

Himachal Pradesh Civil Services

Geography of Himachal



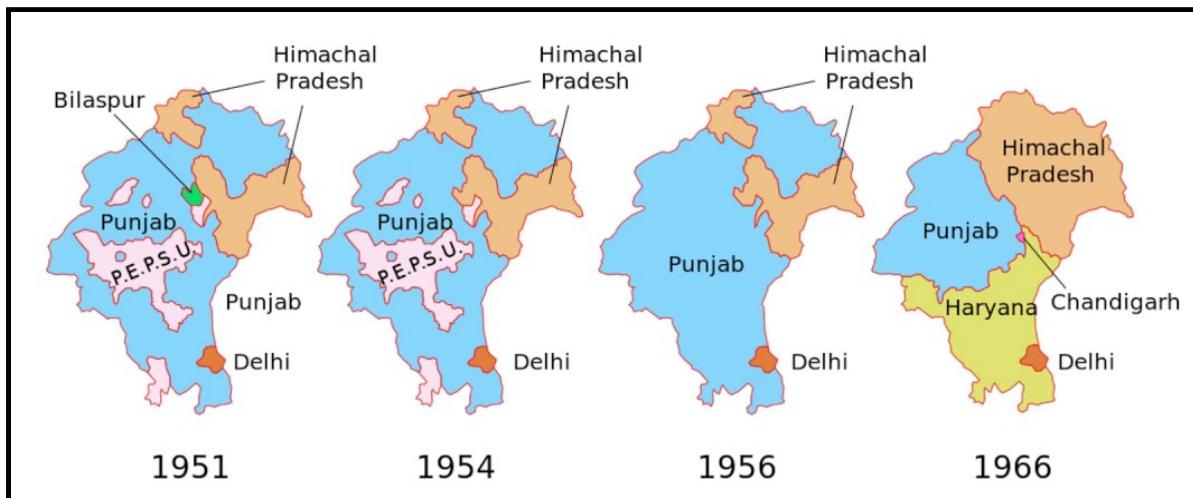
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Geography of Himachal Pradesh

- **Introduction:**

- *Himachal Pradesh* is one of the mountainous states of India nestled in the lap of the Western Himalaya at the range of **350 m** to **6975 m** above mean sea level.
- *Himachal Pradesh* is located almost in the centre of the Himalayan mountain range and is a land of remarkable bio-geographical diversity
- *Himachal Pradesh* is located in the **North-Western** part of India.
- *Himachal Pradesh* got its statehood on **25th January 1971**.



- *Capitals of Himachal Pradesh are Shimla and Dharamshala (2nd Capital in winters)*
- *Extensions:*

Latitude	Longitude
30°22'40"N to 33°12'20"N	75°45'55"E to 79°04'20"E

- Present day Himachal has an Area of **55,673 sq.kms**
- It constitutes **1.69 %** of the total geographical area of India.

North	Jammu and Kashmir
South West	Haryana
West	Punjab
South East	Uttarakhand
East	Tibet Autonomous Region
South	Uttar Pradesh



- The state of Himachal Pradesh is divided into **12 districts** which are grouped into **three divisions**: **Shimla, Kangra and Mandi**.
- The districts are further divided into **69 subdivisions, 78 blocks and 145 Tehsils**.

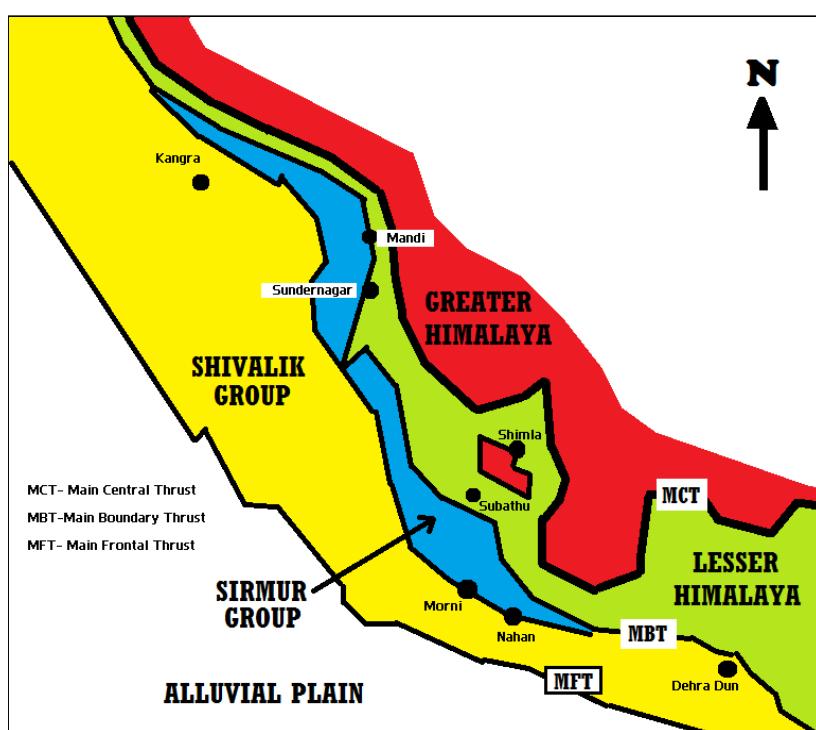
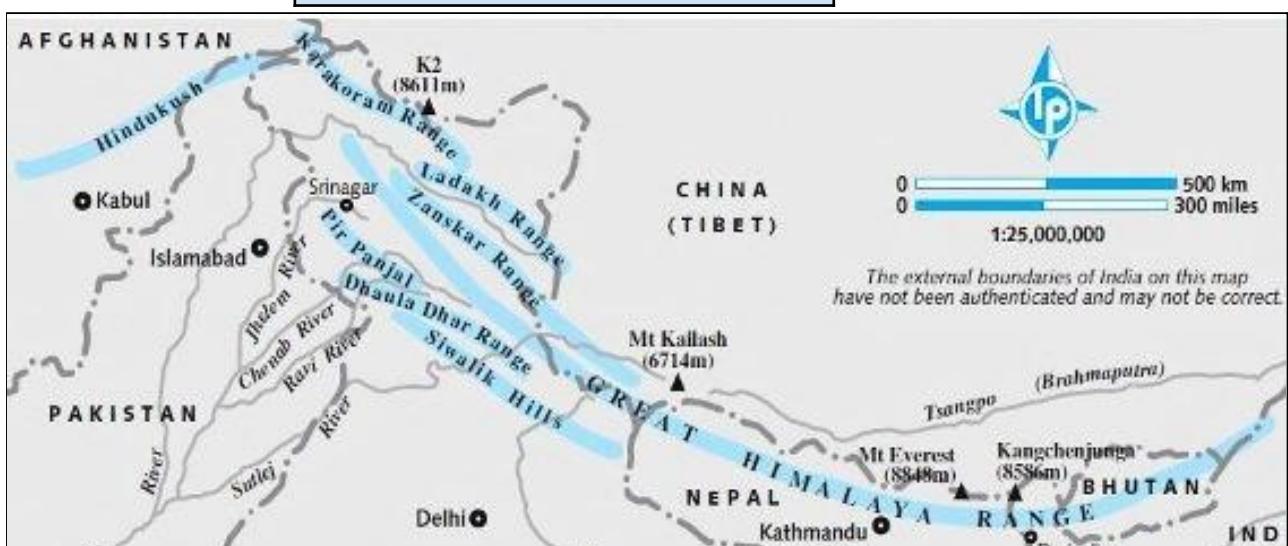
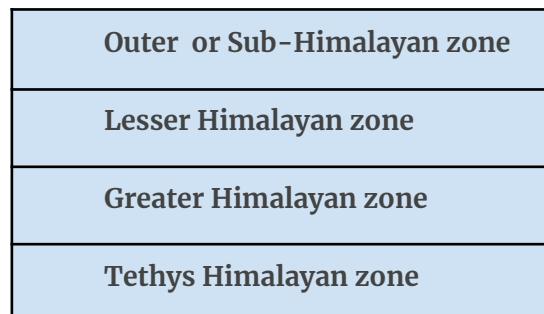
Divisions	Districts
Kangra	Chamba, Kangra, Una
Mandi	Bilaspur, Hamirpur, Kullu, Lahaul and Spiti, Mandi
Shimla	Kinnaur, Shimla, Sirmour, Solan

- **Administrative Structure**

Divisions	3
Districts	12
Tehsils/ Sub-Tehsils	16
Developmental Blocks	78
Urban Local Bodies	49
Towns	59
Gram Panchayats	32
Villages	20
Police Stations	12
Lok Sabha Seats	4
Rajya Sabha Seats	3
Assembly Constituencies	68

