh was declared a separate State in 1971.

6. LIVELIHOOD EXIGENCIES AND NATURAL UNDERPINNINGS

While the political landscape of Mandi underwent progressive transformation, the day-to-day existence of the local peasantry followed a fairly unchanging trajectory. According to local narratives, livelihood systems catered to a fairly frugal lifestyle in Uttarsal, dictated entirely by the availability of natural resources. High levels of uncertainty embedded in various facets of the mountain ecosystem, prompted locals to adopt a diversified approach towards production: they aimed at minimising risks and ensuring efficient use of limited resources. Local inhabitants, therefore, relied on agriculture as well as livestock rearing so as to cope with the vagaries and peculiarities of their environmental context.

A typical village hamlet in Uttarsal, surrounded by terraced fields near forests

In Uttarsal, agriculture was mostly rain fed except in some locations where small seasonal mountain streams were tapped for irrigation. Due to geomorphological constraints imposed by the undulating mountain terrain, not all water could be easily harnessed (Singh C. 1998: 71). But wherever feasible, the seasonal down stream flow of water was diverted to fields through collectively constructed irrigation water channels known as kuhls. Cropping patternreflected an innate understanding of environmental factors by the local populace for ensuring food security. Diverse summer and winter crops were selectively cultivated depending on climate and altitudinal variation. Maize was the predominant crop of the kharif season, sown at the beginning of the summer rains. Pulses such as rajma or kidney beans were also grown to supplement dietary needs. In addition, varieties of buckwheat and millets that were rich in nutritive value were sown in high altitude locations where the climatic conditions were favourable for raising these grains. The winter or rabi season crops essentially

consisted of wheat, mustard and barley (also an important fodder crop). Besides these cereals and oilseeds, colocasia (the local potato or arbi) was particularly valued in the villages of Uttarsal as a source of carbohydrates in winter.

Although cultivation of crops was meant mainly for self-consumption, some surplus maize from the region was exported to Kangra and Hoshiarpur in Punjab too, where it was bartered for essentials. The maize crop from these mountain belts fetched a good price since it was valued for its superior taste as compared to the maize crop cultivated in the plains. Crop residue obtained after harvesting operations was never discarded because it was an important source of fodder; hence, it was painstakingly stocked for winter months as fodder from other sources was relatively scarce during this period.

Crop residue: An important source of fodder during winter

Livestock rearing was an important element of the agrarian economy of Uttarsal. The abundance of grasslands or ghasnis on sunny spurs towards the southern aspects was particularly advantageous for rearing cattle, sheep and goats. Every village had its dedicated grass collections zones managed through collective local governance mechanisms for ensuring equitable distribution of grass fodder across households in the village. After the grass was extracted, these ghasnis became potential grazing areas for livestock to nibble on the stubble and other bushy vegetation. Before the onset of monsoons these areas were intentionally set on fire to

Cattle rearing: An integral part of rural existence in Uttarsal

clear the area of unwanted vegetation for ensuring growth of fresh grass in these pastures after the rains.

Sunny-side mountain-spurs in Uttarsal: Potential grasslands for livestock rearing

Cattle rearing yielded much needed milk and processed milk products such as ghee, besides facilitating draught operations in agriculture. Sheep and goats were mostly kept for wool, which was crucial for spinning yarn. This yarn was transformed into hand-woven clothes and shawls or pattus and blankets to withstand severe cold conditions in the winter season. Goats were sold off to butchers at times when there was a need for commercial exchange. Oral history narratives recorded in some villages of the Kamand valley indicate that there was invariably some surplus ghee that was transported on foot to Mandi town where it was exchanged for essentials or simply sold off for cash so as to meet land revenue obligations. Based on accounts accumulated from earlier generations, the locals recounted how the journey to Mandi town from the heart of Uttarsal involved nearly four hours of arduous walking.

Leaf-litter accumulation for cattle-bedding which decomposes into organic manure

Above all, it was important for the hill-peasantry to engage in livestock rearing, since it was an important source of organic manure crucial for raising output levels of agricultural produce. The inherently

low fertility levels of the sloped mountain soil, prone to erosion in various ways, would yield very little unless the productivity of the soil was raised by frequent application of organic manure. The generation of organic manure was a difficult multi-pronged operation. Leaf-litter was periodically swept off the forest floor and meticulously collected to serve as bedding for livestock by being spread in cattle-pens. When this mingled with cattle urine and excreta, the mixture turned into high quality organic manure that was gathered and dispersed across the fields to enhance the fertility of the top soil.

All forms of livelihood activities were completely dependent on the surrounding natural resource base. Water, forests and uncultivable wastelands in the village surroundings were accessed and utilised with great skill and dexterity for tending to vital necessities of day-to-day existence. For instance, underground mountain streams were prudently excavated and tapped for potablewater purposes. These were known as baiin local parlance. The water source was often celebrated with stone carvings of Ganesha as a mark of reverence to signify the importance of the resource for basic sustenance.

Traditional underground mountain springs tapped for potable water

In a similar vein, after a thorough scrutiny of their location in terms of requisite slope and necessary geographical conditions, the down-stream flow of water from mountain streams was carefully harnessed to propel locally designed water mills or gharats, installed for grinding local grains and millets to flour. Based on scientific principles of hydropower generation through turbine movement, these traditional water mills (which persist only in a few locations of the Kamand valley due to the availability of modern technological substitutes) exemplify the prevalence of fairly advanced indigenous rural technological skills in the past.

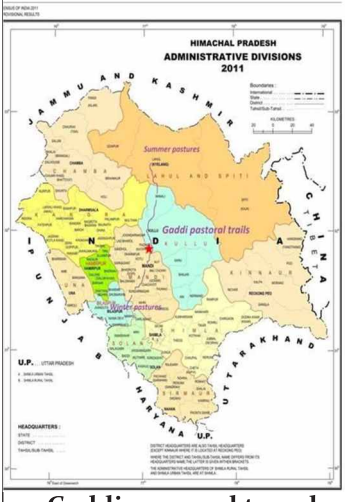
Like water resources, forests in the vicinity of mountain villages were also an integral part of livelihood activities. Domestic energy requirements for cooking and heating during winter were entirely dependent on firewood collected from forests. Besides, forests provided much needed timber for house construction, leaf-litter for manure, and fodder for cattle. Open as well as closed canopy forest areas served as grazing zones for the village livestock. A variety of medicinal herbs were harvested from the wilderness as curatives for physical maladies. This was based on a fairly intricate understanding of palliative values associated with these plant species. An examination of resource flows across forests and sources of livelihood reflects a high degree of interconnectedness. On the one hand, agricultural productivity was critically dependent on livestock rearing for manure; on the other, grass and leaf-fodder from forests complemented by crop-residue emanating from the agricultural sector was necessary for sustaining the livestock population.

A *gharat* propelled by a mountain stream

The interior

The ubiquitous traditional water-mill for grinding grain to flour

Although livelihood activities essentially revolved around agriculture and livestock rearing there is some evidence that peasants from the region often sought casual employment in the non-agricultural sector whenever the need arose. This trend became more common since the early 19th century. Locals sometimes felt cash-strapped, especially when they had to pay their land revenue dues. On such occasions, they worked as labourers in road construction sites, or engaged



Gaddi seasonal transhumance trails through Uttarsal

in activities related to timber extraction in the surrounding forests or even in far flung areas.

Access to Uttarsal's natural resources was not just a prerogative of the local inhabitants. There were nomadic pastoral communities such as the Gaddis and the Gujjars from outside the region who, during their seasonal migration into this region, also benefitted immensely from these natural endowments. For instance, the Gaddis depended heavily on the wealth of pasture resources of the region for feeding their large flocks of sheep and goats in the course of their transhumance movements. These movements were between high altitude summer pastures in the trans-Himalayan belts and their winter destinations along the Shivalik foot-hills. In the course of field interactions, the locals narrated how Gaddis followed a consistent route every year, descending from Lahaul in the winter months, across Manali and Kullu, until they negotiated the Bhubu pass from where they accessed the pastures of Uttarsal. Thereafter, they drifted towards winter pastures in the plains of Bilaspur via Katindi and Mandi or moved towards Jogindernagar in Kangra via Jatingdi. In summers, they trudged up towards Lahaul along the very same trail. Although these seasonal destinations have remained unchanged over the centuries, the Gaddis have redefined the course of their arduous journey to take advantage of an expanding metalled road network whenever possible in order to avoid the hardships of treading on wilderness trails. During early spring and at the onset of winter, it is a common sight to find large flocks of sheep and goats escorted by Gaddi herdsmen moving in unison on metalled roads, obstructing traffic and claiming a right of way.

