Chapter 2

Life on Earth



The Big Questions

1. *How do physiography and climate shape life on Earth?*
2. *How are humans and other life forms interconnected?*
3. *What is the importance of preserving various life forms, and how can we contribute to their conservation?*

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Geography helps us understand how climate, landforms, and water shape life on Earth—and how humans adapt their lives to these conditions. From forests and grasslands to deserts and coastal regions, different environments support different forms of life. At the same time, human activities influence these natural systems in significant ways. This chapter explores the close relationships among physical features, climate, and living organisms, and encourages us to reflect on our responsibility towards preserving the diversity of life on Earth.

Imagine our planet as a giant patchwork quilt, where each patch has its own colours, weather, and living beings. These huge patches are called **biomes**. The word 'biome' is made up of the word *bio*, derived from the Greek word *bios*, meaning 'life', and *-ome*, a suffix used in biology to denote a group of a specific type of biological constituents. Biomes are large natural regions of the world where certain types of plants and animals live under similar climatic conditions. For example, icy tundras, hot deserts, green forests, and vast grasslands are all different types of biomes. In simple terms, a biome is like a broad environmental region, while an **ecosystem** is like a neighbourhood within it, where plants, animals, and non-living things interact closely. Each biome is unique, but together they form the living world of our planet, supporting diverse forms of life and helping maintain the balance of nature.

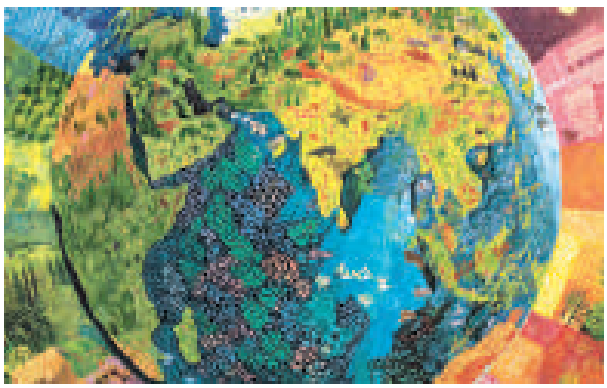


Fig. 2.1. Earth as a giant patchwork quilt

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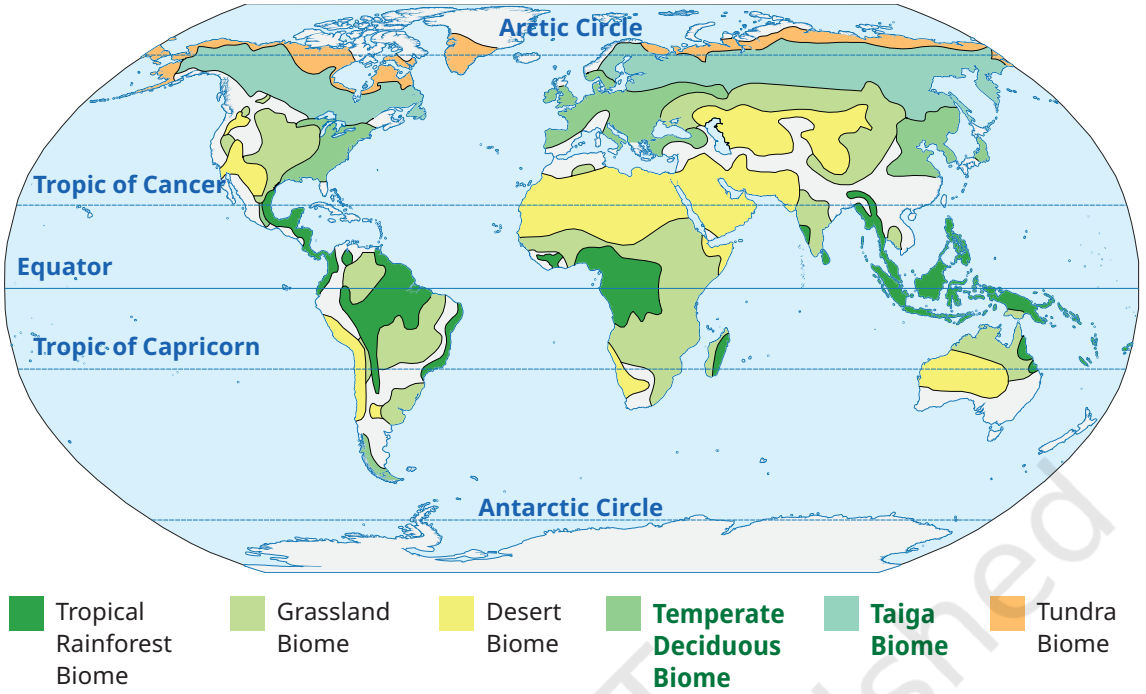


Fig. 2.2. World map showing distribution of biomes (map not to scale)

Temperate deciduous biome: This biome is characterised by forests of broad-leaved trees that shed their leaves seasonally, with moderate temperatures and distinct seasons.

Taiga biome: This biome is characterised by coniferous forests consisting mainly of pines, spruces, and larches.