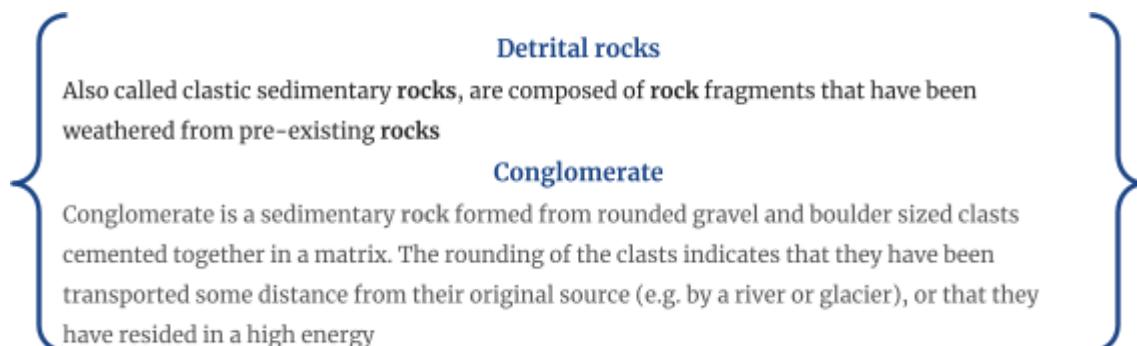
Physiography:

- The state has a general increase in elevation from west to east and from south to north.
- There are *4 physio-geographic divisions* of Himachal Pradesh:

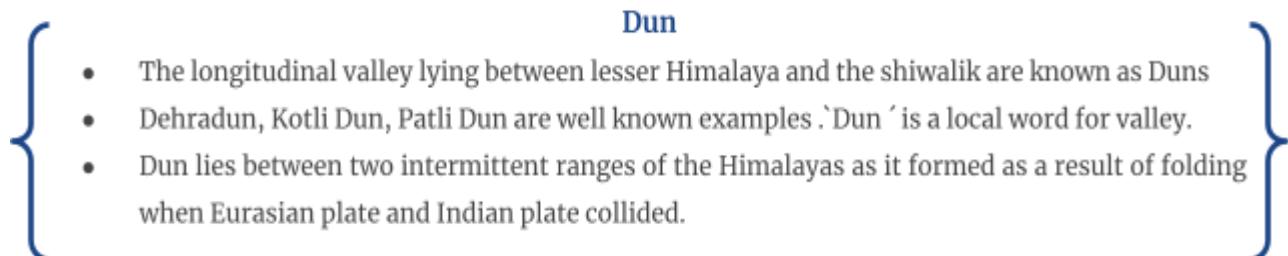
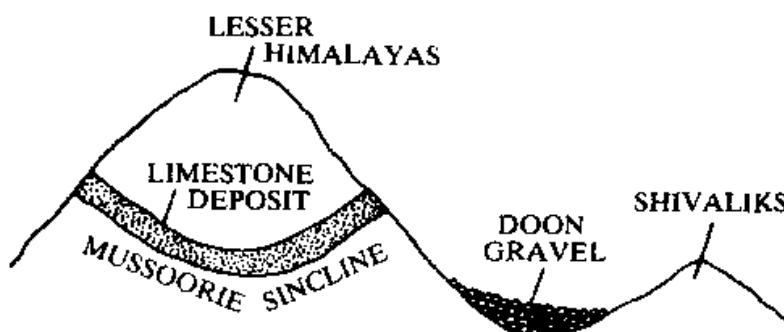


Outer or Sub-Himalayan zone (Shivaliks):

- The foothill zone consists predominantly of *tertiary* formations, comprising of thick *detrital* rocks, clays and *conglomerates*.



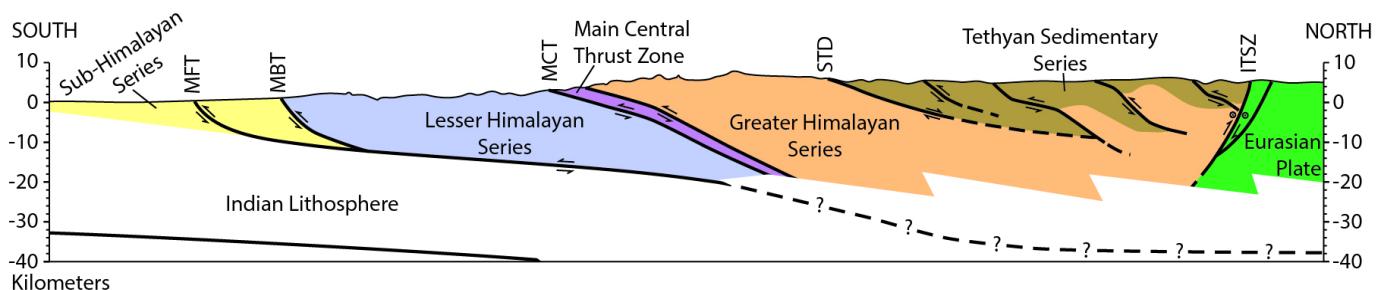
- The sub-Himalayan zone rocks comprises rocks varying from oldest to youngest; the *Subathu*, *Dagshai* and *Kasauli* deposits, and the *Shivalik Group*.
- At the base of the sequence are the *shallow marine rocks* comprises of the Subathu deposits.
- Rocks found in the Shivaliks are dominantly *limestones*, *mudstones*, *Red fine-grained sandstones*, *siltstones*, *mudstones*, thin sequence of *shales* capped by a hard white-gray *quartz rich sandstone* and softer *green-colored sandstone* etc.
- Shivalik hills have an elevation of **600 to 1200 m**.
- Shivaliks are *monoclinal hills* dipping with steep scarps facing southward and merging with the small tract of Indus plain which has a general slope towards south-west.
- Towards the north Shivalik gently dip to the structural and longitudinal valleys called “*Duns/Doons*”.



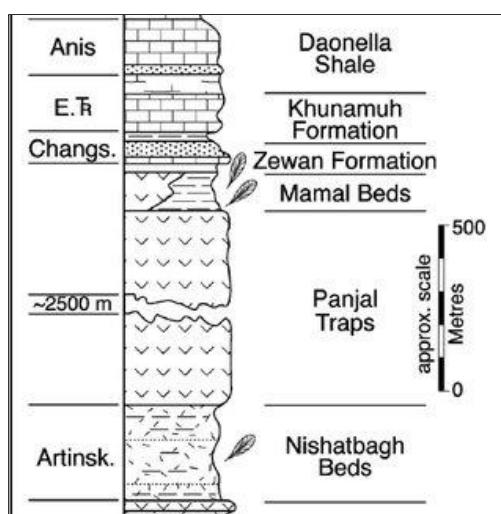
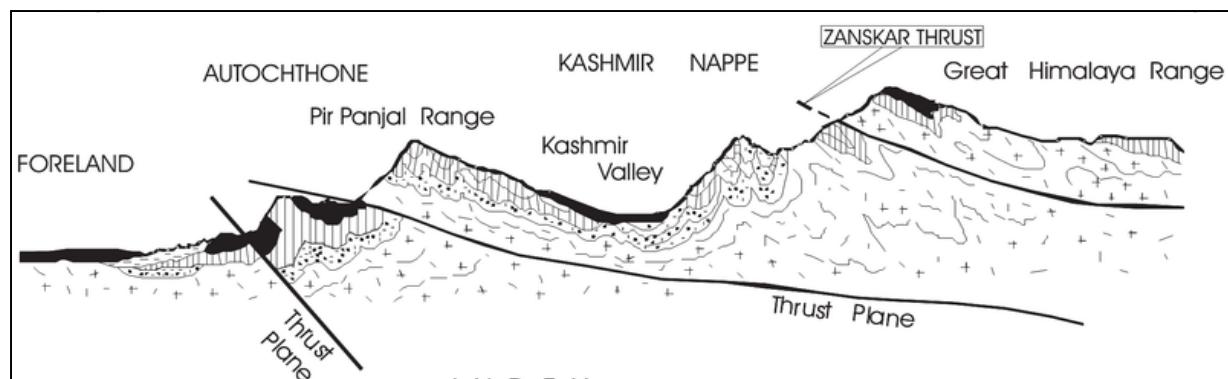
- Shiwaliks represents the *youngest part of the Himalayas*, they are prone to erosion and their morphology comprises of *highly dissected and rugged residual terrain, hogback ridges, earth pillars, rilled death buttresses of conglomerate formations, talus cones, chhoe divides and terraces etc.*
 - The duns or valleys are drained by network of streams and rivers. This zone is about 50 km wide in the west and about 80 km wide in Kangra valley and again tapers to smaller width in Nalagarh and Kyarda Duns in east.
 - The crest line are known by many names like *HatiDhar, Sikandar Dar, Chaumukhi range, Solah Singhi Dhar, Rajgarh Dhar, Naina Devi Dhar and DhartiDhar*.
-

Lower Himalayan zone:

- The Lower Himalayan zone lies between the *Main boundary thrust and Central Himalayan thrust*.
- This zone is mainly composed of early Proterozoic detrital sediments deposited between approximately 1900 and 1800 million years ago, and subsequently overthrust during the Himalayan upliftment onto sub-Himalayan rocks along the Main Boundary Thrust (MBT).



- Lesser Himalaya mainly consists of massive quartz intruded by basalts and other *crystalline rocks of unfossiliferous sediments*.
- The almost complete *Paleozoic sediments* in the Lower Himalaya is suddenly interrupted by the transgression of the outstandingly different *Gondwana rock sequence*.
- This volcanic activity is well preserved in the Pir Panjal range, the formations being known as '*Panjal Volcanics*' or '*Panjal Traps*'.