Gaddi flocks descending to the plains at the onset of winter, spotted along Kamand campus on MDR 23

The nomadic Gujjars too arrived in Uttarasal every summer so as to graze their herds of buffaloes in high altitude pastures around Parasharlake. Unlike the sheep and goat rearing Gaddis, they never had a definite homeland. Availability of water and pastureland determined

their long, onerous and slow journeys traversing diverse mountain landscapes. Their livelihood depended entirely on the sale of milk, butter and processed products such as ghee which they churned out in their temporary high altitude hutments. As ghee was relatively non-perishable it could be stored and stocked for sale until their tenure in the highland pastures was over, and then sold in markets across the plains.

Summer pastures: The temporary abode of the Gujjar tribe in the vicinity of Parashar

7. THE VILLAGE ENTITY: PHYSICAL AND SOCIAL DIMENSIONS

All in all, like most other mountainous belts, production and livelihood strategies adopted by inhabitants of Uttarsal exhibited a high degree of interdependence and great ingenuity in design targeted at optimising efficient use of limited resources. Even the village morphology and layout was an outcome of such adaptive strategies, reflecting a purely functional utilisation of space that was intricately related to livelihood needs.

Village morphology: Uttarsal

Village sites were invariably adjacent to forests, which provided important resources for daily existence. Due topoor soil fertility and unpredictable environmental circumstances, all the best land was allocated for cultivation while compact hamlets were built on rocky spurs or worthless spots in proximity to perennial springs. Cultivation on terraces was an all-pervasive feature of the region. The sloped terrain was extremely susceptible to erosion caused by wind and the down slope movement of water or snow. Therefore these painstakingly constructed terraces were intentionally designed to serve as barriers against the resultant loss of fertility. Ownership of non-contiguous plots at varying heights was a common feature so as to reap advantages of variation in weather. This expanded the scope for cultivating a multiplicity of crops with differing harvesting schedules besides serving as a mechanism to overcome the risk of crop failure in one altitudinal belt or another. Uncultivable wastelands were crucial for fodder collection and grazing.

The temple of the local deity was the prime landmark of the village, strategically located so as to be visible to every household of the village as well as to visitors who frequented such shrines during special fairs and festivities. The temple complex, usually adjacent to a well

canopied sacred tree, was not only an important place of worship but also served as a common meeting place where locals congregated from time to time for settling village level issues that required mutual consent and collective action. Decisions made in these sacred quarters automatically assumed a certain level of sanctity, thereby ensuring easy acceptance and a high degree of social compliance.

Climate and seismic responsive local architecture based on available natural resources, designed to cater to multiple livelihood-linked functions

At the household level, the homestead was meticulously designed and constructed with locally available materials to cater to several diurnal and seasonal subsistence activities. Besides living areas, the local home had clearly delineated internal and external spaces for storage of grains and fodder, for livestock rearing, for drying cereals and pulses as well as for seasonal threshing operations of various kinds. Intimate indoor spaces and relatively flat outdoor open spaces for regular socialising, for festive occasions or for hosting the village deity were sensitively carved out. This created a congenial and hospitable atmosphere for guests. Each space and building typology reflected a systematic understanding of complex factors such as the availability of natural light, as well as constraints imposed by inclement weather or periodic earthquakes. Locals specialised in indigenous techniques such as timber reinforced dry stone masonry for constructing their homes. Such homes were climate responsive and resistant to seismic shocks that were common in these parts. Most dwelling units had thatched grass roofs that needed seasonal replacement. For roofing, slate was undoubtedly a better substitute for grass. But slate was not locally available, and transportation costs made it an expensive construction material which only the wealthy could afford (Singh C. 1998: 48).

Typical dry stone masonry that imparts flexibility to withstand seismic shocks

Based on research studies of varied mountain landscapes, ecological anthropologists have asserted that not only economic activities but patterns of social organisation and village life have evolved in response to environmental constraints (Orlove and Guillet 1985: 7). The difficult nature of the terrain, extremities of weather and labour resource constraints necessitated a high degree of cooperation in pursuing livelihood associated activities within a household as well across households in a village. As a consequence, this resulted in relatively less fragmented social structures as compared to settlements in the plains (Das 2000: 4337). Because of these rigid environmental parameters, all members of a household needed to actively engage themselves in a multiplicity of activities necessary for survival and sustenance. It is for this reason that these highland societies lacked a strong gendered division of labour within a household as compared to village societies in the plains. The need for collective action in many spheres of everyday existence led to greater flexibility in social arrangements across caste groups as compared to more orthodox Hindu counterparts elsewhere in lower altitudinal belts. Consequently, society was much less divided on caste lines and there were no sharply defined economic disparities (Berreman 1963: 70, Guillet 1983: 564, Sarkar 1998: 2802, Singh C. 1998: 208). Further, unlike in the plains, the lower castes in these highland societies were not engaged in menial activities; instead, they specialised in creative spheres and served as artisans, crafts persons or temple musicians in the village. By virtue of their traditional skills, the lower castes contributed significantly to the development of sacred architecture and to the preservation and transmission of traditional music of the region.

The existence of caste groups was merely a factor of social and customary distinction. In every village, spatial segregation of

neighbourhoods across caste groups was a common feature. Well-established customary norms permitted or prevented access to living quarters of other caste groups and the village temple. Apart from these norms, inter-personal relations across caste groups were fairly congenial. In Uttarsal, there were only two caste group: the Rajputs and the lower castes. The dual classification of caste groups into bhitkeor insiders and baharkeor outsiders exemplified the simplicity of rules governing social relations (Field studies 2011). Rajputs or Kanets were known as bhitkebecause they were accepted into all homes. The lower castes or Harijans were known as baharkeand they were denied access to Rajput homes. Harijans were barred from entering the core areas of temples, although the idol of the deity and the temple itself was a creation of their intricate craftsmanship and inherited traditional skills. Inter-caste marriages were taboo. In all other spheres of social life interactions across caste groups was always amiable and fairly liberal.

Irrespective of caste distinctions, cooperative arrangements were devised across households in a village for catering to arduous labour intensive activities such as sowing, harvesting, pre-winter firewood stocking, repair or construction of field terraces and dwelling units. This traditional social practice of mutual interdependence for pursuing livelihood linked activities was known as jwarin local parlance. For enhancing living conditions and the overall welfare of the inhabitants, locals engaged in collective activities from time to time by investment of voluntary labour or shramdan. A great deal of physical toil was required to complete these tasks, which included reconstruction of frequently damaged irrigation channels, construction and maintenance of village paths and temples, organisation of village festivities, mobilisation of resources necessary for burials and engagement in relief operations during village calamities. These activities were managed by informally constituted village councils consisting of the aged and the experienced under the surveillance of the local deity. Social sanctions had religious overtones. Fear of religious spirits believed to cause harm and anguish drove people to abide by customary codes of behaviour resulting in successful outcomes of collective action in innumerable spheres of social interaction.

8. RELIGION AND VILLAGE SOCIETY

Religion has always been an important institution of local governance for regulating mountain societies of this region. Every deity had its own realm of influence within which communities evolved as a cohesive unit, forming strong ties amongst themselves and the divine entity in particular (Singh C. 1998: 209). In Uttarsal, a three tier system of religious order was prevalent for nurturing these bonds. At the apex was the shrine of ParasherRishi, appropriately located at one of the most elevated and scenic spots of the region. Regional deities such as Chandimata of Kataula village and Adi Brahma of Teehri village were designated as secondary to the Parashar deity in the order of sacred significance. At the bottom most rung of the religious hierarchy, every village in Uttarsal had its own local deity, an iconic entity by which a village community was often identified.

