

Challenges of Urbanization in mountains

- **Urbanization** (or **urbanisation**) refers to the population shift from rural to urban areas
- It is the process through which cities grow, and higher and higher percentages of the population comes to live in the city.
- More than half of the world's population now live in urban areas — increasingly in highly-dense cities. However, urban settings are a relatively new phenomenon in human history. This transition has transformed the way we live, work, travel and build networks.

- It is predominantly the process by which towns and cities are formed and become larger as more people begin living and working
- It is predicted that by 2050 about 64% of the developing world and 86% of the developed world will be urbanized.
- That is equivalent to approximately 3 billion urbanites by 2050, much of which will occur in Africa and Asia.
- Urbanization is closely linked to modernization industrialization, and the sociological process of rationalization.
- Our expanding cities take up a lot of land, only around 1% of global land is defined as built-up area
- Urbanization creates enormous social, economic and environmental changes
- Urbanization is not merely a modern phenomenon, but a rapid and historic transformation of human social roots on a global scale, whereby predominantly rural culture is being rapidly replaced by predominantly urban culture.

- From the development of the earliest cities in various civilizations until the 18th century, an equilibrium existed between the vast majority of the population who were engaged in subsistence agriculture in a rural context, and small centres of populations in the towns where economic activity consisted primarily of trade at markets and manufactures on a small scale.
- The ratio of rural to urban population remained at a fixed equilibrium. This relationship was finally broken and an unprecedented growth in urban population took place over the course of the 19th century, both through continued migration from the countryside and due to the tremendous expansion
- The main objective related to urbanization is to use resources more efficiently, to create more sustainable land use and to protect the biodiversity of natural ecosystem

- Urbanization rapidly spread across the Western world and, since the 1950s, it has begun to take hold in the developing world as well.
- At the turn of the 20th century, just 15% of the world population lived in cities and by 2007 more than 50% of the world population were living in cities
- Causes
- Urbanization occurs either unintentionally or planned as a result of individual, collective and state action.
- Living in a city can be culturally and economically beneficial since it can provide greater opportunities
- Cities offer a larger variety of services, including specialist services not found in rural areas. These services require workers, resulting in more numerous and varied job opportunities. Elderly people may be forced to move to cities where there are doctors and hospitals that can cater to their health needs. Varied and high-quality educational opportunities are another factor in urban migration, as well as the opportunity to join, develop, and seek out social communities
- However, there are also harmful social phenomena that arise: alienation, stress, increased cost of living, and mass marginalization that are connected to an urban way of living