- Along the Sutlej section, the Lesser Himalayan Crystalline Sequence crops out within a tectonic window called the *Larji-Kullu-Rampur Window*. The lower part of this unit is composed of thick *mica schist* and *granitic gneiss*.

LARJI-KULLU-RAMPUR Window

- The highly folded Larji belt of rocks forms the gateway to the Kullu valley.
- This Window Zone is framed by crystalline nappes emanating from Central Crystalline Zone of the Tethys Himalayan
- It consists of a complex of sedimentary and igneous rock
- It is a unique window within a window with four tier tectonic units of Larji group, Rampur group with an inner frame of Kullu group thrust sheet and an outer frame of the Salkhala group Nappe on the west side and Vaikrita on the east side.

Lesser Himalaya or Central Zone can be divided into two zones:

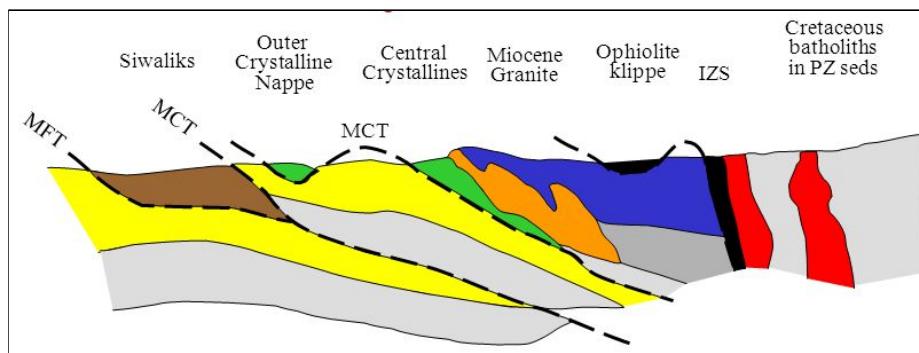
The Lower Himalayas towers abruptly from the north of the duns with steeper southern facing slopes than northern characterized by deep gorges and sharp ridges. This zone mainly includes the Dhauladhar.

The Middle Himalayas lying further north are steeper and the peaks remain under permanent snow cover perennially like the Pir Panjal ranges.

- The average elevation ranges from **1000 to 4000 m** and width from **60 to 80 km**.
- The **Dhauladhar** and **Pir Panjal** ranges are conspicuous and quite distinct in the west and form the southern and northern watershed of Ravi Basin.
- **Dhauladhar** extends further east into the **Beas** valley and crosses the **Satluj** River near Rampur.
- **Pir Panjal** forming the southern watershed of the **Chandrabhaga** in Chamba and Lahaul Spiti districts joins the **Great Himalayan range** north of Deo Tibba and Rupi Valley (Parbati River).
- Some minor ranges of lesser Himalaya are **DagniDhar**, **Manimahesh** and **DhoDhar** in the **Ravi** valley; **JaloriDhar** and **ShikariDhar** in **Beas** and **Satluj** basins and **Nag Tibba range**, **Mussoorie range** and **Shimla hills** in the **Yamuna** basin east of the great Himalayan Divide.

Higher Himalayan zone:

- Along the entire Himalaya, this zone represents the *main metamorphic unit* forming the **crystalline core zone**.

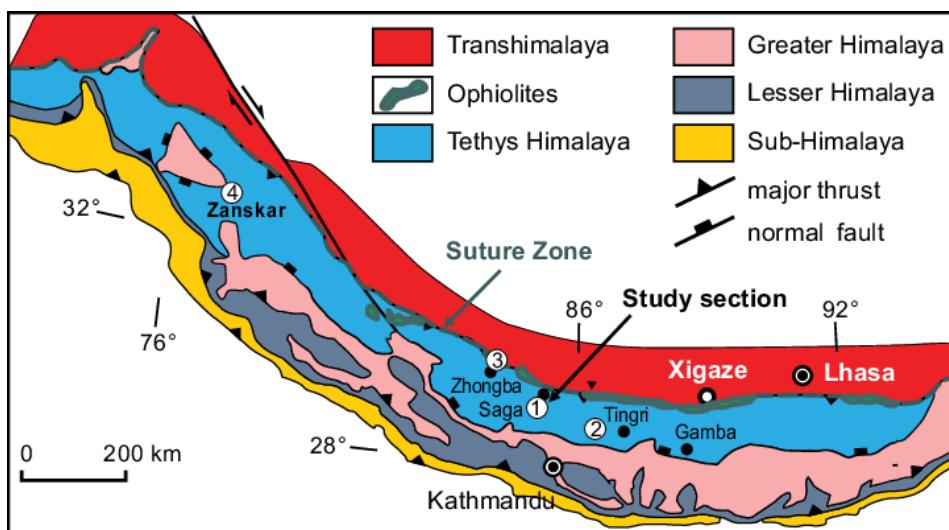


- The **Main Central Thrust (MCT)**, a major 3 fault that accommodated up to 250 km of shortening during collision, encompasses the zone at its base.
- **Great Himalaya or Central Zone** are the **highest mountain ranges** that run across the northeastern border of himachal through **Lahaul Spiti** and **Kinnaur** districts.
- The elevation of the great Himalaya ranges between **5000 and 7000 m**, and it has several **passes** having elevations between **4500m**.

- This towering snow-clad mountain wall is a store house of many *glaciers* and acts as a *source of many rivers*.
- It also plays an important role in governing the climatic condition of the state as it acts as a *barrier* against the northward movement of the *southwest monsoon*.
- It forms the northern *watershed* of the *Chandrabhaga (Chenab)* basin and separates it from *Spiti* basin and further east it forms *watershed* between *Spiti* and *Beas* basins.
- It is cut across by *Sutlej* before it enters the *Uttar Pradesh Himalaya* with extension to *Badrinath/Kedarnath*.

Tethys Himalayan zone:

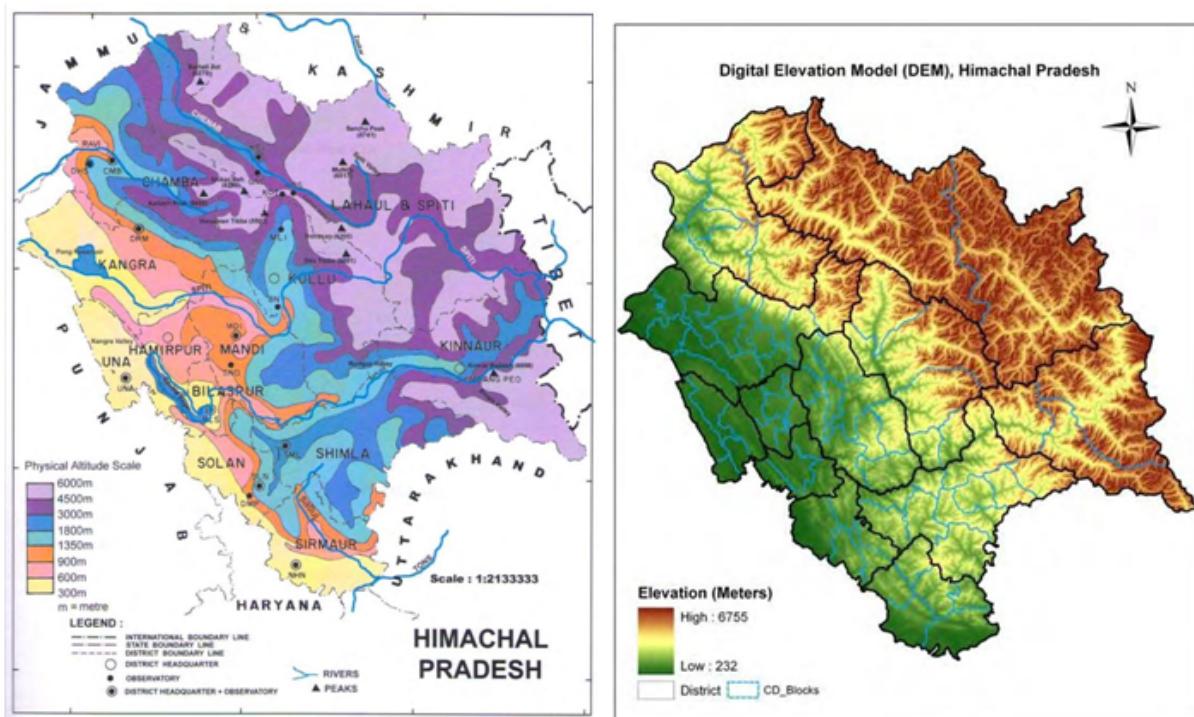
- The Tethyan Himalaya corresponds to a nearly *continuous*, Upper Proterozoic to Eocene sedimentary sequence deposited in the *Spiti* region.
- These sediments generally underwent only very low-grade metamorphic.