LET'S MAP

Look at the world map in Fig. 2.2 and answer the following questions.

→ Which type of biome is found in smaller, separate regions, and why?

→ Which continent has the least number of biomes? What could be the reason for this?

→ Why are there areas that do not have any specific biomes?

Types of Biomes

Now that you have understood the meaning and uniqueness of biomes, let us identify the different types of biomes. Different **biomes** support diverse plant and animal life and can be categorised into **terrestrial** (land-based) and **aquatic biomes** (water-based).

There are several factors that determine which types of plants and animals can survive and thrive in a biome. These include temperature, precipitation patterns, dominant plant species, growth forms of vegetation, etc.

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Terrestrial Biomes

Terrestrial biomes are classified into forests, grasslands, deserts, and tundra, based on their climate.

Forest Biome

A forest biome is like nature's giant green umbrella—warm, wet, and bursting with life at every level, from the tallest trees to the damp forest floor. **Tropical rainforests** are mainly found near the Equator, between the Tropic of Cancer and the Tropic of Capricorn (23.5° N to 23.5° S). These regions remain hot and wet throughout the year, which supports the growth of dense forests. The largest tropical rainforests are located in the Amazon Basin in South America, the Congo Basin in Africa, and parts of Southeast Asia, such as Indonesia and Malaysia. Smaller rainforest regions are also found in Central America, as well as in India's Andaman & Nicobar Islands, and the Northeastern states. Together, these areas form the world's richest



Fig. 2.3. (Left to right, top to bottom) A beach, Andaman Islands; Dzukou Valley, Nagaland; Nohkalikai Falls, Sohra; Gurudongmar Lake, Sikkim

storehouse of biodiversity with rich genetic resources. They preserve unique genetic material, supporting conservation and scientific research, and are hence also known as a 'gene bank'. Forests also play an important role in maintaining oxygen levels and balancing the Earth's climate.

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LET'S EXPLORE

Look at the layers of vegetation in a rainforest. What do the yellow shapes in the figure indicate?

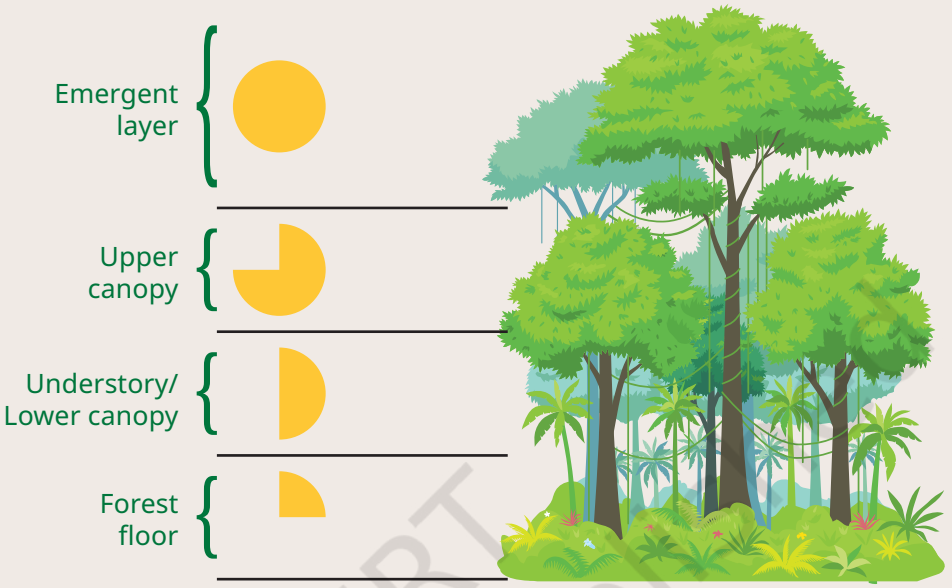


Fig. 2.4. Ideal structure of a rainforest biome



Grassland Biome

Grasslands are large open areas covered mainly with grass and very few trees. These develop in regions that receive moderate rainfall, which is not enough to support dense forests. Temperate grasslands (such as the prairies in North America and the steppes in Asia) have



Fig. 2.5. Typical grassland landscape

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fertile soil and are often used for farming. Tropical grasslands, also known as Savannas (as in Africa), have scattered trees and are home to large animals such as lions, elephants, and giraffes. Grasslands support grazing animals and are important for human activities like agriculture and livestock rearing.

LET'S EXPLORE



Observe Fig. 2.5 and explore which of these animals you will find in the grasslands of India.

Desert Biome

Deserts are the driest biomes, receiving very little rainfall. They can be hot, like the Sahara in Africa, or cold, like the Gobi in Asia. The Rann of Kutch in Gujarat is one of the world's largest salt deserts, turning into a marshy wetland during the monsoon and a vast white salt desert during the dry season. The extreme conditions of a desert make it difficult for life to survive; however, plants like cacti and animals such as camels, lizards, and snakes are specially adapted to these conditions. They can store water and withstand heat and dryness. Deserts often have sandy soil and sparse vegetation. Despite their harshness, they are home to unique ecosystems, and many of them also provide valuable resources such as minerals and oil.





