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The National Anthem of Sri Lanka

Sri Lanka Matha
Apa Sri Lanka Namo Namo Namo Namo Matha
Sundara siri barinee, surendi athi sobamana Lanka
Dhanya dhanaya neka mal palaturu piri jaya bhoomiya ramya
Apa hata sepa siri setha sadana jeewanaye matha
Piliganu mena apa bhakthi pooja Namo Namo Matha
Apa Sri Lanka Namo Namo Namo Namo Matha
Oba we apa vidya
Obamaya apa sathya
Oba we apa shakthi
Apa hada thula bhakthi
Oba apa aloke
Apage anuprane
Oba apa jeevana we
Apa mukthiya oba we
Nava jeevana demine, nithina apa pubudukaran matha
Gnana veerya vadawamina regena yanu mana jaya bhoomi kara
Eka mavakage daru kela bevina
Yamu yamu vee nopama
Prema vada sema bheda durerada
Namo, Namo Matha
Apa Sri Lanka Namo Namo Namo Namo Matha

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ஒர தாய் மக்கள் நாமாவோம்
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யான்று மழியாச் செல்வமன்றோ.

ஆனந்த சமரக்கோன்
கவிதையின் பெயர்ப்பு.

Being innovative, changing with right knowledge
Be a light to the country as well as to the world.

Message from the Hon. Minister of Education

The past two decades have been significant in the world history due to changes that took place in technology. The present students face a lot of new challenges along with the rapid development of Information Technology, communication and other related fields. The manner of career opportunities are liable to change specifically in the near future. In such an environment, with a new technological and intellectual society, thousands of innovative career opportunities would be created. To win those challenges, it is the responsibility of the Sri Lankan Government and myself, as the Minister of Education, to empower you all.

This book is a product of free education. Your aim must be to use this book properly and acquire the necessary knowledge out of it. The government in turn is able to provide free textbooks to you, as a result of the commitment and labour of your parents and elders.

Since we have understood that the education is crucial in deciding the future of a country, the government has taken steps to change curriculum to suit the rapid changes of the technological world. Hence, you have to dedicate yourselves to become productive citizens. I believe that the knowledge this book provides will suffice your aim.

It is your duty to give a proper value to the money spent by the government on your education. Also you should understand that education determines your future. Make sure that you reach the optimum social stratum through education.

I congratulate you to enjoy the benefits of free education and bloom as an honoured citizen who takes the name of Sri Lanka to the world.

Akila Viraj Kariyawasam
Minister of Education

Foreword

The educational objectives of the contemporary world are becoming more complex along with the economic, social, cultural and technological development. The learning and teaching process too is changing in relation to human experiences, technological differences, research and new indices. Therefore, it is required to produce the textbook by including subject related information according to the objectives in the syllabus in order to maintain the teaching process by organizing learning experiences that suit to the learner needs. The textbook is not merely a learning tool for the learner. It is a blessing that contributes to obtain a higher education along with a development of conduct and attitudes, to develop values and to obtain learning experiences.

The government in its realization of the concept of free education has offered you all the textbooks from grades 1-11. I would like to remind you that you should make the maximum use of these textbooks and protect them well. I sincerely hope that this textbook would assist you to obtain the expertise to become a virtuous citizen with a complete personality who would be a valuable asset to the country.

I would like to bestow my sincere thanks on the members of the editorial and writer boards as well as on the staff of the Educational Publications Department who have strived to offer this textbook to you.

W. M. Jayantha Wickramanayaka,

Commissioner General of Educational Publications,

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2019.04.10

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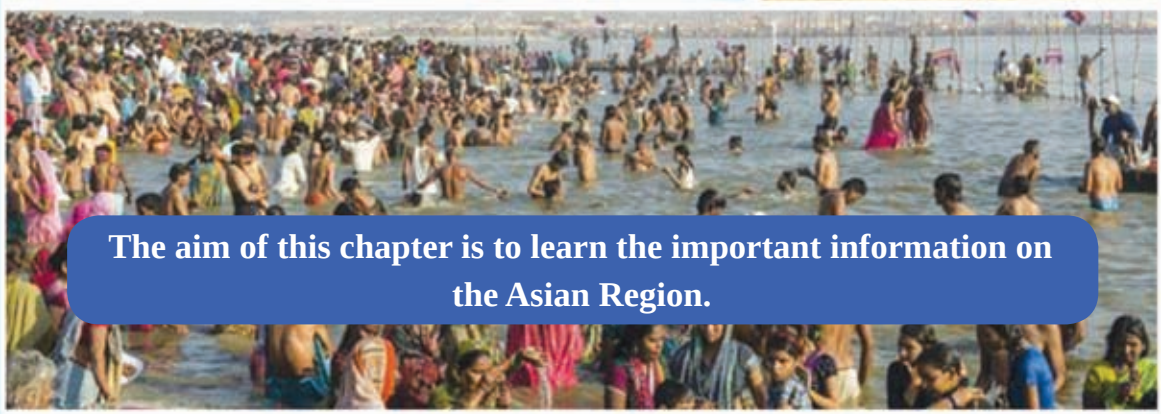
The Asian Region