- The rusty ferrous slates and Kinnaur Kailash Granite that thrust the Lesser Himalaya over the sub-Himalaya is a characteristic landmark in this region.
- The Himalayas and the associated eastern ranges remain tectonically active due to continued under thrusting of the Indian peninsula against the Eurasian Plate.
- Trans-Himalaya or *Zanskar range* is the *easternmost* range of Himachal Pradesh.
- The average elevation is *3,000m* and its peaks rise over *6,500m*.
- It forms the *northern watershed* of the *Spiti* and *Sangla* valleys in Kinnaur.
- It roughly forms the *Indo-Tibetan border*.
- *Sutlej* cuts across the Zanskar range forming a *deep gorge*.
- In the south-eastern part of Kinnaur, one prominent range comes out of it towards west-northeast in the form of *Kinnaur-Kailash range*.

RELIEF AND SLOPE:

- The state has a very complex topography with an altitudinal range of **350 meters** to **6975 meters** above mean sea level.
- Most of the state is enveloped by *lofty mountains hills* and *river valleys*, apart from the areas bordering Punjab plains, which have lower elevations.
- The highest relative relief above **4100m** is found in the eastern part of the state encompassing *western Kinnaur*, north eastern margin of *Shimla* and southeastern extreme of *Kullu district*.
- The lowest relative relief below **1300 m** is found in the western and southern part of the state encompassing north western and central part of *Kangra*, eastern part of *Hamirpur* and *Bilaspur*, larger parts of *Mandi*, entire *Solan*, western and central portion of *Shimla*, north western and central part of *Sirmaur*.



- 70%** of the state is covered by steep to very steep sloping lands like in districts of *Lahaul Spiti*, *Kinnaur*, northern parts of *Chamba*, *Kangra*, *Kullu*, *Shimla*.
- 19%** of the state is covered by moderate to moderately steep slopes covering the districts of *Sirmour*, *Solan*, southern parts of *Chamba*, *Kangra*, *Kullu*, *Shimla* and river valleys.
- The remaining **11%** of level to gentle sloping land is seen in parts of southern *Kangra*, *Mandi*, *dun valleys* of *Una*, *Hamirpur*, *Bilaspur*, *Sirmaur* and *Solan*.
- The topography comprises of wide snowfields, cirques, glaciers, U-shaped and hanging valleys moraines etc.

VALLEYS:

- Himachal Pradesh is traversed by *prominent valleys* at various elevations which are formed either by tectonic forces or by work of rivers and glaciers.
 - They can be categorised into *two groups*:
 1. *Shiwalik Duns*
 - which are formed initially by tectonic forces and later modified by the work of running water and highly dissected by rills or gullies.
 - They consist of *lacustrine, fluvial, aeolian* and *swamp* environment deposits; for example *Paonta valley of Sirmaur, Kangra valley, Nalagarh dun in Solan and Jaswan dun in Una district.*
 2. *Fluvial and Fluvio-Glacial valleys of Outer, Inner and Greater Himalayas*
 - These are found at higher elevations traversed by major rivers and their tributaries.
 - The major rivers like *Beas, Ravi, Chenab, Sutlej* which originate from glaciers and meanders through these valleys.
 - The examples are *Kullu valley, Sangla valley, Pin valley, Hangrang valley, Pattan valley, Chamba valley, Pangi valley etc.*
-

Glaciers:

- Himachal Pradesh has about *2,554 glaciers* covering an area of *4160.58 sq km* with ice reserves of *387.35 km³* which are natural reservoirs of freshwater feeding the rivers like *Beas, Sutlej, Ravi and Chenab*.
 - The glaciers are located largely over the high altitudes exceeding *4,000 m* above in the *Pir Panjal, Greater Himalayas, Dhauladhar and Zanskar ranges*.
 - Majority of the glaciers are small in size, linear in form, with accumulation zone of *2 to 4 sq. km.*
 - Glacier Recession is a major concern of the geologists or environmentalists these days.
-

Hot Springs :

- In Himachal *hot spring* are found along the major rivers.
 - These hot springs are presently utilized for tourism and recreation, but they have potentiality for power generation, greenhouses, dehydration of fruits, vegetables and for aquaculture.
 - They are at *Manikaran, Kasol, Pulga and Khirganga* along the *Parvati River; Kalath and Vashisht along the Beas river and Tattapani, Jeori, Tapri, Karcham and Wangtu* along the *Satluj river.*
-

Lakes and wetlands:



- Ramsar Convention on Wetlands define wetlands as: "areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres".
- A wetland is a land area that is saturated with water, either *permanently or seasonally*, such that it plays an important role in ecosystem.
- The primary factor that distinguishes wetlands from other landforms or water bodies is the characteristic vegetation of aquatic plants, adapted to the unique hydric soil.
- The *major role* played by wetlands in the environment are mainly *water purification, flood control, carbon sink and shoreline stability*.

Carbon sink

- It is a natural or artificial reservoir that accumulates and stores some carbon-containing chemical compound for an indefinite period.
- The process by which carbon sinks remove carbon dioxide (CO_2) from the atmosphere is known as ***carbon sequestration***.

- Wetlands are also considered the most biologically diverse of all ecosystems, they serve as habitat for different species.
- There are **92 wetlands** in Himachal Pradesh covering **2.25 hectares area**
- **85 are natural** and **7 are man-made** which constituted **one percent** of the total geographical area.

Ramsar sites

Pong Dam Lake, Chandratal and Renuka

National wetlands

Rewalsar and Khajjiar lakes

- Recently Himachal Pradesh government has proposed *Bhrigu* and *Seruvalsar* lakes in Kullu, Nako lake in Kinnaur), *Parashar* lake in Mandi, *Manimahesh* lake in Chamba and *Chandernahan* lake in Shimla as the new proposed wetlands.
-

IMPORTANT MOUNTAIN PASSES IN HIMACHAL:

- The *narrow footways or roads* that goes through the mountains are called *passes*.
- These passes are significantly important for visitors of one region to another.
- In ancient times people used to cross the mountains on foot by these passes and was connected with far remote areas of Himalayas.
- The passes were also the *main trade routes* of Himalayan region.

Some of passes of Himachal with their importance are shown below:

Rohtang Pass

- One of the most important pass of Himalayas is Rohtang Pass.
- Rohtang means “*the pile of corpse*”. The name was given in local dialect because the pass has been associated with deaths of many visitors or trespassers of the valley.
- The Rohtang pass connects the vegetated and humid *Kullu valley* to dry and cold desert valley of *Lahaul and Spiti*.
- The pass has been the *main way* of the valley for *business and cultural exchange* as this is the only way for remote Lahaul and Spiti.
- This pass is on *Manali-Leh highway no. 21* and is surely a lifeline for remote region.

Kunzum Pass

- Kunzum Pass is another pass with *high altitude* of Himalayas .
- The altitude of Kunzum pass is approximately *4590 meter*.
- The pass connects *Lahaul valley with Spiti valley*.
- Its is around 122 km away from Manali in Manali Kaza road.
- The pass has trek for Chandratal Lake also.
- The pass hosts the beautiful picturesque view of the cold desert of Lahaul and Spiti.

Bara Lacha Pass

- Another high altitude pass on *Leh-Manali highway* is Baralacha pass or Bara Lacha la.
- The altitude of the pass is *4890 meter* from the sea level.
- The pass connects *Lahaul valley of Himachal to Ladakh of Jammu and Kashmir*.
- The pass is little away from the *Suraj Taal lake* which is the originating place of Bhaga river, a tributary of Chenab river.

Saach Pass

- Saach pass is located in *Chamba district* of Himachal in Pir Panjal range of Himalayas.
- The altitude of pass is around *4220 meters* from sea level.
- The pass connects *Chamba valley to Pangi valley* of Chamba district.
- Saach pass significant value from the *strategic point of view* as it shortens the distance of Leh to Pathankot,Amritsar .

Pin Parbati Pass

- Pin Parbati pass is one of the *high altitude pass* in Himachal situated at an altitude of around *5200 meters* from sea level.
- The pass connects *Parbati valley of Kullu to Spiti valley of Lahaul and Spiti*.
- The pass is alternate to Rohtang pass for Spiti valley and is popular trek for adventurers.
- Kullu side of the pass is highly vegetated and green and the Spiti side of the pass is barren and dry.
- Crossing the pass we reached to popular *Pin valley of Spiti*.