Fig. 2.6. Life in the Thar Desert

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LET'S EXPLORE

→ What types of activities do you think people in desert regions generally undertake to sustain their households and livelihood?

→ With the help of your teacher, explore how do people address issues related to the availability of water.



(a) (b)

Fig. 2.7. Camels in deserts

→ Compare the physical features of the Rajasthan camel (Fig. 2.7a) and the Nubra Valley (Ladakh) camel (Fig. 2.7b).



→ Considering the climatic conditions, why do you think the Nubra Valley camel might have a different fur density than the Rajasthan camel?

Tundra Biome

The tundra biome is the coldest of all and is found near the Arctic and Antarctic regions. It has very long, harsh winters and short summers. The soil is frozen almost year-round—a condition called permafrost—which makes it difficult for trees to grow. The vegetation is limited to mosses, lichens, and small shrubs. And animals, such as reindeer, arctic foxes, and polar bears, which are well adapted to survive freezing temperatures, are often found here. The tundra is fragile, and even small temperature changes can affect its ecosystem.

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Fig. 2.8. Tundra (left) and the Himalaya (right)

THINK ABOUT IT

Tundra in polar regions has mosses, lichens, shrubs, etc., while the Himalaya, in the subtropics, is dominated by conifers. What could be the reason for this? What difference do you find in the animals found in these two regions? Which species are found only in the Himalaya? Discuss in class.



Aquatic Biomes

Aquatic biomes cover about three-fourths of the Earth's surface and are divided into freshwater and marine biomes (Fig.2.9). **Freshwater biomes** include rivers, lakes, ponds, and wetlands. These are crucial for agriculture, getting access to drinking water, and supporting species, such as fish, frogs, and insects. **Marine biomes** include oceans, seas, and coral reefs, which are rich in biodiversity and influence the Earth's climate by storing and distributing heat. They are also home to countless species, including whales, dolphins, fish, and plankton, and provide food and livelihood for millions of people.



Fig. 2.9. The diversity of the aquatic biome

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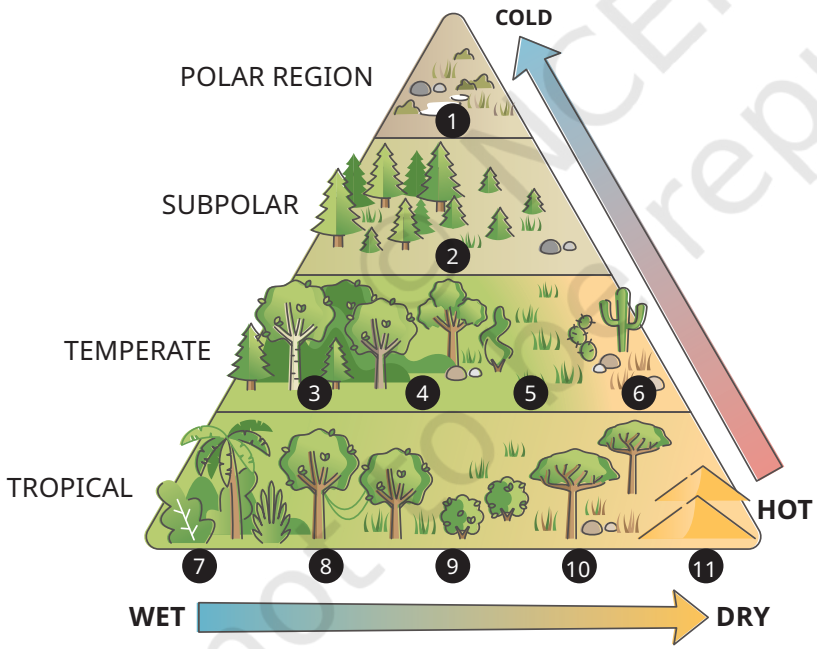
Explore your local environment. This could be your village, city, town, or residential area. Observe how people, plants, and animals build structures and interact. Complete the table with your findings.

Component type	Examples observed	Interaction with humans
Trees/Vegetation/Plants		
Insects		
Animals		
Non-living things		



Biome Pyramid

A **biome pyramid** is a graphical representation that illustrates the relationship between different organisms within a biome, usually in terms of energy, number, or biomass. At the base of the pyramid



1 Tundra	6 Desert
2 Coniferous Forest (Boreal Forest)	7 Rainforest
3 Deciduous Forest	8 Scrubland
4 Chaparral	9 Tropical Seasonal Forest
5 Grassland	10 Savanna
11 Desert	

Fig. 2.10. Biome pyramid

are the producers, such as plants and algae, which capture solar energy through photosynthesis. The next levels consist of herbivores (primary consumers), carnivores (secondary consumers), and top predators (tertiary consumers). As we move up the pyramid, the

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number of organisms, biomass, and available energy decrease as energy is lost at each trophic level as heat during metabolic processes. Thus, a biome pyramid helps in understanding the structure of ecosystems, the flow of energy, and the balance between different living organisms in a biome.