Adi Brahma temple in Teehri Village, Uttarsal

The abode of the Parashar deity had a tremendous sway on the lives of local inhabitants hailing from Uttarsal. Ardent devotees from other parts of Mandi and Kullu districts also visited the shrine. The annual spring fair hosted in the temple precincts drew large numbers, converting the alpine space into an ephemeral settlement of camping pilgrims. Although there is no formal record of its antiquity, the picturesque sacred space is considered to have very ancient roots. Local folk-lore pertaining to the epic Mahabharata is ridden with tales about the Pandavas in exile, who are said to have rested in Parasher en route to Lahaul (Field studies 2011). The temple is likely to have been a nondescript structure at the time of its establishment in ancient times; the tall and elegant pagoda style temple visible today was constructed much later during the 14th century under the regime of Raja Ban Sen, one of the Sen-Dynasty monarchs famed for his patronage of the arts. It

is believed that artisans from Seraj were recruited for creating this magnificent edifice.

The shrine of Parashar Rishi: The apex religious precinct of Uttarsal

Faith in the divine powers of ParasharRishi was so deep that seeking blessings of the deity was a necessary prerequisite before embarking on any important venture in an individual's life. The deity's consent was frequently invoked in times when decision-making on critical issues was a difficult proposition marred by uncertain outcomes. On such occasions, the sacred verdict was diligently respected and honoured and locals resorted to ritualistic tools of communication facilitated by oracles for gaining access to divine realms of the sacred entity.

The Adi Brahma temple located at Teehri village was significant as this was the only temple dedicated to the Hindu Creator God, Brahma. While shrines of Vishnu and Shiva were known to abound within and outside the region, the occurrence of Brahma temples was a rarity. In the ancient past, the only temple of this deity was located in Khokhan village closer to Kullu. The deity exercised a zone of cultic influence across a fairly wide geographical expanse, including Teehri village of Uttarsal. However territorial disputes between the kingdoms of Kullu and Mandi separated the two regions, depriving outside devotees of access to the rare shrine.

Traditional ritualistic communication tools to access divine realm of deities

Therefore, in order to sustain and express their undeterred faith in the deity, the people of Teehri raised a separate temple in their village, which resembled the 14th century Adi Brahma temple of Khokhan (Singh M.G. 1999: 83).

The Adi Brahma temple overlooking a sacred Deodar tree inTeehri village

Chandimata was the main deity representing the Shakti cult in Uttarsal, and was worshipped as the supreme protector against all adversities. Local belief holds that the temple of the deity was constructed in Kataula village after one of its inhabitants found evidence of the goddess inscribed on an ashta-dhatumohur or seal found in a nearby field (Field studies 2011). Apparently, the goddess was discovered in the garb of Mrikulamata, a revered deity of Lahaul. Since Uttarsal was an important junction on the passage connecting Lahaul valley to the Punjab plains, religious influences from the north could have reached these quarters in predictable ways.

Chandimata temple in the village core of Kataula

The pagoda style is the predominant style of temple architecture as seen in the major religious shrines of Uttarsal. It is not known how these temples—with roofs shaped like multi-tiered stacked pyramids—first came to be constructed in this region. In fact, the origin of pagoda temples is considered to be a matter of much controversy among experts. However, there is evidence that many pagoda-like structures were present in the Kathmandu valley of

Nepal and may have originated in these parts. This indigenous style of Newari architecture was perhaps introduced in Nepal sometime as early as the 1st century A.D.But the architectural marvel flourished across the Himalayan kingdom between the 13th and the 18th centuries on account of the patronage of the Malla dynasties.

As per historical records, a young artist and design prodigy named Araniko, who hailed from the Newari community of Kathmandu valley, was responsible for disseminating this form of monumental architecture beyond Nepal into Tibet and China as well. It is believed that these tall, majestic monuments with graduated conical roofs were designed to portray a stairway to heaven, symbolizing spiritual access to the abode of deities.

The pagoda style Parashar temple and intricate engravings in the temple's interior

Religious melas or fairs and festivals, held in flat open spaces adjacent to the temple core, were an important element of highland existence. On such occasions village deities were decorated and paraded, with great pomp and splendour, in full view of their ardent devotees. Music and dance were an integral part of such celebrations. In Uttarsal, village festivals around religious shrines were associated closely with agrarian life. The scheduling of these socio-religious events generally coincided with the timing of crucial agricultural operations. For instance, prayers offered by the annual congregation of devotees at Parashar temple during mid-June on the occasion of nauli celebrations symbolised ceremonial thanksgiving to deities for successful and bountiful harvest of winter crops. Similarly the annual shairimela celebrations held in the Chandimata and the Adi-Brahma temple complexes were initiated to propitiate deities after a productive summer crop harvest.

Threats to the bovine population—considered to be crucial for catering to local livelihood needs—could have dire consequences for the highland inhabitants. In order to avert the possibility of such impending threats, religious rituals were periodically performed for seeking protection for the livestock against epidemics and diseases. GauPujanor livestock worship was a common practice during KartikPurima. The locals herded their cattle and other livestock to the northern site of Kamand campus, considered auspicious for performing these rituals (Field studies 2011). Lori was celebrated to thank the deities for sheltering the local population during months of severe winter. Sharvanmelahad similar connotations and was celebrated to appease the deities for preventing the outbreak of a host of diseases that the locals were particularly susceptible to during monsoon months (Field studies 2011). Besides the customary rituals and religious practices that needed to be performed with rigour, these periodic festivities served as an outlet for social exchange and rejuvenation that was necessary to overcome the humdrumness of daily life. These festivals relieved the monotony caused by physically exhausting chores and tasks necessary for survival amidst undulating terrain, extremities of climate and unpredictable weather conditions.

Annual village festivities associated with Chandimata in Kataula village
Source: Panchayat documents, Kataula

Rituals performed by oracles at the monsoon SadanuMela
Source: Panchayat documents, Kataula

9. GLIMPSES OF CONTINUITY AND CHANGE

The post-independence era in Uttarsal has ushered in a period of transformation and change in numerous spheres of rural existence. A plethora of state-driven community development programs, land reforms and better accessibility through an emerging network of roads have been significant drivers triggering the process of change. Influential political figures hailing from Uttarsal have hastened these trends by deliberately prompting fund disbursals into the region for the upkeep and creation of much needed physical and social infrastructure. Over the years, these factors coupled with the local community's own initiatives and aspirations for change have led to the region's progressive transition from a subsistence based agrarian economy to one largely geared for the market. This has resulted in rising levels of economic prosperity. Despite these developments in the more contemporary context, various facets of traditional religious, socio-cultural and economic life continue to hold sway over everyday existence in the valley. The lilting sounds of traditional local trumpet that ring out in the valley from time to time epitomises a phase of continuity amidst persistent forces of change.

Imprint of a local political stalwart: An important factor propelling change

Improved accessibility has undoubtedly been an important determinant of change in Uttarsal. Road connectivity through the valley was first initiated due to the efforts of vidhayakPiri Ram Chaudhary during 1960. The status of the kutcha road or dirt track was improved a decade and a half later when it was finally metalled, reducing travel time. In 1977, Kaul Singh Thakur, who belongs to the region, got elected to the legislative assembly as a representative of Drang constituency. Major District Road (MDR 23) connecting Mandi town to Bajaura in Kullu district via Kamand campus was upgraded during his tenure. On grounds of religious significance the

Parashar link road was also commissioned and constructed due to his efforts. He was re-elected to the Assembly for five consecutive terms and his long-term political position enabled him to facilitate sustained flow of funds for expanding the road network in keeping with the mandates of a development paradigm that advocates the importance of bringing remote mountain villages under the influence of modernisation and change (Sarkar 2010: 63). Rural link road alignments connecting each village to major road arteries are a fairly recent phenomenon and still underway. They are funded by the Central Government sponsored PradhanMantri Gram SadakYojna (Prime Minister's Rural Link Road Scheme).

