

## Indian Geography

India is the largest country in the Indian subcontinent, deriving its name from the Sindhu river (which was known to the ancient Greeks as the 'Indus') which flows through the north western part of the country. The Indian mainland extends in the tropical and sub-tropical zones from latitudes 8° 4' and 37° 6' north and from longitudes 68° 7' and 97° 25' east. The southernmost point in Indian territory, the Indira point (formerly called Pygmalion point) is situated in the Nicobar Islands (The southern-most point was submerged under water after the 2004 tsunami). The country thus wholly lies in the Northern and Eastern hemisphere. The northernmost point of India lies in the state of Jammu and Kashmir.

### Area and boundaries

India stretches 3,214 km at its maximum from north to south and 2,933 km at its maximum from east to west. The total length of the mainland coastline is about 6,100 km and the land frontier measures about 15,200 km. The total length of the coast line including the islands is 7500 km. With an area of 32,87,782 sq km, India is the seventh largest country in the world, constituting 2.4% of the world's area.

The country is shaped somewhat like a triangle with its base in the north (Himalayas) and a narrow apex in the south. South of the Tropic of Cancer, the Indian landmass tapers between the Bay of Bengal in the east and the Arabian Sea in the west. The Indian Ocean lies south of the country, thus establishing the Indian subcontinent as a peninsula. In the south, on the eastern side, the Gulf of Mannar and the Palk Strait separates India from Sri Lanka. India's islands include the Andaman and Nicobar islands in the Bay of Bengal, and the Lakshadweep islands (including Minicoy and Aminidive islands) in the Arabian sea.

### India's neighbours

India's neighbours in the north are China, Nepal and Bhutan. The boundary between India and China is based on the **McMahon line**.



To the west and north-west India shares its boundary with Pakistan and in the east with Myanmar. Afghanistan is another close neighbour of India towards north-west. However, India's longest land border is with Bangladesh – which is surrounded on most sides by India.

### **Administrative divisions**

At the time of independence in 1947, India was divided into hundreds of small princely states and principalities; along with a few provinces that were directly ruled by the British. These States were united to form fewer states of larger size and finally re-organised to form 14 states and six union territories. This organisation of Indian states was based upon a number of criteria, language being one of these. Subsequent to this a number of new states have been carved out to meet aspirations of the people. Presently there are 28 states, 8 union territories and one national capital territory. The most recently formed state was Telangana (which was earlier part of Andhra Pradesh). Rajasthan with an area of 342,239 sq. km is the largest state in India. Before the formation of Chhattisgarh as a separate state in the year 2000, Madhya Pradesh was the largest Indian state in terms of area. Goa with an area of 3,702 sq. km is the smallest state. Goa was a Portuguese colony and was liberated from Portuguese rule on December 19, 1961. Uttar Pradesh is the state with maximum number of districts in India. Uttar Pradesh is the most populous and fifth largest state of India. Only five countries of the world - China, USA, Indonesia, Brazil and India itself have populations larger than that of Uttar Pradesh.

**This is a list of India's States and Union Territories with their capitals:**

1. Andhra Pradesh – Hyderabad (Proposed Capital: Amaravati in Guntur district)
2. Arunachal Pradesh – Itanagar
3. Assam – Dispur
4. Bihar – Patna
5. Goa – Panaji
6. Gujarat – Gandhinagar
7. Haryana – Chandigarh
8. Himachal Pradesh – Shimla
9. Jammu & Kashmir – Srinagar (Winter Capital: Jammu)
10. Karnataka – Bengaluru
11. Kerala – Thiruvananthapuram
12. Madhya Pradesh – Bhopal
13. Maharashtra – Mumbai
14. Manipur – Imphal
15. Meghalaya – Shillong
16. Mizoram – Aizawl
17. Nagaland – Kohima
18. Orissa – Bhubaneswar
19. Punjab – Chandigarh
20. Rajasthan – Jaipur
21. Sikkim – Gangtok
22. Tamil Nadu – Chennai
23. Tripura – Agartala
24. Uttar Pradesh – Lucknow
25. West Bengal – Kolkata
26. Chhattisgarh – Naya Raipur
27. Uttarakhand – Dehradun
28. Jharkhand – Ranchi
29. Telangana – Hyderabad