LET'S MAP

Mark the following regions at appropriate levels on the Fig. 2.10: Andaman & Nicobar Islands, Keralam, Ladakh, Chhattisgarh, Odisha, Meghalaya, and Lakshadweep. Where will you place your home?

There is no arrow on the third side of the triangle. What would happen if we drew an arrow? Would it point upwards or downwards?



Interconnectedness between Biomes and Living Beings

Biomes are closely connected to living beings because they provide a natural environment where plants, animals, and humans can survive and interact. At the same time, living beings also influence biomes—animals help in pollination and seed dispersal, humans modify landscapes for farming or cities, and microorganisms recycle nutrients. In this way, biomes and living beings are interconnected systems that depend on one another to maintain ecological balance and biodiversity. We will discuss some of the aspects of this interconnectedness in the following section.

Maintaining Ecological Balance and Biodiversity

Biodiversity

Biodiversity is the variety of life on Earth, including plants, animals, microorganisms, and the ecosystems they inhabit (Fig. 2.11). It refers not only to the number of different species but also to the genetic differences within species and the variety of habitats and ecological processes that sustain life. In simple terms, biodiversity means the richness of life forms and the natural balance they create, which is essential for maintaining healthy ecosystems and supporting human survival.



Fig. 2.11. Biodiversity in wild animals

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The **geographical aspects of biodiversity conservation** focus on how location, climate, landforms, and ecosystems influence the protection and management of living organisms. Since biodiversity is unevenly distributed across the Earth, geography plays a vital role in conservation. Some key aspects of conservation are—

Hotspots of Biodiversity: Certain regions, such as the Himalaya, the Western Ghats, the North–East India, and the Andaman & Nicobar Islands, are rich in unique species found nowhere else. Identifying and protecting these hotspots is a priority in conservation.



Fig. 2.12. (Left to right, top to bottom) Endangered Nilgiri Tahr Wild Goat; Himalayan Snowcock Bird; Indian Spider, Western Ghats; Big Himalayan Yak; Mangrove Forest, Andaman Islands

Ecosystem-Based Conservation: Different biomes (forests, wetlands, deserts, coasts, and mountains) support distinct life forms. Conservation strategies must suit the geographical setting; for example, mangrove protection along coasts or afforestation in mountains.

Protected Areas: National parks, wildlife sanctuaries, biosphere reserves, and World Heritage Sites are chosen based on geography to preserve critical habitats and prevent habitat fragmentation.

Geographical Barriers and Corridors: Natural features like rivers, mountains, and valleys serve as barriers or corridors that influence animal movement and gene flow. Conservation planning uses this knowledge to create wildlife corridors.

Human–Environment Interaction: Geography also considers how local communities use land, water, and forests. Sustainable practices vary with geography, such as terrace farming in the hills or agroforestry in the plains.

In short, biodiversity conservation is an intrinsic part of geography because the survival of species depends on their location, habitat conditions, and human activity within those regions.