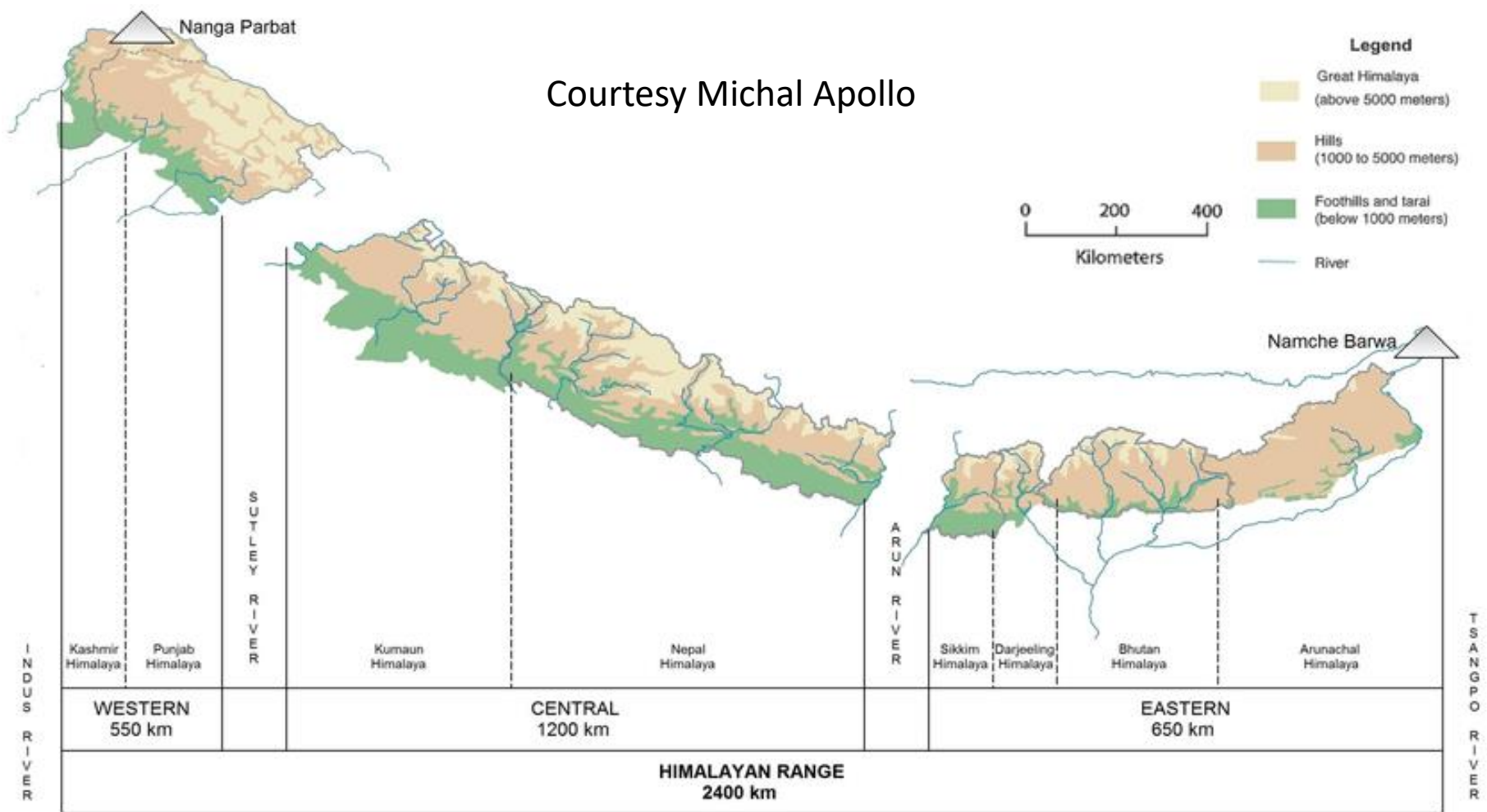
- **Urban heat island**
- An urban heat island is formed when industrial and urban areas produce and retain heat.
- Cities are often 1 to 3 °C (1.8 to 5.4 °F) warmer than surrounding landscapes. Impacts also include reducing soil moisture and a reduction in carbon sequestration
- **Water quality**
- The occurrence of eutrophication in bodies of water is another effect large urban populations have on the environment.
- **Food waste**
- Rapid growth of communities create new challenges in the developed world and one such challenge is an increase in food waste. Food waste includes food products that can no longer be used due to presence of unused products, expiration, or spoilage. The food waste increases production of methane gases and attraction of disease vectors.

- **Habitat fragmentation**
- Urbanization can have a large effect on biodiversity by causing habitat fragmentation alienation of species, decreases in species richness, dominance of anthropophilous species.
- **Health**
- Rapid urbanization has led to increased mortality from non-communicable diseases associated with lifestyle, including cancer and heart disease
- Urbanization is associated with improvements in public hygiene, sanitation and access to health care, it also involves changes in occupational dietary, and exercise patterns. It can have mixed effects on health patterns, alleviating some problems, and accentuating others.

- Mountains are endowed with rich biodiversity both in terms of flora and fauna.
- With the increasing of population and urbanization of many of the rural centre there is pressure exerted on these natural resources for the livelihood as there is hardly any alternative available.
- Small forest based urban centers, development works including setting up of industry, the requirements have change. Better education health and also luxury become need of the areas.
- There occurs vast changes in land use pattern.

- Urbanization and population pressure in mountains are two of the most important threats to biodiversity worldwide and their growth affected natural resources.
- Urban area may make threats ecosystem through direct habitat conversion and through various indirect effect of population density many kind of precursor, both social and environmental, appears in habitat.