**List of Union Territories:**

1. Andaman and Nicobar Islands – Port Blair
2. Chandigarh – Chandigarh

3. Dadra and Nagar Haveli – Silvassa
4. Daman and Diu – Daman
5. Lakshadweep – Kavaratti
6. Puducherry (Pondicherry) – Puducherry
7. National Capital Territory of Delhi

## **Geology**

The geological history of India is complex. Rocks in different parts of the country range in age from very ancient to geologically recent formations. The peninsular block has some of the oldest rocks in the world. The rocks of the Himalayas and northern region are comparatively younger. The peninsular region is believed to have been a part of the ancient mega-continent of Gondwanaland. It is customary to divide India into three landform regions - the Himalayas and the associated ranges; the India Gangetic plains to the south of the Himalayas and the peninsular plateau.

The Himalayas (from the Sanskrit 'hima', meaning "snow," and 'alaya', meaning "abode") are mainly made up of the Proterozoic and Phanerozoic sediments that are largely of marine origin and they have experienced great tectonic disturbances. These mountains have resulted from diastrophic movements during comparatively recent geological times. The geological evidence suggests that this extra peninsular region has remained under the sea for the greater part of its history and therefore has layers of marine sediments that are characteristic of all geological ages subsequent to the Cambrian period.

The Indo Gangetic plain is younger and is covered by sediments of Holocene or recent age. The western part is occupied by vast stretches of desert. It was formed during the quaternary period. The peninsular plateau is geologically as well as morphologically a totally different kind of area from the former two units.

The peninsula has been a continental part of the crust since the Pre-Cambrian Era. It is a stable mass of Pre-Cambrian rocks, some of which have been there since the formation of the earth. The mountains of these region, except for Aravalli, were formed by denudation of ancient plateau surfaces.

## **Physiography**

The Himalayas are among the youngest fold mountain ranges in the world and comprise mainly sedimentary rocks. Along with the associated ranges in the northwest and northeast, they form the northern boundary of India extending from Jammu and Kashmir in the west to Assam, Manipur and Mizoram in the east. The total length of this chain is about 5,000 km, of which about 2,500 km stretches in the form of an arc along the Indian border. The Indus Valley and Brahmaputra are taken as the western and eastern limits, respectively, of the Himalayas within India.

The breadth of Himalayan Mountains varies from 150 to 400 km and the average height of the whole region is taken to be about 2,000 metres.



*The Himalayas, with their large reserves of ice, are a source of water for many rivers.*

The elevation of the Himalayan Mountain Range more or less decreases eastward. The Himalayas are believed to be created in the Tertiary Era in the zone formerly known as Tethys Sea, a geosyncline situated between Gondwanaland in the south and Angara land in the north.

Due to the motion of the Indian tectonic plate into the Asian plate, the Himalayan mountains are still growing taller every day. On average, the mountains in the Himalayan range grow taller by about 2 cm every year. The Himalayas comprise a number of almost parallel ranges. The three major ranges are identified as follows:

The greater or the inner Himalayas (Himadri): This range is also called the Central Himalayan Range. This is the northern most range of the Himalayas and it is highest of them all. About 25 km broad, it is the source of many rivers and glaciers and the mountains reach an average height of 6,000 m. The world's tallest mountain peak, Mount Everest lies in this range (on the border of Nepal and Tibet). The world's third tallest mountain, Kangchenjunga, lies on the border of Sikkim and Nepal. Kangchenjunga (whose name means 'The Five Treasures of Snows'), as it contains five peaks, four of them over 8,450 metres, is best viewed from the hill station of Darjeeling. On a clear day, it presents an image not as much of a mountain but of a white wall hanging from the sky. The people of Sikkim revere Kangchenjunga as a sacred mountain.

A western extension of the Himalayas is the Karakoram range in which is found Mt K2 (or Mt Godwin Austen) the second tallest mountain peak in the world, and the tallest within India's official boundaries.

The lesser Himalayas (Himachal): This range extends to the south of the central Himalayas. It is also known as the Middle Himalayan Range. This range is broader than the former but its height is lower. The average height of mountains here is about 1,800 metres and the breadth varies from 80 to 100 km. Most rivers originating in the higher Himalayas have cut deep gorges in this region. The main central thrust zone lies between this and the central Himalayas.

The sub-Himalayas (Shivaliks): This is the third and lowest range of the system. This range is also known as Outer Himalayan Range. The main boundary thrust separates this range from the middle Himalayas. The length of this range between the Potwar basin in the west and Teesta River in the east is about 2,500 km. The breadth of the Shivaliks varies from 10 to 50 km and average height is about 1200m.