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LET'S MAP

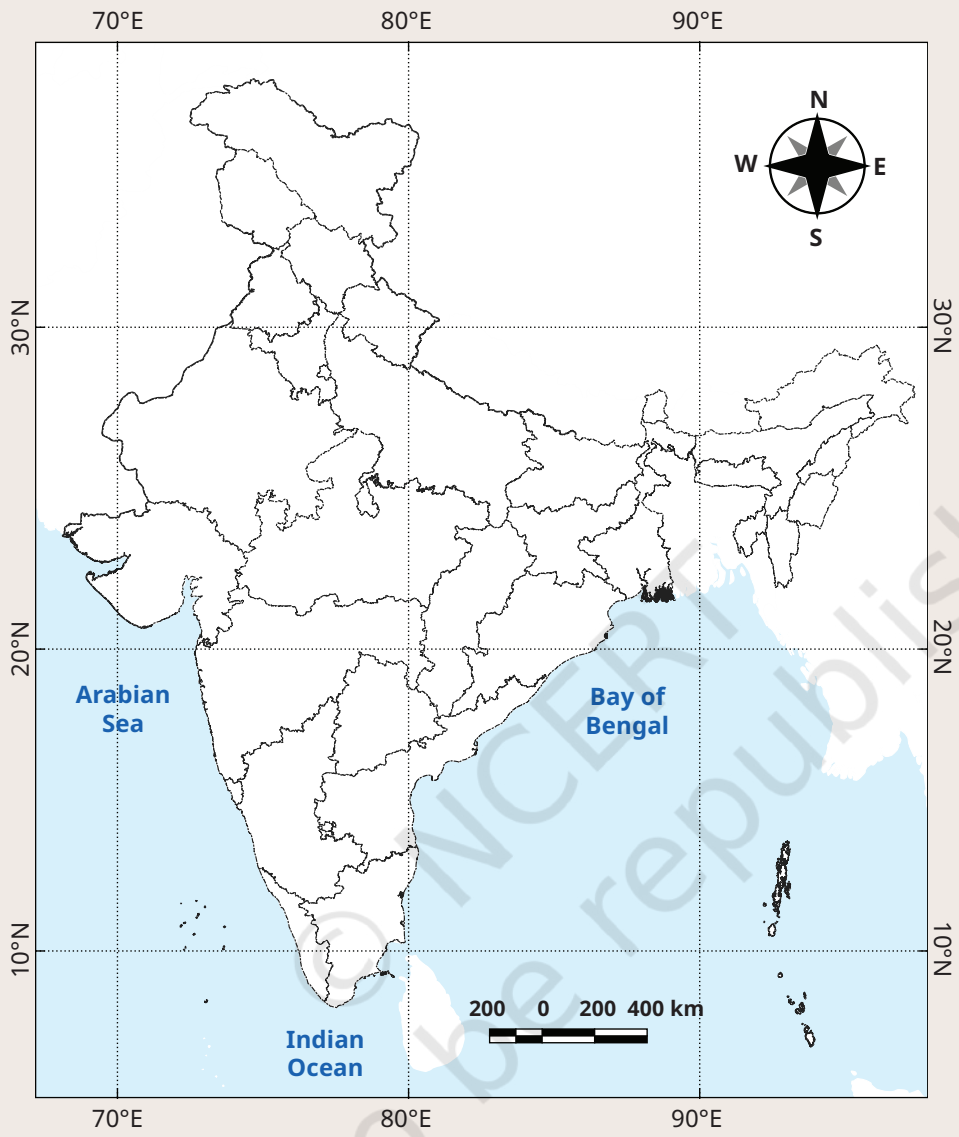


Fig. 2.13. Political Map of India

Mark and name the following regions on the map in Fig. 2.13. Also gather more information about these biodiversity regions from your teacher or other sources and discuss their features with your peers.

1. Namdapha National Park
2. Rann of Kutch
3. Gahirmatha beach
4. Gulf of Mannar
5. Pachmarhi
6. Achanakmar–Amarkantak



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Forest Ecotourism

Ecotourism: Travelling to nature-friendly places without harming the environment, and supporting local people.

Ecotourism in forests refers to responsible travel to forested areas where tourists enjoy nature while contributing to its conservation. Forests are home to a wide variety of plants, animals, rivers, and waterfalls, which attract people who want to experience natural beauty, wildlife, etc. Unlike mass tourism, ecotourism emphasises minimal environmental impact, respect for local communities, and learning about ecosystems. For example, visiting national parks, wildlife sanctuaries, or trekking through rainforests allows visitors to observe biodiversity while supporting conservation programmes and generating income for the local people. Thus, ecotourism in forests helps balance tourism, environmental protection, and sustainable development.

DON'T MISS OUT



The Swadesh Darshan 2.0 Scheme, launched by the Ministry of Tourism, Government of India, aims to develop sustainable tourism destinations with a tourist- and destination-centric approach, and a focus on factors such as sustainable development, conservation, and local community involvement.

LET'S EXPLORE

Thenmala Ecotourism in Keralam

→ Thenmala, located in the Kollam district of Keralam, is India's first planned ecotourism destination, developed jointly by the Tourism Department, the Forest Department, and the Irrigation Department of Keralam. The name *Thenmala* means 'Honey Hill', reflecting the area's natural richness and biodiversity within the Western Ghats—a UNESCO World Heritage Site. The project was launched to promote sustainable tourism while conserving forests and supporting local communities, by employing the inhabitants as guides, eco-guards, and service providers, ensuring that the tourism benefits are shared within the community. Thenmala's success lies in its balanced approach—combining recreation, environmental education, and conservation—making it a model for responsible forest-based ecotourism in India (Fig. 2.14).

→ Is there any such ecotourism site in your State/UT? Collect some information and discuss with your friends.

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→ What should be a tourist's behaviour while visiting any tourist site? What should one be mindful of?



Fig. 2.14. Exploring forest canopy in Thenmala



Forests and Livelihoods

People, particularly rural and tribal communities, rely heavily on forests for their livelihoods. Forests provide essential resources such as food, fuel, fodder, medicine, shelter, timber, bamboo, and firewood. Non-timber forest products, such as honey, fruits, nuts, resins, and medicinal plants, help families meet daily needs and earn income. Several communities including the Gonds and Bhils perform rituals to honour the forest deities before collecting resources, reflecting sustainable cultural practices and a deep respect for nature (Fig. 2.15). Forests also support livestock grazing, small forest-based industries, ecotourism, and employment, making them vital for the livelihood, culture, and survival of many.



Fig. 2.15. Rituals to honour the forest deities

THINK ABOUT IT

Sacred groves are small forest patches protected by local communities for religious and cultural purposes. Across India, there are over 1,00,000 sacred groves, though many are not officially recorded. They are known by different names, such as *Devrai*, *Devarakadu*, *Kavu*, and *Sarna*.

Why are these groves so special? Despite being small, they are rich biodiversity hotspots, often preserving rare plants, medicinal species, and wildlife that may not survive elsewhere. Some groves are even linked to water sources and help to maintain streams and groundwater.