Chanshal Pass

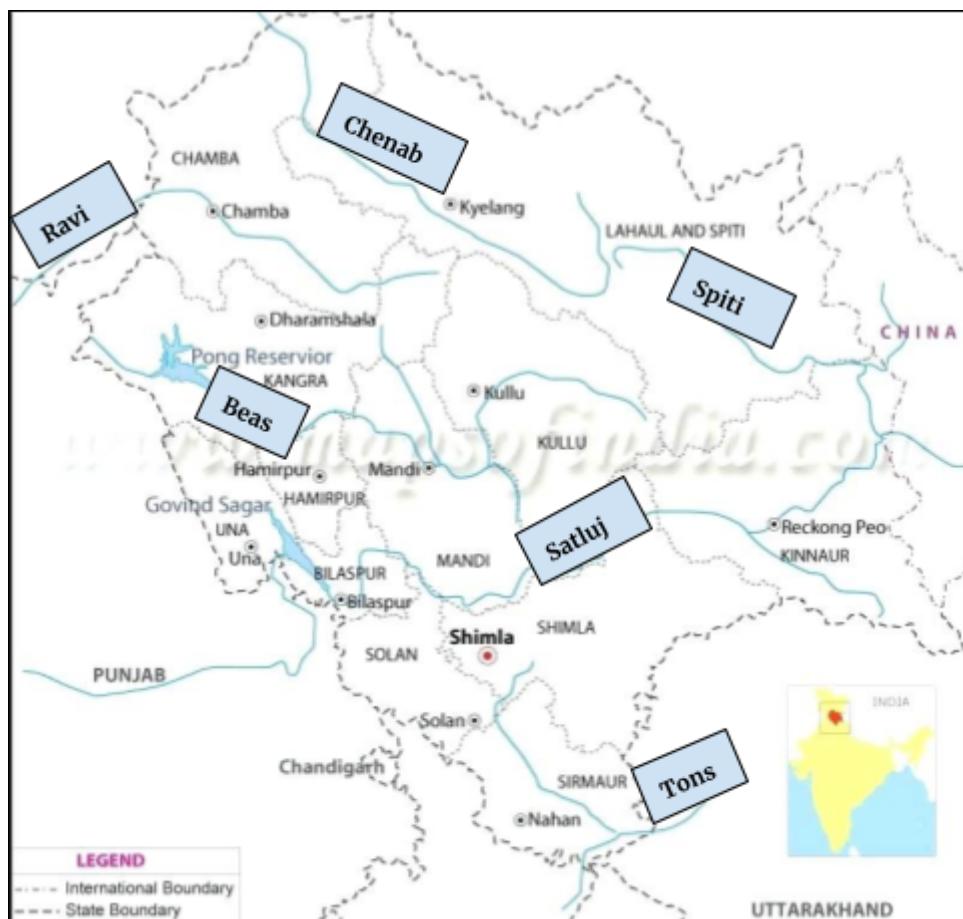
- Chanshal peak is situated in *Rohru of Shimla district*
- It connects *Rohru to Dodra-kwar region of Shimla district*.
- *Dodra-Kwar* is a remote area of Shimla district.
- Chanshal pass is situated at an altitude of *4520 meters* from sea level
- Chanshal pass is a beautiful place of Chanshal valley.
- The large open space on the top makes the view of valley very beautiful.
- *Pabbar river* is also originated from *Chanshal valley at Chandernahan lake*.

Jalori Pass/Jot

- Jalori pass is a beautiful pass of *Kullu district* situated at an altitude of near *3200 meter* from sea level.
 - The uniqueness of the pass is that this is covered by lush green forests all around and also is nearest from Stations like *Shimla, Chandigarh and Delhi*.
 - The pass is named after *Jalori Mata* and the temple of Jalori mata is also situated on its top.
-

DRAINAGE SYSTEM IN HIMACHAL PRADESH

- The flow of water through a definite channel is drainage. The network of several such channels is called *drainage system*.
- Drainage pattern is referred to the *geometrical form* of the rivers of a particular area and their *spatial arrangement*, e.g., *radial pattern*, *dendritic pattern* etc.



- On the basis of origin, the Indian river drainage system can be divided into two parts:

The Himalayan drainage system	The Peninsular India's drainage system

- Himachal Pradesh falls into the *Himalayan drainage system*.
- The study of the *Himalayan rivers* can be done under the following river systems:
 - The Indus River System*
 - The Ganga River System*
 - The Brahmaputra River System*
- The rivers of Himachal Pradesh provide water to the *Indus* and the *Ganga* river basin *only*.

THE INDUS RIVER SYSTEM:

- It is *one of the largest river basins* of the world.
- The Indus is the *largest river* in this river system.
- The *Jhelum, the Chenab, the Ravi, the Beas* and the *Satluj* are its tributaries.
- The *drainage basin* of Indus river system includes the *whole of Jammu and Kashmir* and *most of Himachal Pradesh*.

THE GANJA RIVER SYSTEM:

- The *drainage basin* of this system covers about *one-third of the Western Himalaya*.
- Its *basin extends* from the eastern face of the *Shimla ridge of Himachal Pradesh* to the South western slopes of *Kanchenjunga massif* on the *Nepal-Sikkim border*.
- *Yamuna*, which is the *longest tributary of Ganga* flows through Himachal.

- The Himalaya houses a vast reservoir of moisture both in the form of *ice, fresh water, and underground water*.
- The rivers draining Himalayas sustain life in the Northern part of Indian sub-continent.
- Himachal Pradesh has *nine major catchment areas* :
 - *Satluj* is the largest covering 20,398 sq. km
 - 37% of the total geographic area of the state
 - The *smallest is Ghaggar River* covering only 262 sq. km.
- There are *five main rivers*, which flow through Himachal Pradesh.
 - *Four out of these five rivers* found mention in the *Rig Veda*:

Asikni (Chenab)
Purushanai (Ravi)
Arjikiya (Beas)
Shatadru (Satluj)

- The fifth river *Yamuna* has mythical relation to the Sun.

Satluj: (Vedic Name: Satudri, Sanskrit Name: Shatadru)

- The Satluj originates from the ‘RAKAS LAKE’ near the ‘MANSAROVAR LAKE’ in Tibet.
- It enters India at *Shipki La (pass)* in *Kinnaur District*.

- It flows through *Kinnaur, Shimla, Kullu, Solan, Mandi* and *Bilaspur Districts*.
- It leaves Himachal Pradesh to enter the plains of Punjab at '*Bakra*'.
- The prominent settlements on the bank of Satluj are *Rampur, Kalpa, Suni, Bilaspur, Namgia and Tattapani*.

Tributaries

1. Spiti:

- It originates from *Kunzum range*.
- This river flows through Spiti valley and meets Satluj at '*Namgia*' in Kinnaur district.
- '*Tegpo*' and '*Kabzian*' streams are its tributaries.

2. Baspa:

- It originates from the *Baspa hills* in district Kinnaur and joins Satluj near *Karcham (Kalpa)*.

3. Noglikhand:

- It joins Satluj below *Rampur Bushahr*. The Satluj enters Mandi district near Firnu village

Beas: (Vedic Name: Arjikiya, Sanskrit Name: Vipasha)

- It originates from *Beas Kund* near *Rohtang Pass*
- *Course of the river:* It flows through *Kullu, Mandi, Kangra* and *Hamirpur districts*.
- The prominent settlements on the bank of Beas are *Manali, Mandi, Kullu, Pandoh, Naggar, Sujanpur, Dehra- Gopipur, Bajaura*.

Tributaries:

1. **Parbati:** It originates in the snowy wastes upstream of *Manikaran* in Kullu and joins Beas at *Shamshi* in Kullu valley. Hot water springs of Manikaran pour their water into this river. Manikaran and Kasol are important settlements along this river.
 2. **Banganga:** It arises from the southern slopes of the *Dhauladhar range* and join Beas in the Kangra valley.
 3. **BadnerKhand:** It arises near Palampur and drains central part of Kangra valley.
 4. **Chakki:** It arises from the southern slopes of the *Dhauladhar range* and join Beas near Pathankot. Nurpur is an important settlement along the Chakki River
 5. **Sainj:** It rises from the water divide of the Beas and the Satluj rivers. It joins Beas near Larji.
 6. **Suketi:** This river is a tributary of Beas in the Kangra valley. It rises from the south facing slopes of Dhauladhar range.
 7. **Tirthan:** It flows into the Beas near Larji.
 8. **Uhl:** It joins Beas near Mandi.
- Other tributaries of Beas include **Awa, GajKhad, Harla, Luni, Manuni** and **Patlikuhl**.

Chenab: (Vedic Name: Asikni)

- The Chenab is made up of two streams called the *Chandra* and the *Bhaga*.
- These two streams meet at *Tandi* to form the river Chenab.
- It flows through *Lahaul-Spiti, Chamba*.
- It leaves Himachal Pradesh to enter the plains of Kashmir at ‘*Sansari Nala*’.
- The prominent settlements on the bank of Chenab are *Tandi, Udaipur*

Tributaries:

1. **Chandra River:** It originates from *Chandratal lake in Lahaul Spiti*.
 2. **Bhaga River:** It originates from *Suraj Tal lake in Lahaul-Spiti*.
- Other Tributaries:
 - **Miyar Nullah** joins Chenab in Lahaul,
 - **Saicher Nullah** joins it in Pangi valley.
 - Others include **Jammu Tawi** and **Munawar wali**.

Ravi : (Vedic Name: Purushani, Sanskrit Name: Irawati)

- It originates from *Bara Banghal* as a joint stream formed by the glacier fed ‘*Bhadal*’ and ‘*Tant Gari*’.
- It flows through *Kangra* and *Chamba districts*.
- It leaves Himachal Pradesh to enter the Kashmir at ‘*Kheri*’.
- The prominent settlements on the bank of Ravi are *Chamba, Bharmour, Madhopur*.

Tributaries:

1. **Bhadal**
2. **Siul**
3. **Tant Gari**
4. **Baira**

Yamuna : (Vedic Name: Kalindi)

- The Yamuna originates from the ‘*YAMUNOTRI*’ glacier on Bandarpunch range in Uttarakhand.
- It enters India Himachal at ‘*KHADAR MAJRI*’ in Sirmaur district.
- It flows only through *Sirmour* district of Himachal Pradesh.
- It leaves Himachal Pradesh near ‘*TAJEWALA*’ and enters into Haryana.
- The prominent settlement on the bank of Yamuna is *Paonta Sahib*.