Himalaya



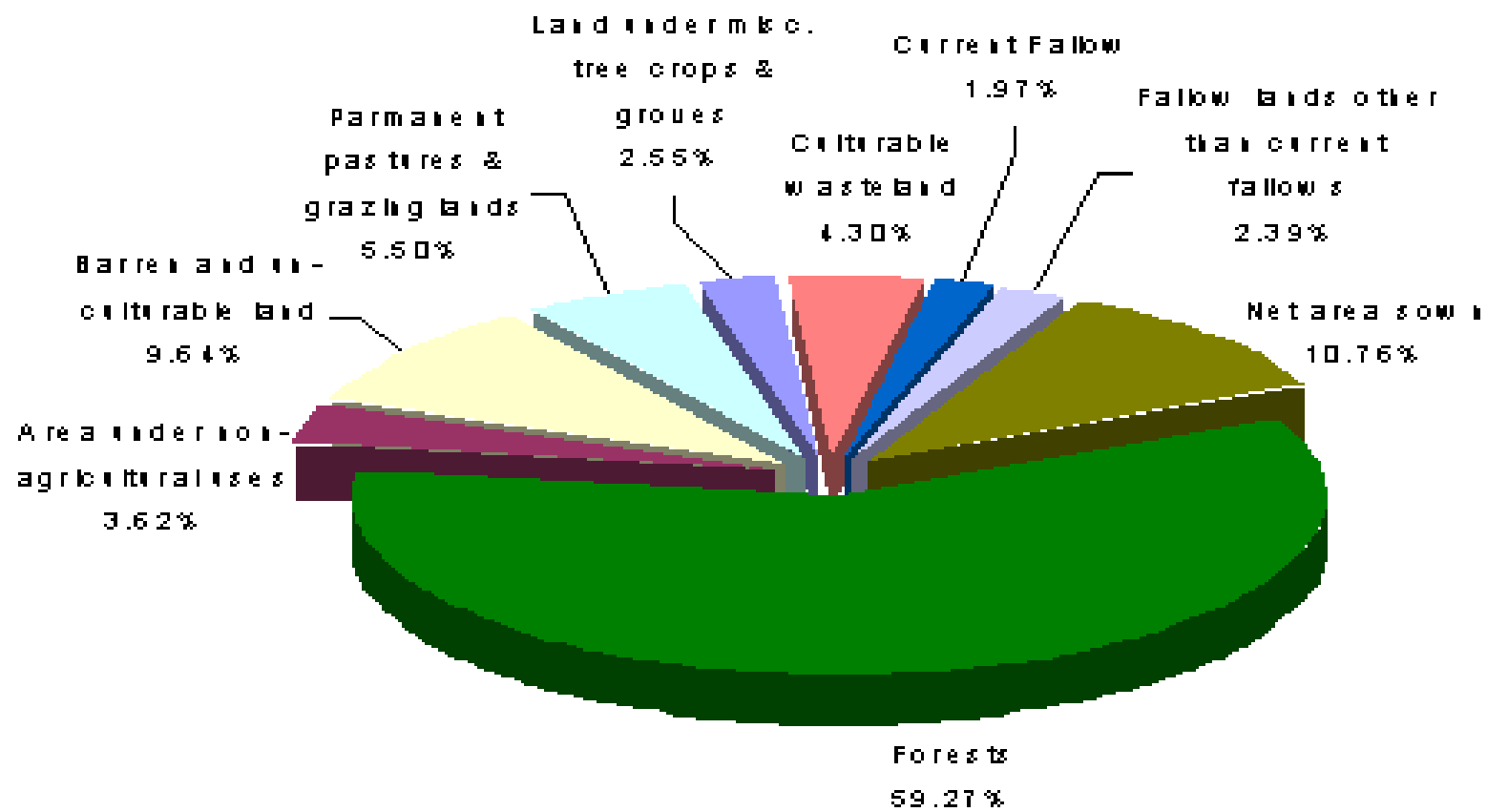
- Western Himalaya: Kashmir & Punjab Himalaya (Nanga Parbat to Sutlej river)
- Central Himalaya: Kumayun & Nepal Himalaya (Sutlej to Arun)
- Eastern Himalaya: Sikkim-Darjeeling, Bhutan & Arunachal Himalaya (Arun to Tsangpo_ Brahmaputra)

- Urbanization in IHR is rapidly occurring
- The capital cities contributes 0.5%; 314 km² of urban area in Himalayan region and accommodating large (ca. 4 million) population (2015).
- Unplanned and haphazard growth in all capital Himalayan cities, leading towards urban densification as well as dispersion in the periphery causing development of suburban areas
- Rapidly growing urban population can present serious challenges to national and especially, local governments.

- Population size of most of the districts (62%) of IHR is less than 4 lakhs, and they together contribute merely 27% of total population.
- On the other hand only 10.5% district contributes about 32% of total IHR population. Most of them are having urban pockets at foothill/tarai area or respective state capitals.
- Decadal growth rate (1991-2001) of IHR is higher (25.43%) as compared to the national average (21.35%). 2001 – 2011 - 18.5% (17.64%), 2011 – 2021 – 12.85% (12.5%)
- The growth rate of 80% IHR districts fall between 10 and 40, which cover 91.58% of total IHR population.
- Population density of IHR as a whole is less 181 /km² (2011) but it showed a phenomenal increase compared to 74 person/km²(2001) [145% increase] 8 districts having a very high density (>500 person/km²) in contrast to 46 low density (<100 person/km²) districts.

- High population density and growth have frequently been associated with forest loss and species extinction
- Due to increasing agricultural population pressure a significant deforestation has been experienced
- The spread of urbanization has been a severe threat for forests in the current scenario of high population growth and vanishing cultural values.
- Rapid population growth has responsible for clearance of vegetation for built-up area, agriculture, overgrazing and fuel wood.