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Timber and bamboo (Assam, Tripura, Keralam)	Wild fruits, honey, mushrooms, and roots (Jharkhand, Odisha)
Tendu leaves, mahua flowers, sal seeds, gums (Madhya Pradesh, Chhattisgarh)	Ecotourism (Uttarakhand, Assam, Keralam)
Herbs like ashwagandha, neem, and tulsi (Himalayan region, Western Ghats)	Handicrafts and cottage industries (Rajasthan, Keralam)
	You may add some examples of forest produces from your own state/UT in the map above.

Fig. 2.16. Forest produces from different Indian states (map not to scale)

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Forest Dwellers

Forest dwellers have a deep and multifaceted connection to forests as they rely on them for household needs, cultural practices, and livelihood activities. Through their roles and responsibilities, they are often deeply involved in caring for and using forest resources. Women, in particular, play a vital role in collecting and managing forest resources for household needs, sustaining traditional knowledge and practices, and contributing to the livelihoods. Some of these connections are:

Knowledge Holders: They possess rich traditional knowledge of using herbs, plants, and forest resources for food, medicine, and cultural practices. This knowledge is passed down through generations and helps in biodiversity conservation.

Livelihood and Income: They are actively engaged in gathering and processing non-timber forest products (NTFPs) such as tendu leaves, mahua flowers, honey, lac, and bamboo, which provide income for households.

Forest Protection: They have been at the forefront of forest protection movements, such as the Bishnoi Movement in Rajasthan led by Amrita Devi. This also influenced the Chipko Movement in Uttarakhand, where village women hugged trees to prevent deforestation. Hence, they often play a key role in community forest management and eco-restoration.



Household Needs: In many rural and tribal areas, forest dwellers collect firewood, fodder for cattle, wild fruits, roots, tubers, and medicinal plants from forests to sustain their families.

Cultural and Social Role: In many communities, forests are linked to several rituals, festivals, and beliefs making them guardians of ecological and cultural traditions.

Fig. 2.17. Connections between forest dwellers and forests (Central image shows women carrying bundles of leaves and wood from a mountain forest in Sohra, Meghalaya)

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Fig. 2.18. Traditional tribal livelihoods



Try to identify and classify the items for sale in the images given in Fig. 2.18.

Also, make a list of the food and medicinal varieties available in your local market.

Geographical Indication (GI)

Did you know that some forest products are unique to specific regions and are recognised as Geographical Indications (GI)? A **Geographical Indication (GI)** tag is a type of intellectual property right that identifies a product as originating from a specific place, where a given quality, reputation, or other characteristics of the product are essentially linked to its geographic origin.

In simple terms, it is a label that indicates that a product comes from a particular region and derives its uniqueness from that place. Thus, GI tagging helps protect region-specific products, promote cultural heritage, and generate economic benefits for local communities through exclusive market recognition.

GI-tagged Forest Products in India

India has several forest-based products that have been granted Geographical Indication (GI) tags because they are unique to their region, linked to traditional knowledge, and depend on the forest ecosystem (Fig. 2.19).

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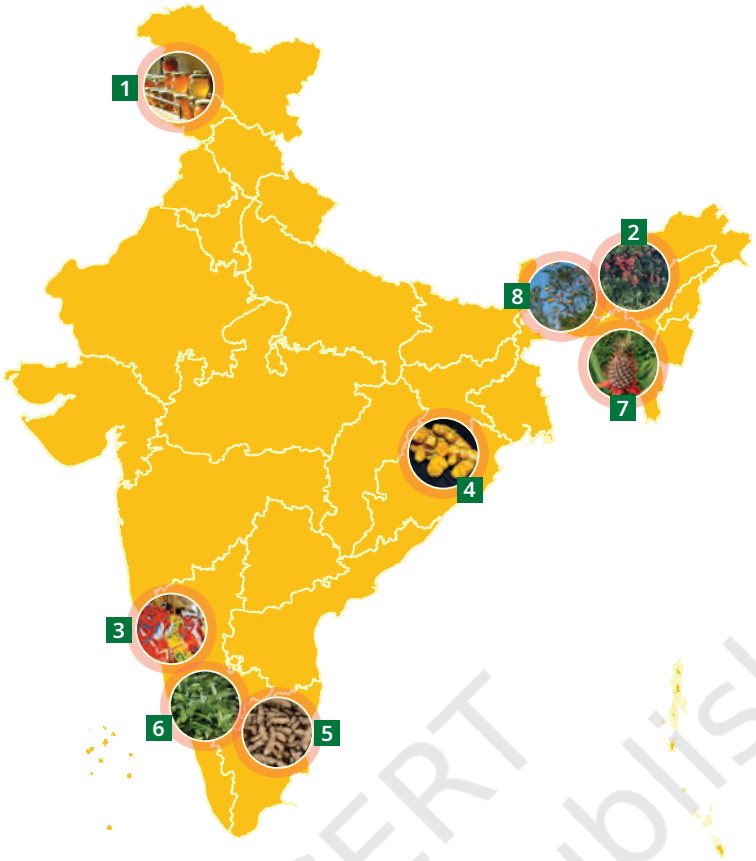