Besides improvements in road connectivity, another notable landmark of the post-independence period was land reform legislation initiated nationally as well as in Uttarsal. The Himachal Pradesh Land Reform and Tenancy act of 1972 prescribed automatic land transfers to all tenants. Transfer of land to the tiller as a consequence of this path breaking legislation was not a very smooth process in Uttarsal. The Khatri community had amassed a sizeable quantum of landholdings from land revenue defaulters and they persevered to resist such transfers. Their adamant stance and indifference to the new law led to a violent social uprising in the region. One of the agitating locals named Durgu Ram from Jau village lost his life fighting for justice (Field studies 2011). Eventually the Khatris had to succumb to social and legal pressures and the locals were granted their legal property rights.

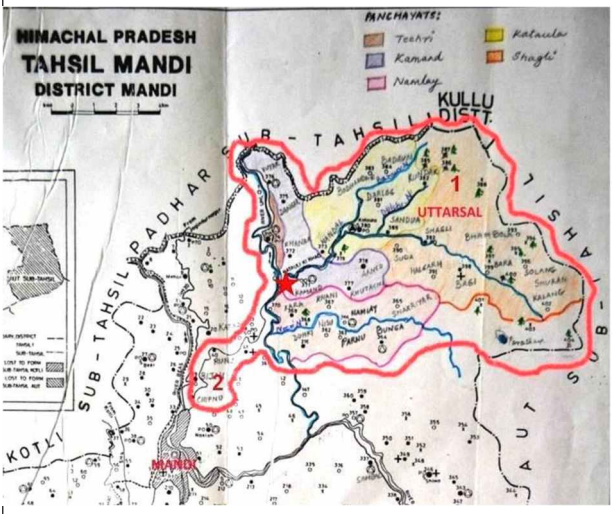
During this period the buffalo-rearing Gujjars, who set up temporary shelters in the alpine pastures of Uttarsal every summer, were also given land grants in order to encourage them to adopt a settled existence. This nautod

Marginal land grants to Gujjars on the flood prone banks of Kataulakikhad

scheme opened up opportunities for the landless nomadic tribal population, permitting them to embark on new avenues such as agriculture to which they were unaccustomed. Though the intention behind such a policy move was laudable, land grants were not always given in desirable locations. Many Gujjars had to be satisfied with marginal land close to streams or in flood prone areas of Uttarsal.

Marginal land grants to Gujjars on the flood prone banks of Kataulakikhad

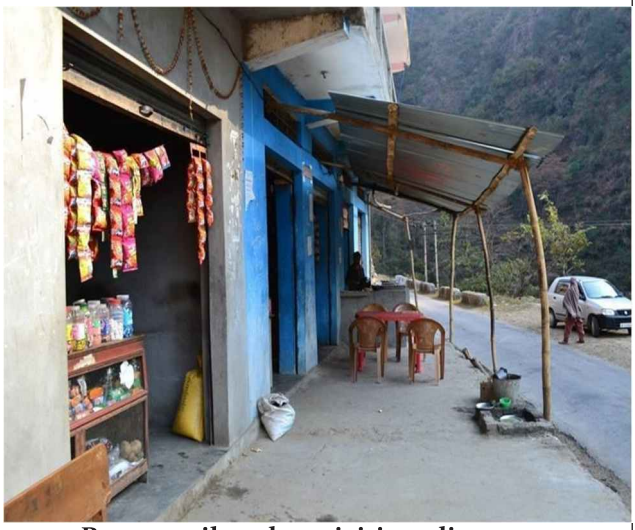
Set in motion due to favourable factors highlighted above, the intensity and pace of rural development in Uttarsal has certainly peaked over the last two decades. For instance, there has been a major shift towards production of cash crops, particularly vegetables for the market. In consonance with these trends, the cultivation of traditional crops such as buckwheat or millets and even staple subsistence crops such as wheat has declined drastically throughout Uttarsal (Field studies 2011). Even in the dairy sector, the quantum of milk and milk product for sale in the valley has increased considerably, supplementing income from sale of cash crops. These emerging lucrative ventures have been facilitated by the strategic road connectivity profile of the region which permits easy access to the booming wholesale markets of Kullu as well as Mandi. Preliminary field



Panchayats of Uttarsal
Source: District Census Handbook

investigations revealed that the local inhabitants have fully exploited these locational advantages. Over the years, they have used their indigenous skills for creating a well-developed market chain and have benefitted economically through the sale of cash crops as well as dairy products. This has been done to the extent that poverty may be an issue of less concern in the present context.

For a more detailed picture reflecting this economic boom, it may be worthwhile to note that the villages of Kamand, Kataula and Namlaypanchayats rely intensively on the sale of maize and vegetables such as cauliflower, radish, tomato, garlic and beans for income generation. Transition to rearing of hybrid varieties of cattle in place of local breeds has substantially increased the availability of surplus milk for the market after meeting subsistence needs. Nearly 10-15 quintals of milk is collected from Kamand and Kataulapanchayats every day for sale. In contrast, the villages of Namlaypanchayat rely more on dairy products for catering to the burgeoning market demand. Since the villages of this panchayat are a little remote, the local inhabitants prefer to sell less perishable types of milk products such as khoya and paneer. Easy access to firewood from forests nearby necessary for churning out these dairy products is an added boon for the local community. The remaining panchayatsof Uttarsal, namely Shagli and Teehri, have specialized in the production of vegetables and apple orchards in some locations. The high altitude setting of these panchayats results in delayed crop harvests; this assures off-season prices and therefore highly remunerative returns from sale.



Petty retail trade activities adjacent to Kamand campus

Although the primary thrust has been to focus on more market

oriented agriculture and livestock rearing as sources of livelihood, locals have also ventured into non-farm avenues of employment for expanding their income base. For example, they have fully exploited the expanding casual employment opportunities as a result of Government sponsored village level civil works as well as road development programs. With changing times, new job opportunities have also emerged at the regional level. The tourism industry of Kullu and Manali, which started flourishing after 1985 following insurgency problems in Kashmir, attracts job-seekers from fairly distant belts such as Uttarsal. To explore other avenues, a large fraction of the youth migrate seasonally to prosperous neighbouring horticulture belts of Shimla and Kinnaur districts, where they are now valued for mastering skills in apple plucking and grading operations. Those who have business acumen and capital to invest opt for retail trade or transport activities. Because of exposure and rising demand for urban goods fuelled by economic prosperity, every village now hosts a few shops displaying a variety of grocery and other items stocked through periodic visits by city-based wholesale distributors. Meagre public transport services and need for goods transportation has also led to the growth of privately initiated jeep and commercial transport service sector for facilitating movement of passengers and freight. There is a lot more inter-regional movement in the present context: for employment, as well as for panchayat meetings and other such pursuits. This generates clients for local restaurants or dhabas which have cropped up along principal road arteries.

Fish angling from Uhl-river for local restaurants or dhabas

While the proliferation of economic commercialisation has led to an apparent rise in the economic well-being of the local population, changes in other spheres of human development have been less dramatic. A scrutiny of parameters related to the status of education indicates that there is close to 100% enrolment in primary education. While this is a laudable achievement, the quality of education imparted

to students is not up to the mark (Field studies 2011). For instance, examination scores are often deplorable because of poor training in school and scanty parental motivation at home. This is a serious lacuna of the present education system in these parts. There is an absence of well-conceived teaching tools for increasing curiosity levels, for enhancing awareness and for strengthening students' basic foundational concepts. Meagre teacher accountability aggravates these problems, crippling the potential and confidence of the rural young, and dampening their capacity to seek better opportunities. These deficiencies have been observed across other rural areas of Himachal as well. (De et al. 2011: 104). Field studies revealed that most youngsters, irrespective of gender, discontinue studies after completion of 12th grade and do not pursue higher studies. Educational achievements of the minority Gujjar community residing in the region are dismal. In spite of significant improvements in economic status and close urban links as well as exposure, the Gujjars continue to have very low levels of literacy in terms of formal education.