Land use



- Rate of tree cutting has increased for diversion and expansion of roads. Construction of roads disturbs the stability of the hillside, causes serious damage to the hydrologic system and removes the protective cover from the vulnerable slopes
- This selective cutting had adverse effect on land cover and is responsible for big land cover conversion in the landscape.
- Amount of sediments eroded away from sites of road construction is ten times greater than that derived from agricultural land, about 200 times greater than that from grassland and 2000 times greater than that from forest land
- Loss of vegetation creates ever drier conditions contributed to widespread desertification which further impacts negatively on the pastoral production and livelihoods of local people in arid and semi-arid areas.
- There is already a vast degradation of soil, water, air biodiversity and even light/temperature

- Degradation of grassland has spread over the past few decades across the whole high-altitude
- The high-altitude grassland is sensitive to disturbance, especially in its drier part, where the removal of turf is irreversible.
- Many alpine meadows have been seriously degraded since the 1960s (Wang et al. 2008). In addition, warm-temperate coniferous forest has nearly disappeared mostly due to commercial logging
- Wetlands and lakes decreased substantially, due primarily to wetland shrinkage
- lake expansion has also been reported in some high-altitude belts (Liu et al. 2009, 2010) like the source areas, or headwaters, of the rivers and is attributed to glacier melting caused by global.

- Due to urbanization and population pressure the traditional shifting cultivation (jhum), which is still the only livelihood of many areas of the Eastern Himalaya have been converted into permanent cash crop areas.
- This conversion has a reverse impact on the environment.
- In the traditional jhumming method the native forests which were slashed and burnt kept undisturbed for # 25 yrs (Jhum cycle).
- But due to the introduction of economically sound plantation crops like areca nut, cashew nut and tea the and more recently palm cultivation native diversity of the forest area is in the verge of extinction.
- Moreover, vegetables and crops like Maize, Pumpkin, Bean, Buckwheat, Cucumber, Cabbage, Potato, Chili etc.
- These lead to severe Human-Animal Conflicts

The Indian Himalayan region (IHR), among others, is known to harbour diversity of wetlands. Several of high altitude water bodies account for 42% of the total high-altitude wetlands of the country.

The Himalayan wetlands in high altitude areas, while known for diverse ecosystem services, are specifically recognized for their spiritual and religious values. HAWs are home to unique mountain biodiversity and endemic species. They provide important breeding ground for continental migratory birds and low altitude migrants of Indian sub-continent.

many large HAWs and their surroundings have emerged as centre of attraction for unregulated tourism activities thereby leading to an issue of solid waste and garbage management in hitherto pristine environment

- Not very long back, in mid-2018, Shimla, the state capital of Himachal Pradesh, had “run out of water” and local people told tourists to “stay away”.
- A couple of years back, the Institute of Natural Resources sampled 714 springs (source of drinking water) in the northeastern state and found 54 per cent of these had reduced discharge by up to 50 per cent.
- An August 2018 report by the NITI Aayog had noted: “half of the more than three million perennial springs in IHR [Indian Himalayan Region] states have either already dried up or become seasonal, resulting in acute water shortages across thousands of Himalayan villages.
- In the February 2020 issue of Water Policy on the Indian Himalayan region it is said “springs are under great threat from urban waste and sewage polluting the water bodies and catchments”.
- Unplanned urbanization is causing significant changes in land use and land cover and reducing the recharge areas of springs the Indian Himalayan region

- Changes in habitat quality associated with urbanization cause a reduction in the size of habitat patches supporting indigenous fauna, the invasion and planting of alien flora, the increasing isolation of these remnant patches from other similarly “green” areas, an increase in the level of air pollutants due to road traffic and industry, and an increase in physical disturbance in and around the habitat fragments
- Due to high frequency of traffic on roads/railway, wild animals often divert from their original dispersal route and enter hamlets leading to conflict situations
- relation between human population and biodiversity arise because humans and other living organisms depend on processes that are driven or perhaps delimited by existing energy and urban habitats generate break in the ecological continuum of many living organism

- Communities that have thrived for centuries in rugged mountain environments are facing rapid population declines caused by the outmigration of youths, who are sent by parents to distant boarding schools
- The multi-dimensionality of population and environment, the relationship is also influenced by other mediating factors, including technological (e.g. energy production and consumption), political (e.g. policy environment), and cultural factors (e.g. way of life, attitudes towards nature). While climate change is primarily shaped by population size and growth, land use transformation often arises from shifts in population distribution