Fig. 2.19. Some GI-tagged forest products of India (map not to scale)

1. **Ramban Sulai Honey (Jammu and Kashmir):**
   It is highly nutritional with strong antioxidant and immuno-modulatory potential and has a distinct flavour, aroma, and taste.
2. **Tezpur Litchi (Assam):**
   - Grown in the forest-influenced soil and climate of Assam's Tezpur region.
   - It has a distinctive bright colour and high pulp content.
3. **Channapatna Toys (Karnataka):**
   The notable aspect of this forest-based craft is that they are made from *Wrightia tinctoria*, a forest tree locally known as 'Aale mara'.
4. **Kandhamal Haldi (Odisha):**
   - A variety of turmeric grown by tribal communities in the forest regions of Kandhamal.
   - It is known for its high curcumin content and medicinal value.
5. **Erode Manjal/Erode Turmeric (Tamil Nadu):**
   Cultivated in **forest-influenced soils**, it is used for cooking and ayurvedic medicine.
6. **Nilgiri Tea (Tamil Nadu, Keralam, Karnataka):**
   Though plantation-based, its quality depends on the forest ecosystem conditions of the Western Ghats.
7. **Tripura Queen Pineapple (Tripura):**
   With a forest-dependent cultivation, it is famous for its sweetness and aroma.
8. **Khasi Mandarin (Meghalaya):**
   A citrus fruit from the forest-rich hills of Meghalaya.

You may explore more GI-tagged forest products from other states through the School Bhuvan-NCERT Geoportal.

Forest-influenced soils: Soil profiles shaped over long periods by forest vegetation, root systems, and organic litter accumulation.

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→ Can you explain how GI tagging of the forest products mentioned above connects geography, cultural traditions, local governance, and rural economy?

→ Can you name some GI-tagged forest products from your state or union territory?

Challenges Faced by People Living in Forests

People living in forests often struggle to access essential facilities such as healthcare, education, and clean water. Women are exposed to fuelwood fumes and face, many health issues, making their daily lives difficult. Forest dwellers depend heavily on forest produce such as firewood, honey, bamboo, and medicinal plants for their livelihood. Restrictions on forest use, deforestation, and the commercial exploitation of resources often limit their access to these resources. This creates a conflict between conservation laws and their survival needs, leading to economic insecurity.

Forested hilly regions are prone to natural disasters such as floods and landslides. Floods can wash away homes, crops, and roads, while landslides can bury villages and cut off access to essential services. Forest fires can quickly spread through dense vegetation, destroying homes and resources. Human care and preventive measures can help prevent many forest fires.

Crops are often damaged by elephants, monkeys, or wild boars, and sometimes people face direct attacks. Such conflicts not only cause economic losses but also create fear and insecurity among forest communities.

Many forest dwellers also face discrimination and neglect from mainstream society. They are often engaged in selling forest products at relatively low prices. Therefore, creating opportunities for processing and marketing these products is essential to enhance their income. Forest communities also require assistance in accessing government schemes and programmes, as well as greater awareness of their legal rights.

THINK ABOUT IT

You may already be aware that incidents of forest fires have been reported from different parts of India and are a matter of serious concern. According to the Forest Survey of India (FSI), about 36

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per cent of the country's forest cover is estimated to be prone to forest fires, of which nearly 4 per cent is extremely prone. Climate change as well as human-induced factors are the main reasons for such occurrences, some of which are quite severe and cause extensive damage to human life and the environment (Fig. 2.20). *Note: You may explore various fire locations on the School Bhuvan–NCERT Geoportal.*



Fig. 2.20. A forest fire

LET'S EXPLORE



You may have heard about the Pradhan Mantri Ujjwala Yojana (PMUY). How are the benefits of this scheme impacting the health of women?

THINK ABOUT IT

- Which wild animals (like monkeys or deer) have you seen in your residential area?
- Identify the causes behind these animals' presence in human settlements.



Fig. 2.21. Forest bridge to avoid roadkill



Government Efforts to Support Forest Dwellers

To reduce the hardships of people living in forests, the Government of India has taken several steps. One of the most important measures is the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, commonly called the Forest Rights Act (FRA). The Act recognises the rights of eligible communities over the forest land and forest resources that they have traditionally depended upon. It allows them to collect minor forest produce such as bamboo, honey, and medicinal plants, and grants ownership of small patches of land cultivated by them.

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Along with the FRA, the Government runs schemes for tribal welfare, including education scholarships, healthcare programmes, and skill development initiatives. The Joint Forest Management (JFM) programme encourages local communities to participate in protecting forests while benefiting from forest produce. Other initiatives, such as the Panchayats (Extension to Scheduled Areas) Act (PESA), the Dharti Aaba Janjatiya Gram Utkarsh Abhiyan (DAJGUA), and the Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan (PM JANMAN), aim to promote the welfare of such communities.