Tibetan Himalayas: To the north of the great Himalayas lie the Trans Himalayan Mountains, or the Tibetan Himalayas. This range acts as a watershed between rivers flowing towards the north and south.

The Siachen Glacier is the largest glacier in India. At 75.6km long and 2.8km wide, it is the longest glacier in the Karakoram and second-longest in the world's non-polar areas. The Siachen Glacier is located in the eastern Karakoram range in the Himalaya Mountains.

Dras in western Ladakh is the coldest place in India. It is also believed to be the second coldest inhabited place in the world after Siberia, and is often called 'The Gateway to Ladakh'.

## The Northern Plains

They are also known as the Indo-Gangetic plain and the Ganga-Brahmaputra plain. The rivers Indus, Ganges (Ganga) and Brahmaputra, and their tributaries have contributed to the formation of this plain. The whole plain is a combination of flood plains in the west and flood plains and delta plains in the east. A further division of the Ganga plain into *Khadar* and *Bangar* areas is also very common. The term *Khadar* is applied to areas of new alluvium where a new layer of silt is deposited regularly during floods. These areas stretch along the river channels.



*The Ganga basin used to be rich in nutrients, but the river is currently battling against pollution.*

The soil in these areas is sandy and the water table is generally higher. The term *Bangar* is applied to areas of older alluvium that are farther from the river channels and generally out of reach of frequent floods. The soils in these areas are finer than in the *Khadar* and the water table is generally low. The northern part of the Ganga plain is called the *Terai* region.

The southeastern part of the plains is called the Sunderban delta- the largest delta in the world. Formed by the Ganga and Brahmaputra, a large part of this delta extends in Bangladesh.

## The Coastal Plains

The coastal plain stretching along the Bay of Bengal coast is called the Eastern Coastal Plain while the one stretching along Arabian Sea is called the Western Coastal Plain.

The Eastern coastal plain is also known as the Coromandel coastal plain in Tamil Nadu. This plain is occupied by the delta regions of rivers Mahanadi, Godavari, Krishna and Kaveri. It is a fertile coastal lowland. The eastern coastline is of emergence unlike the western coastline, and hence it is greater in width.

The western coastal plain extends from Gujarat in north to Kerala in south. Unlike the eastern coastal plain, this plain is rather narrow except in Gujarat, where it is the widest. The northern part of the plain is occupied by the Gujarat plain. South of Gujarat, it stretches upto Goa constituting the Konkan coast. Further south, in Kerala the coast is known as the Malabar coast.

The lack of width is due to the lack of delta formation by the flow of rivers. It is a coastline of submergence. The continental shelf is far wider on the eastern coastline than on the western one. From an agricultural point of view, the eastern coastal plain is more important than the western coastal plain.



## **Peninsular plateau**

The Peninsular Plateau is the name given to the region spreading to the south of the Indo Gangetic plain and flanked by the sea on three sides. This plateau is shaped like a triangle with its base in the north. The Eastern Ghats and Western Ghats are the east and west borders of the plateau respectively. The river Narmada, which flows through a rift valley, divides the region into two parts: the Malwa plateau in the north and Deccan plateau in the south.

## **Malwa plateau**

This plateau extends to the north of the Narmada valley, between the Aravalis to the east and the Nagpur plateau to the east. The general slope of land is towards north and the rivers flow northwards and join the Ganga river and its tributaries. For example, the Chambal meets the Yamuna which itself flows into the Ganga. Other examples are the Son and Damodar.

## **Aravalis**

The Aravalis are the oldest mountains in India. These are fold mountains which attain their maximum height at Gurushikhar, near Udaipur. They extend in a southwest – northeast direction and their northeast end is near Delhi. This mountain range acts as an important climate divide in Northern India.

## **The Deccan Plateau**

This is the part of the peninsular plateau region extending to south of the Narmada valley. This part is divided into three major units – the Western Ghats, the Eastern Ghats and the Deccan trap.

## **Deccan trap**

It represents the core of the plateau region and it is in this part, that the oldest rocks of India are found. This region is made up of crystalline rocks.