Tributaries:

1. Giri:

- It arises from '*Kupar peak*' just above Jubbal town in Shimla district.
- It divides the Sirmour district into two equal parts that are known as **Cis-Giri** and **Trans-Giri region**.
- It joins Yamuna upstream of *Paonta* below Mokkampur.
- **Jalal** and **Asni** are further the tributaries of Giri River.

2. Jalal:

- It arises from '*Dharti ranges*' adjoining Pachhad of Sirmour.
- It joins **Giri** at *Dadhau*.

3. Tons:

- It arises as *two feeder streams*- the *Rupin* and the *Supin river* which meet at '**NATIWAR**' to form Tons.
- The Tons *join Yamuna* at *Kalsi* near Dehradun.
- **Pabbar** is a *tributary* of Tons.

4. Pabbar:

- It arises from the '**CHANDERNAHAN**' glacier in Rohru area of Shimla district
- It joins **Tons** at the base of '**CHAKRATA**' *massif* near border of U.P and H.P.
- **Patsari** and **Andhra** are *tributaries* of Pabbar.

5. Andhra:

- It arises from a small glacier near *Chirgaon* in Shimla district.
- It merges with **Pabbar** at *Chirgaon*.

6. Patsari:

- This River originates from lower *Himalayan hills* near *Kharapathar* in Shimla district
- It joins **Pabbar** near hamlet of *Patsari*.

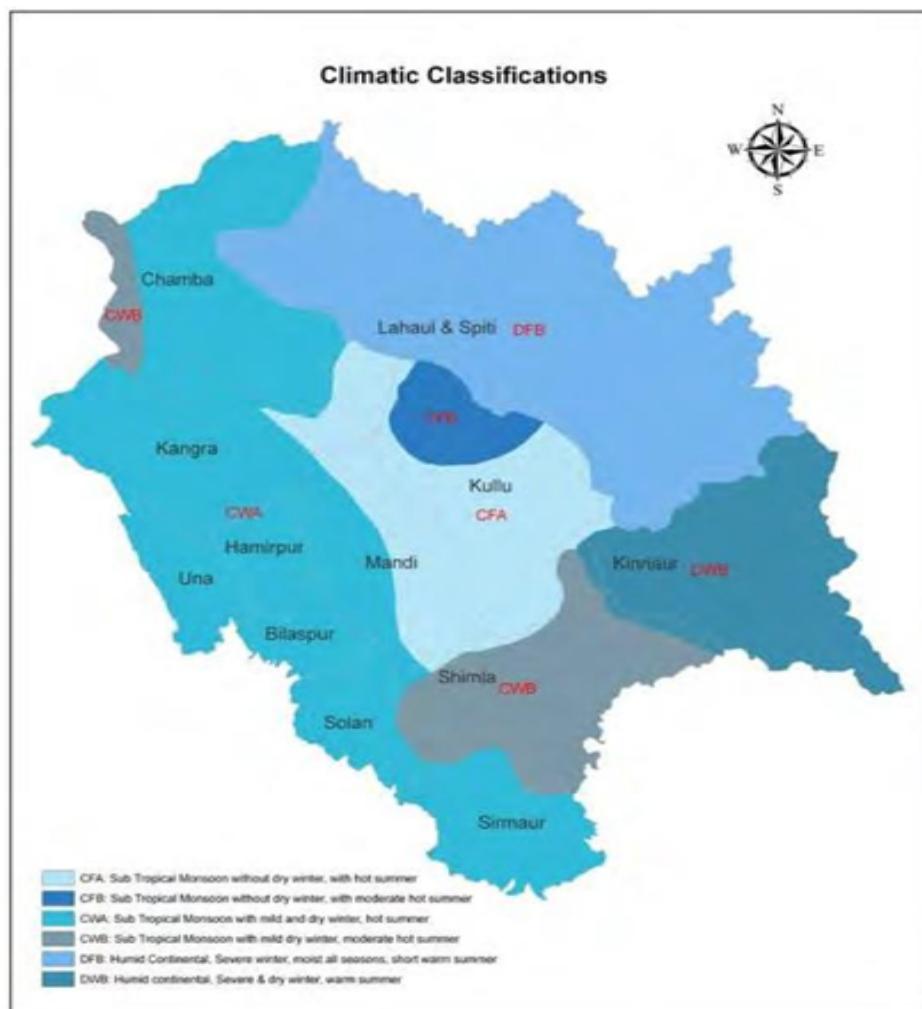
7. Bata:

- It arises near *Dharti range*
- It joins **Yamuna** at *Bata Mandi*.

Climate of Himachal Pradesh:

- The climate varies across the state with the altitude.

Altitude	Climate
400–900 m	Hot sub humid type
900–1800 m	Warm & temperate
900–2400 m	Cool & temperate
2400–4800 m	Cold alpine & glacial

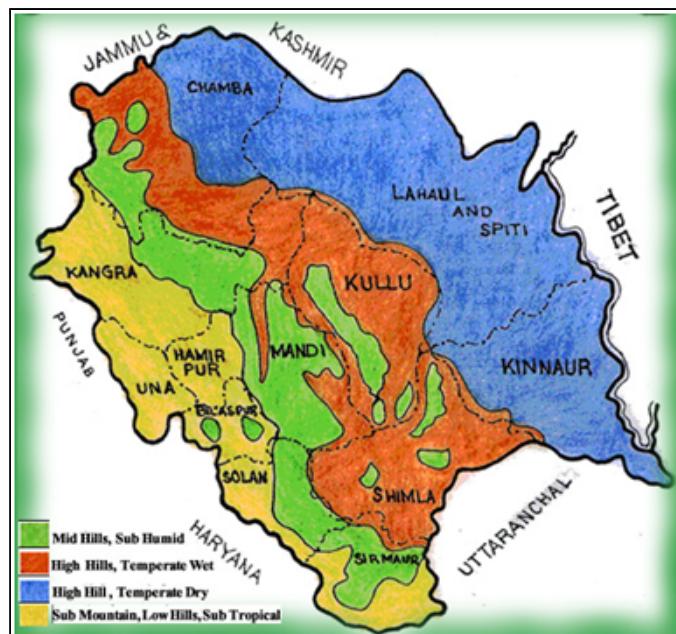


Climate Pattern of Himachal Pradesh

Climate Pattern	Districts
Sub-tropical Monsoon (Cwa type) Mild and dry winter, hot summer	Bilaspur, Kangra, Mandi, Sirmour, Una, Hamirpur, Solan, Chamba
Sub-tropical Monsoon (Cwb type) Mild and dry winter, moderate hot summer	Shimla, Parts of Chamba
Sub-tropical monsoon (Cfa type) Without dry winter with hot summer	Chamba, Major parts of Kullu, Mandi
Sub-tropical monsoon (Cfb type) Without dry winter with moderate hot summer	Minor parts of Kullu
Humid continental (Dwb type) Severe and dry winter, warm summer	Kinnaur
Humid continental (Dfb type) Severe winter moist all seasons, short warm summer	Lahaul & Spiti

- During the period from *January to February*
 - heavy snowfall in higher reaches create conditions for *low temperature* throughout the state making it unpleasant and series of *western disturbances* also affect the state.
- There is a huge variation in the climatic conditions of *Himachal Pradesh* due to variation in altitude (*450–6500 metres*).
- The climate varies from *hot and sub-humid tropical (450–900 metres)* in the southern low tracts, *warm and temperate (900–1800 metres)*, *cool and temperate (1900–2400 metres)* and *cold glacial and alpine (2400–4800 metres)* in the northern and eastern high elevated mountain ranges.
- By *October*, *nights and mornings* are very *cold*.
- Snowfall at elevations of nearly *3000 m* is about *3 m* and lasts from *December start to March end*.
- About *4500 m*, is *perpetual snow*.
- The *spring season* starts from mid *February* to mid *April*.
- The weather is *pleasant* and *comfortable* in the season.
- The *rainy season* start at the end of the month of *June*.
- The *landscape* lishes green and fresh.
- During the *season streams* and *natural springs* are replenished.
- The *heavy rains* in *July* and *August* cause a lot of damage resulting in *erosion, floods and landslides*.
- Out of all the state districts, *Dharamsala* receives the *highest rainfall*, nearly about *3400 mm*.
- Spiti is the *driest area* of the state (rainfall below *50mm*).
- The reason is that it is enclosed by *high mountains* on all sides.