The aim of this chapter is to learn the important information on the Asian Region.

Geographical location of Asia

Relative Location

The continent of Asia is located in the Eastern part of the Northern Hemisphere of the Earth. Geographically, it is connected to the continent of Europe. Some of the islands that belong to the Asian continent are located in the Southern hemisphere. (Fig.1.1)

Fig 1.1 - Geographical location of Asia

The Asian continent is bounded by,

- **The Arctic ocean on the North**
- **The Pacific ocean on the East**
- **The Indian ocean on the South and,**
- **The continent of Europe on the West.**

In a geographical view, the Continent of Europe and Asia are both located as one landmass called Eurasia. Ural Mountain Range, River Ural, Caspian Sea, Caucasus Mountains, Black Sea, Mediterranean Sea, Suez Canal and Red Sea are the boundaries that separate Asia from Europe and Africa.

There are many islands that belong to the Asian continent. Japanese islands, Indonesian islands, Philippine islands, Sri Lanka and Taiwan are examples for those islands which are larger in extent. Andaman Islands, Nicobar Islands and the Maldives are examples of smaller islands.

Absolute Location

The location of any place or region on the Earth can definitely be shown using geographical coordinates. Accordingly, the absolute location of the Asian region can be shown on the basis of longitudes and latitudes as follows;

The Asian continent is located between 10º Latitude South to 80º Latitude North and between 25º and 180º Longitudes East.

Uniqueness of the Asian region

There are many specific physical and human characteristics in the Asian region.

Several unique physical and human characteristics

- The largest continent in the world
- Presence of all the climatic types of the world
- Presence of different human races, ethnic groups and languages and cultural diversity
- Birth place of many major religions
- Location of the largest mountain ranges and the highest mountain peak
- The most popular continent

The Asian continent covers an area of 44.6 million km² (44,579,000 km²). It is about 30% of the land area of the earth and 8.7 % of the entire surface of the Earth.

Source : ***https://en.wikipedia.org/wiki/Asia 2017.02.05***

The largest mountain range in the world, the Himalayas, is located in the continent of Asia. Mount Everest, the highest peak which is 8848 meters in height is located here. The Dead Sea is also located in the Asian land mass, is below the sea level. Cherrapunji in the state of Meghalaya in India receives the highest rainfall and Gobi desert is considered as the area that receives the lowest rainfall in the world. Both areas are located in the continent of Asia.

All types of climates that exist in the world can be found here. Therefore, every type of forest in the world also can be found in the continent of Asia. Therefore, biodiversity which means the diversity of plants and animals is greater in this region.

According to the size of population, more than half or about 60% of the world population lives in the Asian region. It is notable that China and India, the two most populous countries in the world are located in Asia. Indonesia, Pakistan, Bangladesh and Japan that belong to the top ten countries with the highest population of the world are also located in the Asian region. Accordingly, six out of 10 most populous countries are located in the continent of Asia.

The average density of population of the continent of Asia is 87 per kilometer, but there are some regions in Asia with a high population density of more than 3000 people per kilometer. In the Asian region, there are 54 States or independent countries. ***(https://en.wikipedia.org/wiki/Asia 2017.02.05)***

The diversity in the culture, ethnicity and race is a special feature of the population of the Asian region. Existence of various languages is another specific characteristic as various ethnic groups are living there. According to ethnologue, that providing information on languages in the world, 297 living languages are available only in China. ***(https://en.wikipedia.org/wiki/Asia 2017.02.05)***

Asian region has become unique as it is the home to the world's most ancient civilizations such as Mesapothemia, Howang-Ho, and Indus. It is the birth place of major religions like Buddhism, Hinduism, Islam and Christianity. At present, people who follow religions like Buddhism, Hinduism, Islam and Christianity live in this continent.