## **Western Ghats**



These Ghats form a major water divide in the Deccan plateau region and the rivers rising from the eastern slope of the Ghats flow towards the Bay of Bengal. The Godavari, the Krishna and the Kaveri all rise in these Ghats and flow eastwards across the Deccan plateau. The Narmada and Tapi, flowing through the rift valleys, are the only exceptions. The highest range of the Western Ghats, situated largely in Maharashtra, is named the Sahyadri range. Many rivers of the Western Ghats form scenic waterfalls which are best seen during the monsoons and immediately afterwards. The Jog falls in Karnataka formed by the Sharavati river are the tallest in India, and comprise of 4 distinct falls named Rocket, Raja, Rani and Roarer.

## **Eastern Ghats**

These Ghats lie between eastern coastal plain and the Deccan trap. Unlike the Western Ghats, they are formed by a series of discontinuous hill ranges with gaps through which the rivers of the peninsular region flow into the Bay of Bengal.

In the deep south, the Eastern Ghats are connected to the Western Ghats by the Nilgiri hills (also known as the 'blue mountains' owing to the bluish colour of the flowers of the Kurinji shrub which is found across these hills, and blooms once every 12 years or so!

Apart from the Aravali and Eastern and Western Ghats, other mountain ranges include the Vindhyas and Satpuras in central region. The Satpuras, which lie between the rivers Narmada and Tapi have several hills, including the Rajpipla hills in Maharashtra and Maikal range and Pachmahri hills in Madhya Pradesh.

## **Islands of India**

The territory of India consists of several hundred islands. The largest number of islands lie in the Bay of Bengal and others in the Gulf of Mannar and the Arabian sea. The Andaman and Nicobar Islands, separated by the ten-degree channel, form the two major groups in the Bay of Bengal. The Andamans are divided into three groups – the north, middle and south Andamans. These islands are believed to be extensions of mountain systems extending along the Indo-Myanmar border region.

The Nicobars are a group of 19 islands, of which Great Nicobar is the largest. Most of these islands represent the peaks of the submerged mountains. Live corals and coral reefs are also found along the Nicobar Islands.

On the other hand, all islands in the Lakshadweep group in the Arabian Sea are coral islands. These islands are also divided into groups. The northern group is known as Lakshadweep islands and the southern group the Minicoy islands.



*The Lakshwadeep Islands constitute a Union Territory of India.*

## **Drainage**

More than 90% of India's total surface run-off flows into the Bay of Bengal, and rest into the Arabian Sea.

## **Division of Indian rivers**

On the basis of their origin the rivers are divided into two major groups – Himalayan rivers and rivers of Peninsular India.

### **Himalayan rivers**

The Indus system: Rivers Shyoke, Gilgit and Shigar are the main tributaries of this system, joining in Jammu and Kashmir. The more important tributaries include Jhelum, Chenab, Ravi, Beas and Sutlej, which join before entering Pakistan.

The Ganga system: The second major river system of India, this system drains about 25% of the total area of the country. Three towns holy to Hinduism – Haridwar, Allahabad, and Varanasi – attract thousands of pilgrims to its waters. Thousands of Hindu pilgrims arrive at these three towns to take a dip in the Ganges, which is believed to cleanse one of sins and help attain salvation. The Ganges river's long held reputation as a purifying river appears to have a basis in science. The river water has a unique and extraordinary ability to retain oxygen.

The Ganga, the head stream, is constituted of two major rivers – Bhagirathi and Alaknanda, which combine at Dev Prayag to form the Ganga. Bhagirathi is generally considered the mother stream and it rises from the Gangotri glacier. The Yamuna, which joins the Ganga at Allahabad, is its major tributary. Other tributaries of the Ganga include Ghaghara, Gandak and Kosi from the north and Damodar and Sone from south. The important tributaries of the Yamuna include the Chambal, Betwa and Ken.

### **The Brahmaputra system**

This is the third major river system of north India. The Brahmaputra, the head stream rises in Tibet (near Lake Mansarovar), where it is called Tsang-po, and enters India territory under the name of Dihang. The Subansiri, Kameng, Dhansiri, Manas and Teesta are the major rivers. The Lohit is also an important tributary.

## **Rivers of peninsular India**

These include The Brahmani – Subernerekha system, the Mahanadi system, the Godavari system, the Krishna system, the Kaveri (Cauvery) system, the Narmada system, the Tapi system and the Sabarmati system.