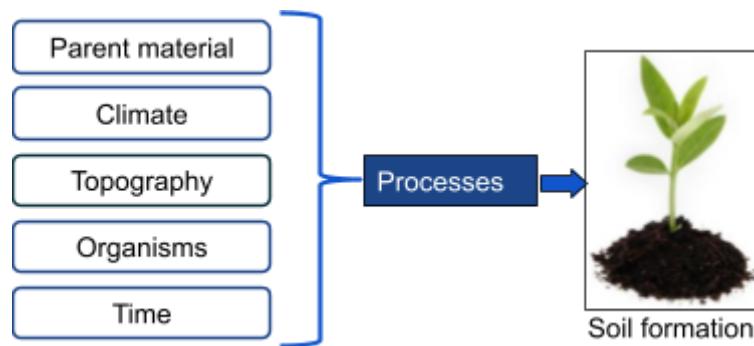
Agro Climatic Zones



Characteristics	Shivalik Zone	Mid-Hill Zone	High hill zone	Trans Himalayan Zone
Altitude	Up to 800 m	800m-1,600m	1,600m-2,700m	2,700m-3,600m
Type of area	Valley areas and foothills	Hilly and mountain ranges	Alpine zone	Lahaul Spiti and Kinnaur range
Climatic conditions	Subtropical	Slightly warm temperature	Cool with humidity	Dry and extremely cold conditions
Rainfall in mm.	1,500	1,500-3000	1,000-1,500	500
% of geographical area	35%	32%	35%	8%
cultivated area	40%	37%	21%	2%
Major Crops	Wheat Maize Paddy Gram Sugarcane Mustard Potato Vegetables	cash crops, Off-Season Vegetables, Ginger, Quality seeds of temperate vegetables like Cauliflower and root crops.	Seed Potato, Temperate vegetables, Good pastures and meadows.	Seed Potato, Temperate and European type of Vegetables and their Seeds, Seed Potato, Peas as green and seed purposes

Soils

- Soil is a mixture of organic matter, minerals, gases, liquids, and organisms that together support life. The Earth's body of soil is the pedosphere, which has four important functions: it is a medium for plant growth; it is a means of water storage, supply and purification; it is a modifier of Earth's atmosphere; it is a habitat for organisms; all of which, in turn, modify the soil.
- The word Soil originated from the latin word “Solum” which means “floor”.



Soils of Himachal Pradesh

- The soils found in Himachal are diverse in nature depending upon the altitude, vegetation cover, slope, structure and stage.
- The soils of the State can broadly be divided into nine groups on the basis of their development and physico-chemical properties.

1. Alluvial soils
2. Brown hill soil
3. Brown earth
4. Brown forests soil
5. Grey wooded or podzolic soil
6. Grey brown podzolic soils
7. Planosolic soils
8. Humus and iron podzols
9. Alpine humus mountain speletal soils

- The soils found in the districts of:

<i>Mandi, Kangra, Bilaspur, Una, Solan, Hamirpur and Sirmaur</i>	<i>Brown, alluvial and grey brown podzolic.</i>
<i>Kullu and Shimla</i>	<i>Greywooded podzolic soils</i>
<i>Kinnaur, Lahaul & Spiti and some parts of Chamba district</i>	<i>Humus mountain speletal soils</i>

Alluvial soils:

- Alluvial soils are characterized by the incipient profile development
- They are found in *Una (Una district), Indora (Kangra district) and Paonta (Sirmaur district)* areas where floodplain is a dominant physiography.
- These are generally *coarse textured soils* comprising *loamy sand and sandy loam* and occasionally *loam to sandy clay loam, low in organic matter and neutral (pH >6.5)* in reaction.
- The soils are somewhat *calcareous* in nature in which calcium carbonate varies from 2.0 to 4.5 %

Brown hill soils:

- These are *Sandy loam to clay loam texture*
- They are found in *Nahan (Sirmaur district) and Solan (Solan district) areas.*
- These soils are *medium to high in organic matter and neutral to slightly acidic* in reaction.
- Non-Calcic Brown soils* are generally found in parts of *Hamirpur, Bilaspur, Mandi districts and Dehra Gopipur (Kangra district) areas.*

Brown Forest soils:

- These are found in parts of *Chamba districts* where there is *forest vegetation.*
- It occurs under *dense deciduous forests*
- This soil can be classified as ranging from *Highly acidic to mildly acidic.*
- The soil is rich in *humic matter.*

Grey Wooded or Brown Podzolic Soils:

- These are commonly developed under varying magnitude of podzolization are found in parts of *Shimla and Kullu districts and Karsog area of Mandi district.*
- They are generally characterized by *darker colours containing high organic matter.*
- Soil reaction ranges from *slightly to strongly acidic*

- The textures are *sandy loam to clay loam*.

Grey Brown Podzolic soils:

- are formed by the dominant process of podzolization and are found in parts of *Kangra district* and *Jogindernagar area of Mandi district*.
- They are distinctly *acidic* in reaction
- They have heavy texture of *clay loam silt loam and silty clay soils*.

Planosolic Soils:

- These imperfectly drained soils are found in *Bah山谷 of Mandi district, Ghumarwin of Bilaspur district, Nagwain area of Kullu district and Saproon valley of Solan district*.
- Soils are *medium to fine textured* i.e. *sandy loam to sandy clay loam and clay loam*
- They are *neutral* in reaction.
- *Organic matter* is usually *medium to high*
- *Phosphorus and potassium* are rated under *medium categories*.

Humus and Iron Podzols:

- These are formed under the process of podzolization.
- They are mainly confined to parts of *Shimla, Dalhousie and Manali regions*.
- These soils have *dark coloured horizon*, enriched with *organic matter, acidic in reaction, and reddish brown to yellowish brown*
- Horizon contains *iron and aluminum* accompanied by *organic matter*.

Alpine Humus Mountain Speletal Soils:

- These are found in the *Himalayan highlands* constituting the districts of *Kinnaur, Lahaul-Spiti and Pangi tehsil of Chamba district* where the ‘*precipitation is low*’ and ‘*temperature is frigid*’.
 - Soils are *gravelly loamy sand to loam*, usually *high in organic matter and neutral in reaction*.
 - Available *phosphorus and potassium* are generally *medium to high*.
-

MINERAL WEALTH:

- The State is the sole holder of country's rock salt resources.
- Barytes, limestone, salt (rock) and shale* are the important minerals produced in the State.

Mineral	Place
Barytes	Sirmaur district
Limestone	Bilaspur, Chamba, Kangra, Kullu, Mandi, Shimla, Sirmaur and Solan districts
Rock salt	Mandi district
Antimony	Lahaul and Spiti districts
Gypsum	Chamba, Sirmaur and Solan districts
Magnesite	Chamba district
Pyrite	Shimla district
Quartz, Quartzite and Silica sand	Una district

FORESTS

- The forest region of the state can be broadly classified into 6 types:



- The total area under the forest region is 37,033 Sq. Km which accounts to approximately 66.52 % of entire region of the state.

Geographical Distribution of Forest (As per FSI Report 2015)			
	AREA KM2	% OF GEOGRAPHICAL AREA	% OF FOREST AREA
Geographical Area	55673	100
Forest area Legally Classified	37033	66.52	100
Area under Tree Cover	14696	26.4	39.68
i) Very Dense Forest	3224	5.79	8.7
ii) Moderate Dense Forest	6381	11.46	17.23
iii) Open Forest	5091	9.14	13.74

Forest Cover	Area(Km ²)	Percentage
Reserved Forests	1896	5.12
Demarcated protected Forests	11387	30.75
Un-demarcated Protected Forests	21656	58.48
Unclassed Forests	976	2.63
Others(managed by Forest Department)	370	1.00
Not managed by Forest Department.	748	2.02
Total	37033	100.00

- The **southernmost** part of the state is the *lower most* regions.
 - These regions are mainly enclosed with *subtropical, tropical dry broadleaf forests* and *subtropical moist broadleaf forests*.
 - The main *trees* found in these regions are *Sal* and *Shisham*.
- The **middle** regions of the state are covered with mosaic *broadleaf forests* and *subtropical pine forests*.
 - The main *trees* of these middle regions are *Oaks, Deodar, and Blue pine trees*.
- The **upper** most regions of the state are covered with *Himalayan alpine plant*.
- The *rhododendron* trees are common along *the hills of Shimla*.
- The state is called the “*fruit bowl of the country*” has numerous fruit varieties growing in vast number of orchards. The state is famous for its excellent quality of *apples* which are exported to all parts of the country and abroad.
- Forest wealth of Himachal Pradesh is estimated at over Rs. 1,00,000 crore. Most of precious *coniferous forests* are of such nature that these cannot be truly regenerated by human beings if these are cut once.
- The State Government has imposed a *complete ban* on commercial felling and the only removals from the forests are either by way of timber distribution rights to the people or salvage extraction.
- **Reforestation Programs:** A World Bank assisted Social Forestry Project has been launched. The aim of the project is to plant more trees for fuel, fodder, and timber to meet the basic requirements of the local people, thus avoiding depletion of the old growth forests. The

deforested Kandi areas are also being reafforested in another project financially assisted by the World Bank.

Wildlife

- The state also has rich and diverse varieties of *birds* and *animal species*.
- As per estimates of the wild life departments, there are approximately 1200 *birds* and 359 *types of animal varieties* in the state.



- The state has 2 *National Parks*, 32 *Wildlife Sanctuaries* and 3 *Conservation Reserves* which cover over 7% of the state's area.

No Of National Parks	2
No Of Wildlife Sanctuaries	33
No Of Conservation Reserve	3

Wildlife Sanctuaries	Conservation reserves
Wildlife sanctuary is an area which is of adequate ecological, faunal, floral, geomorphological, natural or zoological significance. It is declared for the purpose of protecting, propagating or developing wildlife or its environment.. Certain rights of the people living inside could be permitted.	Conservation reserves can be declared by the state government, particularly the areas adjacent to national parks and sanctuaries and those areas which link one protected area with another. Such declaration should be made after consulting with the local communities. Conservation reserve are declared for the purpose of protecting landscapes, seascapes, flora and fauna and their habitat. The rights of people living inside a conservation reserve are not affected.