Typical layout of a village school, with active outdoor spaces in the Kamand valley

Some undesirable trends were evident as regards the effects of transformation and change on other indices of human development such as health and the overall environment. Cultivation of high value cash crops such as fruits and vegetables in place of organically produced varieties of mountain grains, millets and pulses must have had dire consequences for overall health status of the local community, since the nutritive value of these traditional crops was very high. In course of local interactions, most locals appeared to be myopic about these health repercussions due to their preference for market oriented crops; monetary gains appeared to be of paramount importance in their decision-making processes related to farming. Only a few locals reported with regret that under the new set

of circumstances, they had to rely much more on over-refined high yielding varieties of staple cereals and pulses from the market for meeting their dietary needs. They stated that this could be an important factor causing them to have higher levels of morbidity as compared to earlier generations. As proof of their submission, they recounted that their forefathers had fared better in terms of longevity besides displaying greater physical strength and tenacity, because they relied only on the consumption of traditional crops and organic dairy products.

In course of field investigations, the occurrence of illnesses caused due to the deteriorating quality of potable water and sanitation was found to be an important health concerns. One reason for this could be the contamination of drinking water due to the rise in particulate matter, in turn caused by an increase in the usage of fertilizers and insecticides in fields. Traditional water harvesting systems such as village wells or traditional bauris that were meticulously cleaned by the community have been abandoned almost everywhere. In its place the Irrigation and Public Health Department has provided piped water to most homes or created public taps by channelizing perennial springs from quite a distance away. Periodic rupturing of these water pipelines enhances contamination, and causes wastage of water. Water is becoming a scarce resource in Himachal due to rising demand and erratic weather conditions; these have jeopardized water recharge and sustained supply at water sources (Singh H.P. et al. 2010: 75). Field observations on the status of sanitation in these villages also revealed a somewhat grim picture. Open defecation was found to be quite rampant. Even where toilets were sighted the basic environment was not very hygienic. These basic health amenities require immediate attention in order to prevent health problems among the local population in future.

In the present context, increasing opportunities for income generation within the village economy have resulted in a kind of introverted pattern of rural development: locals prefer to be gainfully employed by living in the village instead of migrating elsewhere for work (Epstein et al. 2000: 118). Higher economic returns and preference for this kind of sedentary living accompanied by rising numbers in the village has, however, intensified extractive pressures on the fragile

environment as the local population continues to rely on the natural resource base to cater to their livelihood needs. This is a recurring problem all across the mid-elevation belts. Reconciling rural development goals along with environmental sustainability has, therefore, become the greatest policy challenge in the Himalayas today. It is quite apparent that the mountain landscape—a haven for biodiversity hot spots—has now also started harbouring a proliferating conglomeration of economically buoyant human habitations. This is causing insurmountable threats to the natural surroundings.

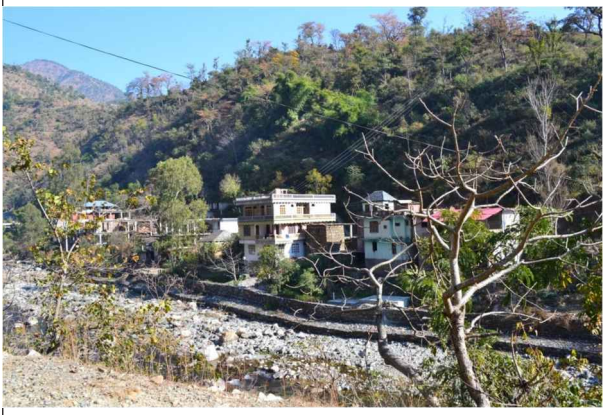
For illustrative purposes it may be noted that in the context of Kamand valley, domestic energy requirements (for cooking and heating during winter months) continues to be heavily dependent on firewood from forests. Although better road access has mitigated cylinder distribution bottlenecks to a large extent, only 15% of households have an LPG connection, which is considered to be a secondary substitute to firewood lopped from forests (Field studies 2011). Those who do own cylinders tend to conserve the resource, restricting their use to tea-making or emergency situations when lighting the firewood driven traditional stove or chulamay be difficult. Since the local population has always had unrestricted customary rights to free-ride and access forests for firewood, they prefer to use free firewood rather than expensive LPG cylinders. Rising numbers have aggravated the problem and led to mounting pressure on natural forests. For the same reasons, extractive pressures on account of fodder for animal husbandry, leaf-litter for organic manure and timber for construction of homesteads have also compounded threats to forests and the fragile ecosystem that they nurture.

Forests have always been an integral livelihood resource in the Himalayas. However, in the past, when the population density was relatively low in relation to the natural resource base, the scenario must have been less grim as compared to present times. All in all, the rapid pace of rural development—characterised by preference for farm-based and market oriented income sources, rising economic prosperity, aspirations for better living, inclination towards village-based existence and resultant demographic expansion—has led to persistent and perhaps rising levels of forest resource use (Sarkar 2013: 87). Field

research studies have revealed that such chronic and excessive biotic pressures on forest resources, particularly in the vicinity of inhabited landscapes, is the principal source of forest degradation in the Himalayas. The seemingly extensive forest stands are afflicted by over-lopped vegetation, poor natural regeneration, unstable forest community structures and depleting biodiversity reserves. This in turn jeopardizes the long-term sustainability and functioning of an intricately interconnected mountain ecosystem (Singh S.P. 1998: 1, Sarkar 2013: 80, Specht et al. 201: 201).

Impact of outside influences: A confluence of old and new aesthetic, artisanal and ritualistic sensibilities

In the socio-cultural realm, while traditional values and rituals continue to have a predominant sway over people's lives, the scales seem to be gradually tilting towards more modern aspirations and choices. Urbanization and urban sensibilities have started permeating various domains of local existence, undermining local art forms, indigenous technology and architecture, diet and dialect. This has endangered the cultural identity of these highland inhabitants. In the course of field studies, visual evidence of such trends was quite evident. Local traditions appeared to be restricted to ritualistic spheres. At



Changing rural fabric in Uttarsal reflected in the proliferation of urban concrete structures that are inappropriate to withstand seismic shocks and extreme weather exigencies

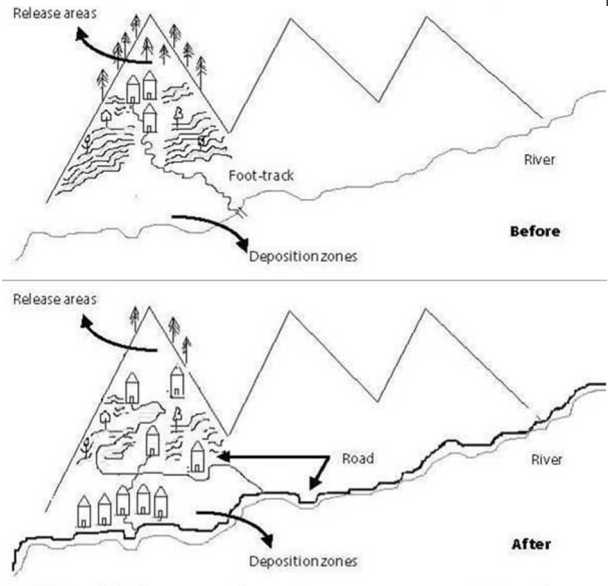
the same time, there seemed to be an ardent bid to preserve these customs. Critics have asserted that although regional integration of this kind has enhanced economic, social and geographical mobility and resulted in positive outcomes as regards economic wellbeing, the nature and pace of rural development has been detrimental to the social and natural environment (Sarkar 2010: 70).

Amidst an already dynamic scenario of transition and change depicted above, the development of Kamand campus in the heart of Uttarsal is unlikely to be an altogether benign stimulus. On the contrary, the campus development may only augment these processes. Perceptions of change have already pervaded the local mind-set. Oral testimonies gathered in course of field studies invariably reaffirmed the possibilities of better infrastructure provision and potential economic gains that would be forthcoming due to the emergence of the campus. For instance, locals anticipated that the campus could serve as a potential market for dairy products. They also anticipated the availability of job opportunities as class IV employees, befitting their educational backgrounds. The local milieu expected and unanimously welcomed the possibilities of further improvements in road accessibility due to the establishment of a premier educational institute. This would undoubtedly facilitate and strengthen economic opportunities by reducing travel time, besides enabling them to have easy access to better health facilities and educational institutions in Mandi town. However, they were somewhat myopic about potential positive educational externalities that could ensue due to the IIT campus and its location in Kamand valley. Neither did they have any inkling about rising land value implications or detrimental social as well as environmental externalities that could emanate in unforeseen ways as the campus evolved over time. They were either subdued in their responses or preferred to evade such queries. On the whole, they were convinced that the campus would lack porous boundaries, thereby curbing interactive interfaces with the rural habitations in the surrounding periphery. As per their preconceived notions, they visualized the campus as an 'encapsulated' and detached entity, in all respects much like the hydro-electric project complexes which have cropped up in various locations of Himachal Pradesh.