## **Climate**

India is a monsoon country, but its climate is far from uniform. There are locations with extreme climates, like the desert lands of Rajasthan, or extremely cold regions in Kashmir or the cold desert of Ladakh. The coastal regions have equable temperatures throughout the year while places in the plains are under the influence of continental location.

## **Soils**

### **Alluvial soil**

From an agricultural point of view, this is the most important soil type. It covers about 24% of the country's land surface. It is mainly found in the northern plains.

### **Black soil**

This is the second major group of soil found in India. Ideal for cultivation of cotton for its high moisture retention capacity, it is referred to as black cotton soil. It is found mostly in the Deccan region, and is locally known as Regur soil.

### **Red soil**

This type of soil contains soluble salts and lime. It covers the peninsular region upto the Rajmahal hills.

### **Lateritic soil**

This type of soil contains iron oxides. The soil occurs in the higher reaches of the Sahyadris, the Eastern Ghats and Rajmahal hills, and other higher peninsular regions.

### **Forest soil**

Forest and hilly areas are covered by forest soil, which is rich in organic matter but varies in character according to relief conditions. The Himalayas and higher reaches of the land have this kind of soil.

### **Arid and desert soils**

These are found in the northwestern parts of the country and cover the entire area from Rajasthan to Punjab, Haryana. These soils are rich in phosphate.

### **Natural vegetation, plant and animal life**

Evergreen forests: Found in the areas receiving over 200 cm rainfall, they cover the Western Ghats and hilly areas in north-eastern India, mainly in the Sub-Himalayan belt. Trees typical of these forests are hard woods such as rosewood, teak, ebony and ironwood. Bamboo is also commonly found. Due to the availability of adequate moisture all the year round, coupled with the high temperature, the vegetation here remains active all year round and there is no particular leaf shedding season. The forest therefore always looks green. The trees in these regions are very tall.



*The Indian climate is perfect for the growth of evergreen trees.*

Deciduous forests: Found in areas receiving a rainfall of 150 to 200 cm, deciduous forests cover the large part of the peninsular region. Due to the seasonal precipitation, the trees shed their leaves in the dry season.

Dry forests: Areas with annual precipitation of 75 to 100 cm have dry forests. Areas under this type of vegetation are the semi desert region of Rajasthan and southern parts of Punjab and Haryana.

Hill forests: These cover the high reaches of hills in Southern India and the Himalayas. The foothill zone of the Shivaliks is covered by tropical moist deciduous forests of sal, bamboo etc. Between 1,000 and 2,000 m above sea level, one can find hill forests of oak, chestnut and pine. The coniferous forests are found between 1,600 and 3,300 m. At an altitude of 3,000 m, alpine forests are found, they are followed by alpine grasslands and scrub.

Tidal forests: The estuaries of large rivers like the Ganga and Mahanadi support the littoral type of vegetation (littoral refers to the shallow water zone of the sea, mainly the continental). These forests are known as mangrove forests.

To highlight the importance of conservation of forestland, the national tree planting festival is celebrated on March 21. Among other steps taken to increase the area under forests, the scheme of social forestry introduced during the sixth five-year plan is very important. The scheme aims at the creation of cultivated forests to meet the community requirements of timber, firewood and fodder by planting locally suitable trees on public and private lands.

The integrated forest scheme has also been introduced which aims at involving the tribal groups towards the protection of their local forest cover, and its objectives include infrastructure development and forest fire control.

### **Biosphere reserves**

These are the protected areas that are maintained in their natural state. There are total of 18 reserves including Nilgiri, Gulf of Myanmar, Sunderbans, Nanda Devi, Nokrek, Pachmarhi, Simlipal, Achanakmar-Amarkantak, Agasthyamalai and great Nicobar.