No.	Conservation Reserve	District	Area (Km ²)
1	Shilli Conservation Reserve	Solan	1.49
2	Shri Naina Devi Conservation Reserve	Bilaspur	17.01
3	Darlaghat Conservation Reserve	Solan	0.67
TOTAL AREA			19.17

Most common <i>wildlife animals</i>	Commonly found <i>birds</i>	commonly found <i>fish</i>
<i>Musk deer,</i> <i>Barking deer,</i> <i>Himalayan Tahr,</i> <i>Himalayan ibex,</i> <i>Blue sheep,</i> <i>Snow leopard,</i> <i>Common leopard,</i> <i>Himalayan black bear,</i> <i>Common palm civet,</i> <i>Ghoral,</i> <i>Indian Hare, Indian porcupine,</i>	<i>Tragopan,</i> <i>Monal,</i> <i>Cheer koklas,</i> <i>Kalij,</i> <i>Snow cock</i>	<i>Mrigal,</i> <i>Grass carp,</i> <i>Mirror carp,</i> <i>Beta Kuni,</i> <i>Rohu,</i> <i>Ticto,</i> <i>Sarena,</i> <i>Gungli,</i> <i>trout.</i> <i>Mahseer.</i>

<i>Red fox, Indian fox, common langur, Jackal</i>		
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National Parks in Himachal Pradesh

The Great Himalayan National Park

- In June, 2014, the *great Himalayan National park was added to the UNESCO world heritage sites list under the category of “exceptional natural beauty and conservation of biological diversity”.*
- It is crammed with lush forests of *oak, conifer and bamboo, alpine meadows, and endangered animals and birds*. The national park in Himachal Pradesh covers an area of **1,171 sq. kms.**
- It is home to animals like *musk deer, brown bear, Goral, thar, leopard, snow leopard, bharal, serow, monal, Kali, koklas, cheer, tragopan, snow cock* etc.
- The *Sainj Valley trek, Rupi Bhaba Wildlife Sanctuary, and Sainj-Tirthan valley trek to Parvati River Valley* are the best modes to explore the national park.
- Apart from conserving wildlife, the Park runs programmes that provide a *sustainable living for people living on the periphery of the conservation area.*

Pin Valley National Park

- It is located within the *cold biosphere reserves* and is one of the *high altitude national parks* in India that covers an area of **1,150 sq. kms. as buffer zone** and **675 sq. kms. as core zone**.
 - The park is home to many animals and birds from like *Snow Leopard, Siberian Ibex, Himalayan Snowcock, Chukar Partridge, Snow Partridge, Red Fox and Snowfinch Flourish*.
 - There are **22 rare and endangered medicinal plant species** in Pin Valley National Park.
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NATIONAL HIGHWAYS IN HIMACHAL PRADESH

- There are **17 National Highways** involving a length of **2002.690 Km.** in the State of Himachal Pradesh.
- The following **5 National Highways** having a length of **632.000 Km.** have been declared as National Highway by the Ministry on **4th March, 2014.**
 1. ***Manali to Sarchu (222.000 Km.)***
 2. ***Samdhu to Gramphoo (209.500 Km.)***
 3. ***Purana Matour to Mcleodganj (22.500 Km.)***
 4. ***Katori Banglow to Bharmour (133.00 Km.)***
 5. ***Amb to Mubarakpur (45.000Km).***
- Further the following National Highway were declared by the Ministry on **31st March., 2015 i.e. Theog to Hatkoti (74.00 Km.)**
- Two National Highways also declared by the Ministry on **14th May, 2015 i.e. Una to Bhota (70.00 Km.) and Banethi to Kumarhatti (75.00 Km.).**

Old	New	Name of National Highways	Length (in Km.)
NH-70+21	NH-3	Jalandhar- Hoshiarpur- Gagret-Mubarakpur- Nadaun-Hamirpur- Sarkaghat- DharmpurMandi-Kullu-Manali.	318.495
NH-22	NH-5	Chandigarh-Kalka-Parwanoo-Solan Shimla-Theog-Narkanda-Rampur	326.276
NH-72	NH-7	Kala amb Paonta Dehradun Rishikesh Haridwar road	57.000
NH-88	NH-103	Hamipur-Bhota-Ghumarwin-Ghagus .	77.000
NH-21A	NH-105	Pinjore- Baddi-Nalagarh-Swarghat.	48.875
NH-20+21	NH-154	Pathankot-Nurpur-Palampur Joginder nagar-Mandi-Sundernagar Ghagus-	267.865
NH-21 & 88	NH-205	Ropar-Kiratpur-Swarghat-Nauni Darlaghat-Shimla.	123.000
NH-20A +88	NH-303	Nagrota-Ranital-Jwalamukhi and Nadaun.	70.200

New	NH305	Sainj- Luhri- Anni -Jalori- Aut Road	94.784
NH-88 & 20A	NH-503	Mataur-Kangra-Ranital-Dehar GopipurBharwein-Mubarakpur.	72.900
NH-72B	NH-707	Paonta-Rajban- Shillai -Menus –Hatkoti	119.500
NH-73A	NH-907	Lal-dhank Bata chowk road	7.420
	NH-154A	The Highway starting from its Junction with NH-154 near Chakki, Dhar in the State of Punjab connecting Banikhet, Chamba and terminating at Bharmour in the State of Himachal Pradesh	133.000
	NH-503	The Highway starting from its Junction with NH-3 at Mubarakpur connecting Dehra Gopipur, Ranital, Kangra, Matour, Dharmshala and terminating at Mcleodganj in the State of Himachal Pradesh.	22.675
	NH-503 (Extn)	The Highway starting from its junction with NH-3 near Mubarakpur connection Amb, Una, Dehlan in the State of Himachal Pradesh, Anandpur Sahib, Kiratpur and terminating at its junction with New NH No. 205 in the State of Punjab.	44.700
	NH-705	The Highway starting from its junction with New NH No.5 at Theog connecting Kotkhai,Jubbal and terminating at its junction with NH No. 707 at Hatkoti in the State of Himachal Pradesh	74.000
	NH-503A	The Highway starting from its Junction with NH-03 at Amritsar connecting Mehta,Sri Hargobindpur, Tanda , Hoshiarpur in the State of Punjab, Una, Basoli, Barsar,Salooni and terminating at its Junction with NH-103. near Bhota in the State of Himachal Pradesh	70.000
	NH-907A	The Highway starting from its Junction with NH-07 near Nahan connecting Bannethi,Sarahan and terminating at its Junction with NH-5 near Kumarhatti in the State of Himachal Pradesh.	75.000

		G.Total	2002.690
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State Profile:

- Population of Himachal Pradesh is **68.65 lakh persons** as per the *Census report for the year 2011*.
- **89.01%** of the total population *inhabits 20,604 villages* in the rural areas of the State.
- **Hamirpur** district has largest population density of **369** persons per square kilometer as against **123** persons per square kilometer for the whole State.
- Female literacy is well above the national level and women employment is much higher than in most states of the country.

Himachal Pradesh Table Data

Description	2011	2001
Approximate Population	68.65 Lakhs	60.78 Lakh
Actual Population	6,864,602	6,077,900
Male	3,481,873	3,087,940
Female	3,382,729	2,989,960
Population Growth	12.94%	17.53%
Percentage of total Population	0.57%	0.59%
Sex Ratio	972	968
Child Sex Ratio	909	896
Density/km ²	123	109
Area(Km ²)	55,673	55,673
Total Child Population (0-6 Age)	777,898	793,137

Male Population (0-6 Age)	407,459	418,426
Female Population (0-6 Age)	370,439	374,711
Literacy	82.80 %	76.48 %
Male Literacy	89.53 %	85.35 %
Female Literacy	75.93 %	67.42 %
Total Literate	5,039,736	4,041,621
Male Literate	2,752,590	2,278,386
Female Literate	2,287,146	1,763,235

Description	Population	Percentage
Hindu	6,532,765	95.17 %
Muslim	149,881	2.18 %
Sikh	79,896	1.16 %
Buddhist	78,659	1.15 %
Christian	12,646	0.18 %
Jain	1,805	0.03 %

Description	Rural	Urban
Population (%)	89.97 %	10.03 %
Total Population	6,176,050	688,552
Male Population	3,110,345	371,528

Female Population	3,065,705	317,024
Population Growth	12.65 %	15.61 %
Sex Ratio	986	853
Child Sex Ratio (0-6)	912	881
Child Population (0-6)	712,822	65,076
Child Percentage (0-6)	11.54 %	9.45 %
Literates	4,471,736	568,000
Average Literacy	81.85 %	91.10 %
Male Literacy	89.05 %	93.42 %
Female Literacy	73.42 %	74.25 %

Big Cities	Population	Male	Female
Shimla (Municipal Corporation)	169,578	93,152	76,426

Large Metropolitan Region	Population	Male	Female
There is no Metropolitan Region having population above 1 Lakh			