10. EPILOGUE

My brief sojourn across Kamand valley opened up a myriad of avenues for comprehending a region and its multifarious dimensions. The intriguing exposure to the region's historical context, its socio-cultural attributes and intricacies of livelihood existence in relation to natural resource endowments instilled a sense of reverence. However, the rapidly changing landscape compelled me to speculate and ponder over the valley's future status. Such mixed feelings and apprehensions were not unwarranted. This is because in the course of my long-term field studies in other belts of Himachal swept by similar forces of transition and change, I have been deeply concerned about the unplanned and unregulated nature of land use transformations that are occurring: expanding highways, large hydro-electric projects, emerging markets as well as administrative town centres in the vicinity of villages and a host of educational institutions. While these ventures are an outcome of the need to cater to regional or national development goals, the effects on the overall environment have not always been desirable, resulting in disruption of water systems and loss of natural forest cover with dire consequences for the overall mountain ecosystem.

At the local level, the rapid pace of transition and change has also resulted in unforeseen habitat use and abuse, making these rural settlements extremely vulnerable to loss of life and property in the event of natural disasters. For instance, the haphazard expansion of farmland and built structures on natural erosion paths (through appropriation of forest land and water



Changing characteristics of land use and village morphology reducing resilience against natural disasters Source: Sarkar 2010: 70

drainage channels) has hindered the functions that the traditional village land use structure was meant to perform for preventing damage caused by natural hazards. The village morphology—characterized by compact cluster of houses adjacent to ample forests and terraced fields together—played an effective role in regulating the down slope movement of water and soil, keeping destructive natural erosion processes at bay to a considerable extent (Sarkar 2010: 69).

These untoward land use transformations have also started threatening and fragmenting flora and fauna habitat in the wild. There is cause for concern, since a relatively sizeable fraction of these species are rare and endemic. While development cannot be wished away, the process can surely be monitored and conditioned so that damage to the environment can be minimized by reversing negative trends in meaningful and innovative ways. This is of particular relevance for a tectonically active mountain state that is ecologically fragile and inhabited by human populations whose lifestyles continue to be intricately associated with the natural resource base. I hoped that by taking cognizance of possible environmental repercussions the upcoming Kamand campus would follow an alternate trajectory, thereby setting a precedent for sustainable land use changes in the State.

These premonitions and expectations continued to linger in my mind for quite some time and I realized that my quest for tracking the Kamand campus had never really ceased altogether. Therefore, four year after my last field visit, I was delighted to get an opportunity to revisit the area in the summer of 2015. As I ascended along the winding mountain route from Mandi town to the IIT campus it was apparent that the road condition had improved markedly. This was something the rural inhabitants had rightfully anticipated. From time to time a

Built environment amid natural surroundings: IIT Mandi from a vantage point, 2015
Captured on lens by faculty member Prasanth P. Jose

speeding vehicle bearing the IIT Mandi label crossed my path, establishing the presence of the new institutional entity in the valley. I moved on, feeling restless but somewhat eager to catch my first glimpse of the campus. After I encountered a few arduous bends on the road, the surroundings suddenly opened up to a spectacular sight as I spotted the sprawling campus. The layout resembled a cluster of village hamlets overlooking a circular public space gently contoured at the foot of the mountain landscape. It was quite reassuring that from a distance, the overpowering natural environment appeared to dwarf the buildings. My first impression erased some of my preconceived fears; I was eager to explore the new developments.

Just as we crossed the glistening waters of the Uhlriver, my taxi crawled up along a narrow hair pin bend off MDR 23 and I was relieved to reach my final destination after a long and tiring journey. It was heartening to receive a warm welcome from the IIT guest-house keeper who turned out to be an amicable local lad from Shaglipanchayat near Parashar. We exchanged notes on village minutiae and I tried to enquire about the well-being of my local hosts who had been extremely supportive during my field trip in 2011. He offered me a refreshing cup of tea and I opted to sit outdoors in communion with the natural surroundings. As I gazed into the horizon, I noticed that the ground around me was already covered by dense grass growth after the first pre-monsoon showers. The carpet of fresh green was intercepted by a fairly profuse outgrowth of wild flowers, mostly the delicate White Dutch Clover and the petite Pink Evening Primrose, both of which drew honey bees and other arthropods in large numbers.

Pink evening primrose
(Oenothera rosea)

White dutch clover
(Trifolium repens)

Wild floral diversity around IIT guest house

As I ruminated over my privileged bearings away from the asphyxiating perils of city life, the serenading call of a Great Barbet filled the surroundings at dusk, elevating my spirits. Its colorful plumage caught my attention and I rushed to fetch my camera. The whole area seemed to

be a haven for the Himalayan Bulbul. Even during the short spell I spent outdoors, that evening I spotted many birds of this species identified by their magnificent regal crests protruding above the forehead. At intermittent phases, a solitary grey Bushchat with its bandit like eyes appeared to observe me curiously from a distance.

It was quite exhilarating to experience the region's biodiversity. To my great relief, it seemed to co-exist happily with all the new developments so far. I darted off to see if I could get some information on the campus design mandates via the internet, by tapping the Wi-Fi connection in my room. Internet connectivity was something I could never have imagined four years ago when I was here. On the internet I found beautiful images of the campus posted by a faculty member. From these photographs it was evident that they were the outcome of an intense emotive connection to various dimensions of the serene surroundings and a passion for observation. This was an enriching revelation which indicated that the location of the campus could offer avenues for nature related experiences and aesthetic development, in addition to one's academic engagements and other responsibilities.

Relating to nature: Grey Bushchat in the green tracts around Kamand campus
Photograph by faculty member Prasanth P. Jose

My thoughts drifted to a recent research paper I had read which reinforced the growing body of scientific evidence about the role of natural surroundings in improving mental well-being (Bratman et al. 2015: 8567). The research study was conducted by a group of conservation biologists from Stanford University. As a prelude to their own research findings, their review of other studies highlighted that growing up in greener rural versus urban settings is associated with

lower stress levels. As per these correlation studies it appeared that window-views which include natural elements are associated with superior memory, better attentiveness, impulse inhibition as well as greater feelings of subjective well-being. Through controlled empirical experiments the Stanford researchers were able to prove that natural areas may be vital for mental health, particularly in the context of our rapidly urbanizing world where mounting threats to the shrinking green cover seem all pervasive. I presumed that at least in this regard the location was a boon for those who had opted to be a part of Kamand campus even though they may have been deprived of a whole gamut of urban privileges.

Integrating the built and the natural environment: Frank Lloyd Wright's creation 'Falling water', considered to be the best all time work of American Architecture

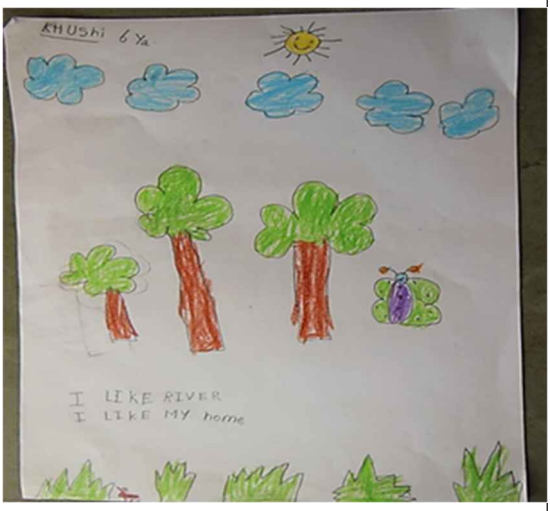
Source: https://en.wikipedia.org/wiki/Frank_Lloyd_Wright

From the very outset the architects of IIT Mandi campus were briefed by the Institute to conceive an Eco-campus compatible with the existing natural surroundings. They responded with a master plan and built an environment scenario that depicted features inherent in the robust traditional Himalayan settlement form besides adhering to geomorphological constraints imposed by climate and topography. Evolving watershed management proposals, slope stabilization strategies and energy conservation measures were an integral part of the design exercise. Much to my satisfaction, sustaining the native flora and fauna was an important design objective.