### **Trivia about Indian Geography**

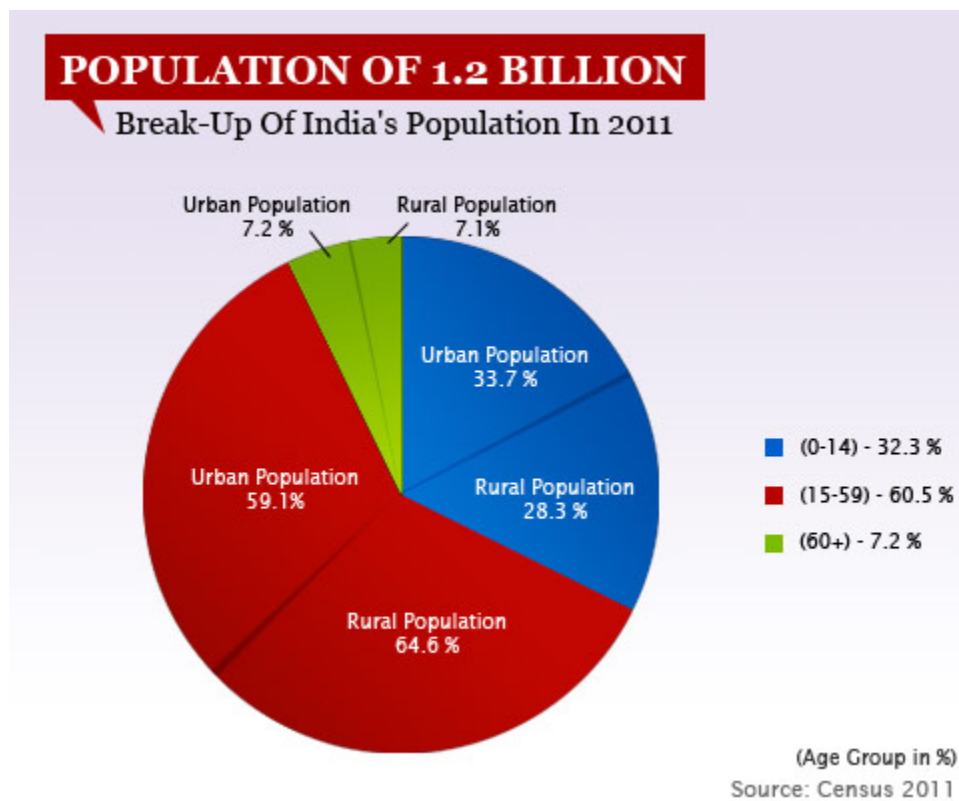
Mawsynram, a village on the Khasi Hills, Meghalaya, receives the highest recorded average rainfall in the world. Cherrapunji, also a part of Meghalaya, holds the record for the most rainfall in the calendar year of 1861, and is one of the wettest places in the world.

The Tropic of Cancer ( $23\frac{1}{2}^{\circ}$  North latitude) passes through Gujarat, Rajasthan, Madhya Pradesh, Chhattisgarh, Jharkhand, West Bengal, Tripura and Mizoram – a total of 8 states.

### **Population**



India is the second most populous country in the world after China, according to the 2011 census the population was about 121 crore. The census has been conducted every 10 years in India since 1871.



*India is set to overtake China as the world's most populated country in the next few years.*

## Density

Average density as per the 2011 census is 382 persons per sq. km. The density is not uniform throughout the country, the highest density is that of NCR Delhi- 11,297 persons per sq. km and the lowest is Arunachal Pradesh with 17 persons per sq. km. West Bengal is highest among the states with 1,029 persons per sq. km.

## Sex ratio

The sex ratio in India is negative. The average sex ratio is 940 females per thousand males. Kerala is the only state where the females are more than males, with 1038 females per 1000 males. Haryana has the lowest sex ratio of 877 females per thousand males.

## **Literacy**

Average literacy rate according to the 2011 census is 74.04%. Literacy is higher among males (82.14%) than among females (65%). The highest literacy rate is in Kerala (93.91%) and lowest in Bihar (63.82%).

## **Languages**

The constitution of India recognises 22 languages as specified in the eighth schedule. A country with over 22 languages! India has 22 official languages including Assamese, Bengali, Bodo, Dogri, Gujarati, Hindi, Kannada, Kashmiri, Konkani, Maithili, Malayalam, Manipuri, Marathi, Nepali, Odia, Punjabi, Sanskrit, Santhali, Sindhi, Tamil, Telugu and Urdu.

Hindi is the language with the maximum number of native speakers; however, English is also widely spoken across India.

## **Religions**

There are a number of religions in the country, namely Hinduism, Christianity, Islam, Sikhism, Buddhism, Zoroastrianism and Jainism, as well as tribal and animist religions. The majority is that of Hindus.

## **Time Zone**

Indian Standard Time (IST) is ahead of Greenwich by 5 hours 30 minutes. This is the single time standard used across India. 82°30' east (Shankargarh Fort, Mirzapur in Allahabad district) has been selected as the Standard Meridian of India.