Activities

1. State the geographical boundaries that would indicate the relative location of the Asian region.
2. Mark those boundaries on an outline map of the world and shade the continent of Asia.
3. Prepare a list of factors that cause for the Asia to be considered as specific region of the world.
4. With reference to a political divisions map of Asia, show the countries that belong to it.

Physical landscape in Asia

Relief

Fig 1.2 - Mount Everest - The highest peak in Himalaya mountain range

The most specific topographic feature in the Asian region is the Mountain Range of Himalaya. This mountain range spreads 2500 kilometers and stretches in a land area of 6.12,000 square kilometers. Due to this large mountain range, India is seen to be separated from Asia and as a result, India is called a sub continent. There are many peaks including Everest located on this mountain range, exceeding 7000 meters in altitude.

Table 1.1 - Highest Peaks in the Himalaya mountain range

Highest peaks	Height in meters
Everest	8848
Kanchenjunga	8586
Makalu	8462
Dhaulagiri	8167
Manaslu	8156
Nanga parbat	8126
Annapurna	8091
Nanda devi	7817

Source : *https://en.wikipedia.org/*

The other large mountain ranges located in Asia are Altai, Kunlun, Karakorum, Tangshan, Ghats, Sargros and Urals.

Several large plateaus in the world are also located in Asia. Some of them are Tibet, Pamir, Deccan, Central Siberian and Iran plateaus. Tibet plateau is the one that located at the highest elevation in the world. It is located at 5000 meters of altitude and surrounded by the mountain ranges like Himalayas, Karakoram and Pamir. As it is the highest plateau in the world and spread over a very large land area, it is called 'Rooftop of the world'.

North Asia is a large plain. It is known as the Western Siberian Plain. Manchurian plain and the Great Chinese plain are the other large plains located in Asia. Apart from that, large plains are located close to the river valleys of Indus, Ganges and Hwang Ho.

Drainage

The large number of river systems scattered all over the Asian region is the major characteristic of the drainage. These rivers flow into different oceans and seas.

- Ob, Yenisey and Lena to the Arctic Ocean,
- Amur, Hwang Ho and Yangtze to the Pacific Ocean,
- Ganges, Indus, Brahmaputra, Mekong, Irrawaddy and Salvin to the Indian Ocean,
- Euphrates and Tigris flow into the Persian bay.

There are several rivers flowing in to the internal seas.

- Serdaria and Amudaria to the Aral sea,
- Ural flows into the Caspian Sea.

Fig 1.3 - River Hwang Ho (Yellow River) China

Fig 1.4 - River Ganges - India

Map 1.1 - Physical landscape in Asia

Source : Gunasena Phyliphs World Map book 2016

Table 1.2 - Major rivers in Asia

River	Length (km)
Yangtze	6301
Hwang Ho	5464
Mekong	4909
Lena	4400
Yenisei	4088
Ob	3650
Indus	2900
Brahmaputra	2897
Ganges	2510

Compare the length of the rivers in Asia with the length and width of Sri Lanka.

Map 1.2 - Size of Sri Lanka

There are several large lakes located in Asia. Among them Baikal and Balkhash are major lakes. Lake Baikal is considered as the deepest lake with fresh water located in the world.

Activities

1. Mention four major mountain ranges located in the Asian continent.
2. Name five peaks with their height located on the Himalaya mountain range.
3. Write down the largest rivers located in Asia and write the oceans or seas into which they flow.
4. Name two large plateaus, one plain and two lakes located in the Asian continent.

Assignment

Mark and name all the physical features written above in an outline map of Asia.

Climate

The Earth is divided into three main climatic zones according to the variations of the distribution of temperature towards the South Pole and towards the North Pole from the equator.

- Tropical zone (Warm climate)
- Temperate zone (Mild climate)
- Frigid zone (Cold climate) (Refer to the Map 1.3)

The Asian continent spreads over to the North Pole from the equator. Therefore, all types of climate that belong to those three climatic zones are found there.