While I pondered over the campus design and setting, I was reminded of America's noted architect Frank Llyod Wright and his inspiring creative ventures. A few weeks ago, my friend, a ceramic

designer, had lent me a documentary film on the life and work of the architect. As I viewed the biographical documentary I was mesmerized by his undeterred spirit, his ideological inclinations and his firm determination to pursue his beliefs (Burns et al. 1998). Throughout his distinguished career as an architect, a writer and an educator, he believed that buildings should be in harmony with the surrounding environment. His immaculate designs, an outcome of great skill and dexterity, undoubtedly reflected that he was a pioneer in integrating the indoors and the outdoors, something he considered to be very important for the human mind. I felt that his ideas had great relevance for the Kamand campus site.

After spending quite some time indoors I could not hold myself any longer. After a sumptuous breakfast I rushed to experience the main campus premises so that I could survey the nature of transformations that had actually happened since my last visit. The whole area was buzzing with activity, obscuring the abandoned animal husbandry fields that were visible in the past and in my memory. Although construction activities were still in progress, I gathered that the campus was already hosting a diverse milieu of resident students, faculty with different academic backgrounds and regional identities, as well as administrative staff. It seemed like a whole new socio-academic world had emerged from nowhere. A new petrol pump had come up in the fringe areas along with commercial banks to cater to the Institute's inhabitants. I was quite sure that these amenities would have benefitted the surrounding villages as well.



Celebrating and acknowledging the surroundings Sketch by Khushi, age 6 years, IIT Mandi Takshila School

At the edge of the sprawling campus I sighted a school for children and ambled along to meet the pupils. The children were outdoors and I took advantage of this opportunity to gauge their

nature observation skills by drawing their attention to a trail of ants moving along in unison. For a while, they were captivated. At my behest and after I had befriended them adequately, they willingly settled down indoors for sketching their pristine surroundings. Their creative expressions made me realize how fortunate they were to be able to spend their formative years in the heart of nature.

The children took their assignment quite seriously and while they were busy I decided to interact with the teachers so as to gain insights in to the school and its objectives. It appeared that the school started functioning by mobilizing children of faculty and staff members from the campus. However, the present academic year had opened up admission prospects for aspiring students from the surrounding rural areas as well. I found that nearly forty students hailing from these villages had been admitted to the school. This was a laudable achievement. The teachers confided that counselling their parents to give up social taboos so that their children could grow up in more liberal confines of the school was an uphill task. My research studies undertaken to comprehend inter-village variations in well being across a wide geographical expanse of the Western Himalayas has invariably pointed to the positive role of local educated visionaries as catalysts for promoting development and change. Deep in my heart, I was very hopeful that these young students inducted to the Kamand campus school would grow to become active social entrepreneurs for steering their respective villages on to sustainable paths of progress.

Having spent rewarding moments with these school children, I decided to move on so that I could mingle with faculty and students of the Institute. After hovering around for a while I realized that the canteen was a prime location for seeking the student fraternity's opinions on campus living. I settled down over a cup of desicoffee churned out at the canteen which was run by locals from the surrounding area. Most respondents confessed that they missed the urban amenities that they were used to, such as malls which offered a lot of avenues for spending their leisure time. Many pacified themselves by conveying that they would catch up with city life during the vacations when they left the campus and got back to their urban homes. Some students stated that opportunities for hiking which their natural surroundings offered were a worthy compensation for their secluded

existence. While they were immersed in articulating their thoughts I had already concluded that they were lucky to have the best of both worlds.

To delve into academic issues I decided to get some insights in to the student's curriculum by interacting with faculty members. It appeared that there were some provisions that enabled students to engage with their rural surroundings as well as campus development priorities. I was excited by my discovery and was eager to probe deeper into various dimensions of these programs. The National Service Scheme (NSS) was being offered as an elective whereby a voluntary group of students and faculty joined hands to work for the betterment of communities both within and outside the campus precincts. By bonding together they made great strides in improving campus cleanliness and engaged in tree sapling plantation programs for furthering campus sustainability goals. Their productive endeavour, aptly known as Prayas, appealed to me immensely. In order to upgrade English language and Science skills of high school students from Kataula, Kamand and Katindi villages they designed and imparted a supplementary education program to the pupils who were at a crucial juncture of their education career. There has been a lot of discontent about the quality of education in local government schools. Therefore their well targeted efforts seemed extremely relevant for strengthening village students' basic foundations in these subjects. This would have immense pay-offs for these youngsters both in the short-term and in the long-run.

During the course of my research engagements in the Himalayas, I have often wondered why technological interventions have not been strongly recommended in policy circles as viable options for improving living conditions, for the provision of infrastructure, and for environmental conservation. My research studies invariably point to the deteriorating mountain ecosystem due to the rapid pace of transformation and change these regions are witnessing. Under these circumstances, while institutional changes and awareness creation is necessary, I firmly believe that technological solutions hold great promise for reversing unsustainable trends.

It is because of my faith in technological solutions for ecological problems that I felt an immediate affinity towards the Interdisciplinary

Socio-Technical Practicum (ISTP), a programme that seeks to integrate technological and institutional solutions for improving rural living conditions. It is a collaborative effort between in-house faculty and students at IIT Mandi and students of the Worcester Polytechnic Institute (WPI), USA. A brief discussion with one of the faculty members involved did not seem to quench my thirst. So I requested him to share a comprehensive report the team had put together highlighting their efforts. Based on a review of relevant literature and an understanding of the socio-economic context through field surveys, I found that they had focused on important livelihood and health concerns through innovative technological and institutional interventions. I was very impressed by the quality of research work, field surveys and technological outcomes succinctly conveyed through a well written and well-designed report. The document was valuable and I felt that it could very well be a precursor to justify the setting up of an 'on campus village technological innovation center' for addressing problems in Himalayan villages in a sustained manner (WPI/IIT Mandi Report 2015).

Socially responsible endeavours: ISTPstudents of IIT Mandi and WPI conducting interviews with a farmer in Kullu Source: 2015 WPI/IIT India Project Center: Annual Report

Above all, I thought that the NSS and ISTP programs were remarkable for motivating students to be socially responsible. In this regard, the Kamand campus was strategically located for such action oriented research, since the surroundings afforded ample scope for exposure to a host of issues that needed to be recognized, prioritized and addressed. I hoped that the programme would evolve to address other pertinent issues relevant to the Himalayan setting of IIT Mandi, including but not limited to disaster management issues and environmental concerns.

At the end of my re-visit tenure, it seemed like most of my preconceived apprehensions were being laid to rest by the evolution of

the campus. It was gratifying to gather that there was intent in some spheres and actual engagement in others for promoting campus sustainability objectives. There appeared to be a concerted drive to interface with village inhabitants for improving their quality of life through students' curriculum and other forms of engagement. At the same time, I realized that I did have some concerns about the green areas within the campus that seemed to have been undermined due to the ongoing construction work. I hoped that the proposed landscape design interventions, that were to be initiated after construction had ceased altogether, would take cognizance of the damage and make necessary rectifications besides improving the overall natural environment in and around the campus. I tried to visualize the campus in the aftermath of these green initiatives.