Mendha Lekha: A Case Study in Community Forest Management

Mendha Lekha is a small tribal village located in the Gadchiroli district of Maharashtra, known for its effective community-based forest management and self-governance. The village, inhabited mainly by the Gond tribe, became the first in India to gain rights over its forest resources under the Forest Rights Act (2006). The people of Mendha Lekha follow the principle of *Mawa Nate Mawa Raj* (our village, our rule), ensuring that all decisions are made collectively through the Gram Sabha. They protect and sustainably utilise their 1,800 hectares of forest by regulating tree cutting, preventing forest fires, and promoting bamboo harvesting as a renewable resource. The revenue from the forest produce is used for community welfare activities such as education and infrastructure. This also upholds the fundamental rights of the people to participate in governance and control resources that sustain their livelihoods. Simultaneously, the villagers fulfil their fundamental duties by protecting biodiversity and preventing illegal exploitation. This model has not only strengthened local livelihoods but also demonstrates how traditional knowledge, rights, and duties, as well as democratic participation, can coexist to achieve sustainable forest conservation (Fig. 2.22).



Fig. 2.22. Community-led protection of forests through self-governance, traditional livelihood, and controlled grazing in Mendha Lekha

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Ecological Commons—Shared Resources

The term **ecological commons** refer to natural resources like forests, rivers, lakes, grazing lands, air, and biodiversity that are shared by a community and used collectively for its survival and well-being. Unlike private property, these resources are not owned by any single individual but belong to the community as a whole, and are often managed through traditional rules and practices. For centuries, people have depended on the ecological commons for food, water, fuel, fodder, and medicinal plants. However, with population growth, industrial use, and privatisation, many of these commons are shrinking or degrading. Protecting ecological commons is important not only for the livelihoods of rural and tribal communities but also for maintaining ecological balance, regulating climate, and conserving biodiversity.

A Case Study of Commons-based Fisheries Management in Bihar

After independence, The Indian Fisheries Act, 1897, remained the basis for the governance of inland fisheries. Historically, control over perennial water bodies and *diara* waterfronts in Bihar was held by large landowners who marginalised the fishing community, rendering them the most vulnerable group in an environment abundant with aquatic resources.



Fig. 2.23. Fishermen at work in a maun (lake) at dawn

The historical insights from Bihar's 19th century case study suggest that a commons-based management model is best suited to riverine regions. To promote community-led management, legal safeguards for public access, and cooperative resource stewardship as

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sustainable alternatives—along with the preservation of cultural heritage associated with riverine waterscapes—the Bihar Fish Jalkar Management Act, 2006, and its subsequent amendments, were introduced. Under this model, local communities develop context-specific solutions to balance the productivity of local resources with sustainable rates of exploitation. The success of this model is reflected in the persistent growth of fish production in the region.

Case Study of Water Tanks Built by the Gond Kings

In India, for centuries, regions with seasonal rainfall have tackled the issue of water demand and management as a collective concern and used common public resources for the same. In fact, between 800 and 1200 CE, the Chandella and Bundela kings built around 8,000 tanks in the Bundelkhand region. Similarly, *keres* were built in Karnataka, *eri* tanks in Tamil Nadu, and *chevuru* tanks in Andhra Pradesh and Odisha. Bihar had the famous *ahar pynes* to store water and the Gond kings funded huge *katas*—three-sided reservoirs—in the Gondwana region. According to official estimates, there are more than 15 lakh functional tanks in India at present.

LET'S EXPLORE

Below is Fig. 2.24 from the School Bhuvan–NCERT Geoportal. Observe the image carefully and see if you can identify some of the tanks and mark the agricultural fields irrigated by them.



Fig. 2.24. Water tanks in Bhandara district, Maharashtra

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Before we move on...



- Biomes are large areas on Earth with specific vegetation and animal life. Biomes are classified based on temperature, precipitation, flora, fauna, etc.
- Humans interact closely with different biomes and adapt their lifestyles to the conditions and resources available.
- Traditionally, different human cultures have developed various practices for conserving nature. Today, there is a legal framework to support conservation efforts.
- Occupations have been closely associated with forests, right from primitive hunting to modern ecotourism. The variety of human interactions with forests highlights their significance for various communities.
- With growing population, there is increasing pressure on forests, which leads to problems like human–wildlife conflict, depletion of resources, etc.



Questions and Activities

1. Why does India have diverse biomes? How does the local geography connect to the diversity?
2. Make a list of economically valuable native plants in your region and comment on their abundance.
3. Prepare a map of your state or Union Territory showing national parks and sanctuaries.
4. Study the impact of forest fires on people dependent on forests. Try to include the causes, losses, and preventive measures.
5. Why are forests often called the 'lungs of the Earth'?
6. If large forest areas continue to be destroyed, what do you think would be its long-term effect on the global climate?
7. Discuss some traditional forest conservation methods with your grandparents or an elderly person.
8. How do forest dwellers contribute to the protection and conservation of forests?
9. What is a forest fire? Prepare a plan for prevention and mitigation of forest fires.

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Notes

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