In course of my recent exposure to the campus of Princeton University, I was overwhelmed by the green campus surroundings. After probing into relevant literature I gathered that the awe-inspiring outdoor environment was the creation of a well-known naturalist landscape designer Beatrix Farrand. I was fascinated by her design principles. Her landscape interventions were an outcome of reverence for ecological principles; she persevered to incorporate natural ecosystems as an integral part of her designs. She believed that nature was the source of design. Therefore while organizing the Princeton campus she conveyed that her goal was to adapt to nature's way (Green

The rejuvenating green alleys of Princeton University: Legacy of naturalist landscape designer Beatrix Farrand

White dutch clover Growing wild across the Princeton campus grounds

Personal visit, June 2015

Campus as a living lab: Princeton University Personal visit, June 2015

J. 2013). I felt that my fortuitous encounter with Farrand's profound principles for creating congenial natural environments was of great significance for landscaping the uniquely situated Kamand campus.

As I walked along the campus alleys in Princeton I was also attracted to a colourful notice board that displayed a panel on campus sustainability. A three-pronged strategy for meeting campus sustainability goals was vividly portrayed through a clear diagram. The basic thrust was on ensuring resource conservation and greenhouse gas reduction, besides initiating research education as well as civic engagement by using the campus as a living laboratory. But the program was also designed to propagate innovative methods of learning for students. Through meaningful engagement and involvement in varied activities, the program attempted to create awareness about the local environment and its links with global sustainability concerns. My thoughts instantly converged on the evolving IIT Mandi campus at Kamand and I saw great potential in assimilating some of the elements of this program to design a framework for formulating and achieving campus sustainability goals.

Kamand campus: preserving the natural environment
Photograph by faculty member Prasanth P. Jose

I earnestly felt that at this juncture of campus development, long-term monitoring of important parameters related to the built and natural environment through scientific base line studies is crucial for ensuring a sustainable Kamand campus. In this connection, the incorporation of realistic thresholds for each of these parameters is important so that whenever these limits have been exceeded, necessary action can be taken to thwart undesirable trends. I was glad, therefore, to know from IIT Mandi that a green office had been created there, and an in-house green coordinator had been appointed for tracking and monitoring sustainability

indicators. I thought to myself that this was a great beginning and a step in the right direction. In addition, if the study of sustainability and rural development can be integrated into teaching modules and research programs it will assist in building an intelligent interface between the campus and its surrounding rural confines. This would also ensure greater and more informed involvement in campus sustainability objectives by the entire community living and working in the Institute. Sustaining and intensifying these efforts will be the key to the future of Kamand campus.

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Notes

His grandfather Dwarkanath was involved in supporting medical facilities, educational institutions and the arts, and he fought for religious and social reform and the establishment of a free press. His father was also a leader in social and religious reform. Within the joint family, Rabindranath's thirteen brothers and sisters were mathematicians, journalists, novelists, musicians, and artists. His cousins, who shared the family mansion, were leaders in theatre, science and a new art movement. See O'Connell K. M. 2003.

Incidentally, AmartyaSen, whose name was given by Tagore, did his schooling at PathaBhavan, Shantiniketan. This was set up in 1901 along Tagore's ideas of education and was referred to earlier as AsramVidyalaya.

As per the census definition, a revenue village has a definite surveyed boundary and each village is a separate administrative unit with a separate village account. See District Census Handbook 1991.

Some of the important species of trees and shrubs that cater to non-timber forest produce requirements are colloquially known as Biul, Shatoot, Chir, Simbal, Dharek, Phagda, Peepal, Kashmal, and Timber.

These are Karsog, Chachyot, Nachan, Sundarnagar, Bahl, Gopalpur, Dharampur, Jogindernagar, Drang and Sadar.

These include Pangwara, Chawasi, Lohara, Kartarpur, Batahuli and Bhiuli.

District Census Handbook 1991.

Yarkhand is the present 'Uyghur' city located in the Autonomous Uyghur region of China. It was the seat of an ancient Buddhist kingdom, on the southern branch of the Silk Road, a historical network of trade routes connecting Central Asia, India, Bangladesh, Java, Indonesia, Vietnam, the Arabian Peninsula, Somalia, Egypt and Europe. Though silk was certainly the major trade item from China, many other goods were traded, and various technologies, religions and philosophies also travelled along the Silk Routes.

The fair was initiated by IshwarSen, one of the imprisoned kings of the Sendynasty, who lost his kingdom to Sansar Chand of Punjab in 1792. He was later released by the Gorkha invaders who helped to restore Mandi back to him. The day of his return, which happened to be Shivratri, was

celebrated with great pomp and honour and the King invited all the hill deities of the kingdom to participate in the celebrations. This tradition of holding the Mandi fair during Shivratri and the congregation of local deities has continued over the years. (For further details see relevant Wikipedia entry.)

Even in the contemporary context, two-thirds of the population in the Western and Central Himalayas can be categorised into the generic caste category known as Rajputs.

The Khatris were traditionally engaged in money lending, trading and other kinds of non-agricultural operations such as management of the iron-smelting industry (Singh C. 1998). They were frequently deputed as court officials as they were skilled in accountancy and management (Census of India 1991).

Live animals were exported from Mandi to butchers in Shimla, especially when the demand for meat rose in the post-colonial era as the colonizers set up their summer capital at Shimla. (Singh C. 1998).

Because of these kinds of engagements, labor from various parts of Mandi, became specialists in forest work. So skilled indeed were the Mandi people in this work that the State gazetteer of 1920, emphatically states: '...not only are Mandi sawyers, floaters and carriage coolies met with throughout the forests of the Punjab Himalayas, but also as far as Garhwal.' (Singh C. 1998).

The extensive seasonal movement enabled them to exploit natural resources of areas lying in different climatic zones well beyond their permanent homes (Singh C. 1998, Sarkar R. 1998).

The Gujjars are identified by their distinct cultural identity and may have made their appearance in Himachal some time during the early part of the 20th century. They are mostly Muslims and can be found grazing their herds in all districts of Himachal except Lahaul-Spiti and Kinnaur. Ever since Forest settlement formalities were laid down under the British regime, they have acquired customary rights to graze their flocks of buffaloes in dedicated pastures across the state.

An alloy of gold, silver, copper, parad, tin, iron, lead and brass usually utilized for creating sacred Hindu idols.

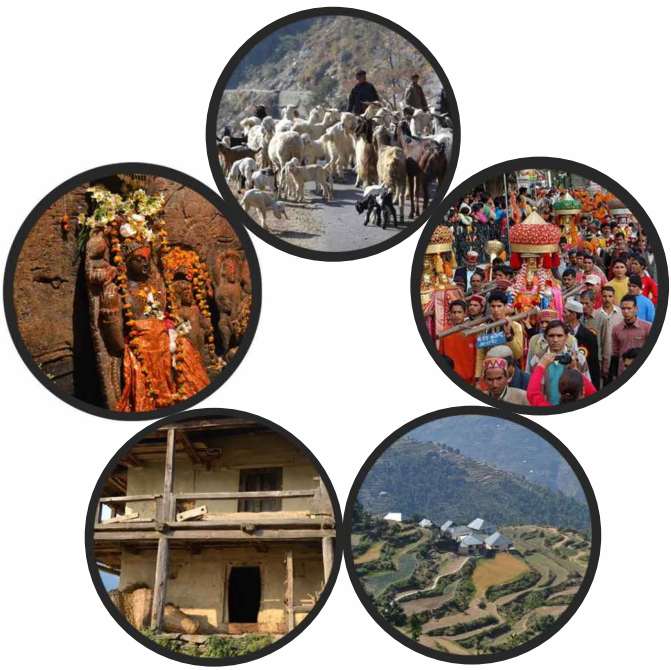
See http://www.webpages.uidaho.edu/arch499/nonwest/nepal/Pagoda.htm.

The Pashupatinath temple in Kathmandu was constructed in the 1st

century AD and is considered to be one of the earliest pagoda style temples in existence.

Greatly impressed by his creative skills, and in response to requests made by the Mongol ruler Kubla Khan, the Malla Dynasty kings deputed Araniko to lead an entourage of Nepali artists to the Chinese province for designing pagoda style monasteries across a wide expanse of the allied emperor's kingdom. Thereafter, the pagoda style architectural movement gathered momentum, spreading to other parts of China and even further away, influencing Buddhist monuments in south-east Asian countries such as Japan and Thailand. (For further details see relevant Wikipedia entry on 'Araniko'.)

These festivals were also common to other parts of Himachal Pradesh (Singh M.G. 1999).



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