- Tropical zone (Warm climate)

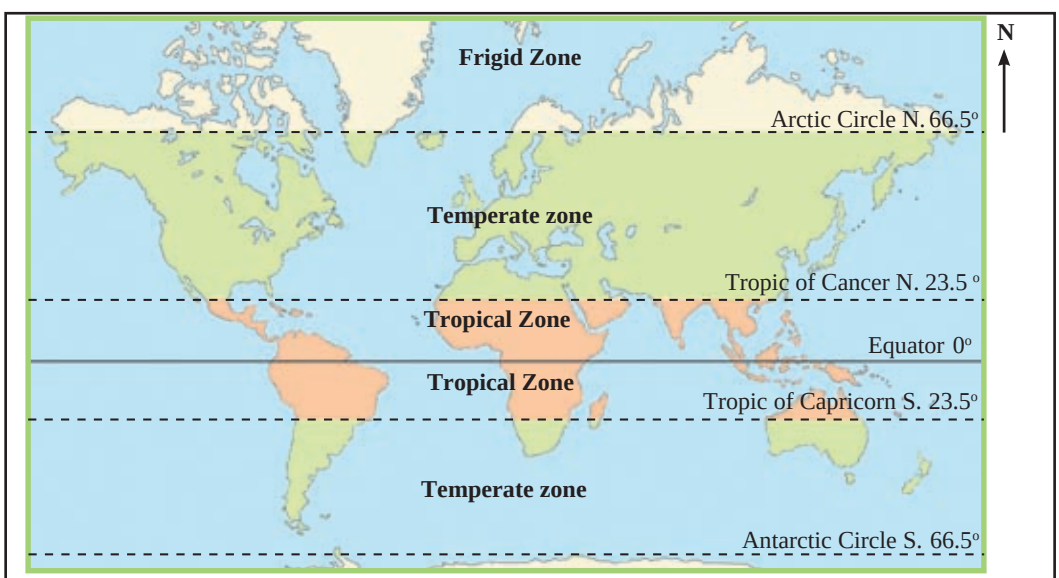
Very high temperature prevails throughout the whole year. The average temperature is more than 18^{o}C. Therefore, a warm climatic condition prevails here.

- Temperate zone (Mild climate)

The average temperature in this zone is lower than the tropical zone. Seasonal variations exist here due to the increase and decrease of temperature from time to time throughout the whole year. A clear warm season and cold season is seen here.

- Frigid zone (Cold climate)

The main feature that can be seen here is the falling snow and land being covered with snow for a longer period of the year due to the lower level of temperature.



Map 1.3 - Distribution of the main climatic zones in Asia

In these three climatic zones, several types of sub climates with different features are be seen due to the influence of various factors, such as changes of the rainfall, influence of monsoons and oceans, altitude, location of mountain ranges and continents.

These types of climates and the areas they are distributed are included in the table below;

The types of climate that exist in the Asian continent

Climatic zone	Climatic type	Distribution Areas/countries
Tropical	Tropical rainy climate	Java and Sumatra islands
	Tropical monsoon climate	India, Sri Lanka, Myanmar
	Tropical savanna climate	North and northeast India, Bangladesh
	Warm desert climate	India, Thar Desert, Middle Est Countries
Temperate	Warm temperate climate	Areas surrounding the Mediterranean Sea
	Wet temperate climate	East China, Japanese islands
Frigid	Polar and Tundra climate	Siberian region and the Northern parts of Asia
	Mountain climate	Regions surrounding the mountain range of the Himalaya

Existence of places with very extreme climatic conditions in Asia is a special characteristic

- The lowest temperature in Asia is recorded from the small city of Verkhoyansk located in Russia and its temperature decreases up to -50^{o}C during certain days.
- The highest temperature in Asia is recorded from Jacobabad in Pakistan and it is about 55^{o}C.

Natural vegetation and wild life

Natural vegetation changes regionally according to the differences of rainfall and temperature. Accordingly, the natural vegetation and the wild life have adapted to the climatic type.

Tropical zone –Tropical Rain Forests

Tropical evergreen forests can be seen in the areas where high temperature and heavy rainfall is experienced throughout the whole year. In these forests, there are various tall trees like Mahogany, Ebony, Rosewood, Kaluwara, Bamboo, Sandalwood, Akeshia are available. The forests consist of different layers. Various types of creepers, moss, lichen as well as epiphytes grow abundantly here. There is also great bio-diversity.

Species of monkeys, reptiles, snakes, fish species and chameleon species are abundantly seen here. Animal species such as tiger, leopard, pig, jackal, deer, and sambar live in large numbers in these areas.

Figure 1.5 - Tropical rain forests and the wild life

Temperate zone - Temperate Deciduous Forests

Deciduous Forests are grown in the temperate zone as a result of the existence of cold and warm seasons during the year. A special characteristic in these forests is falling of leaves from trees annually. Oak, Mulberry, Chestnut, Pine, Eucalyptus, Douglas fir are specific trees grown in these forests. Kinds of animals living here are Wolf, Bear, Sambar deer, and Antelope.

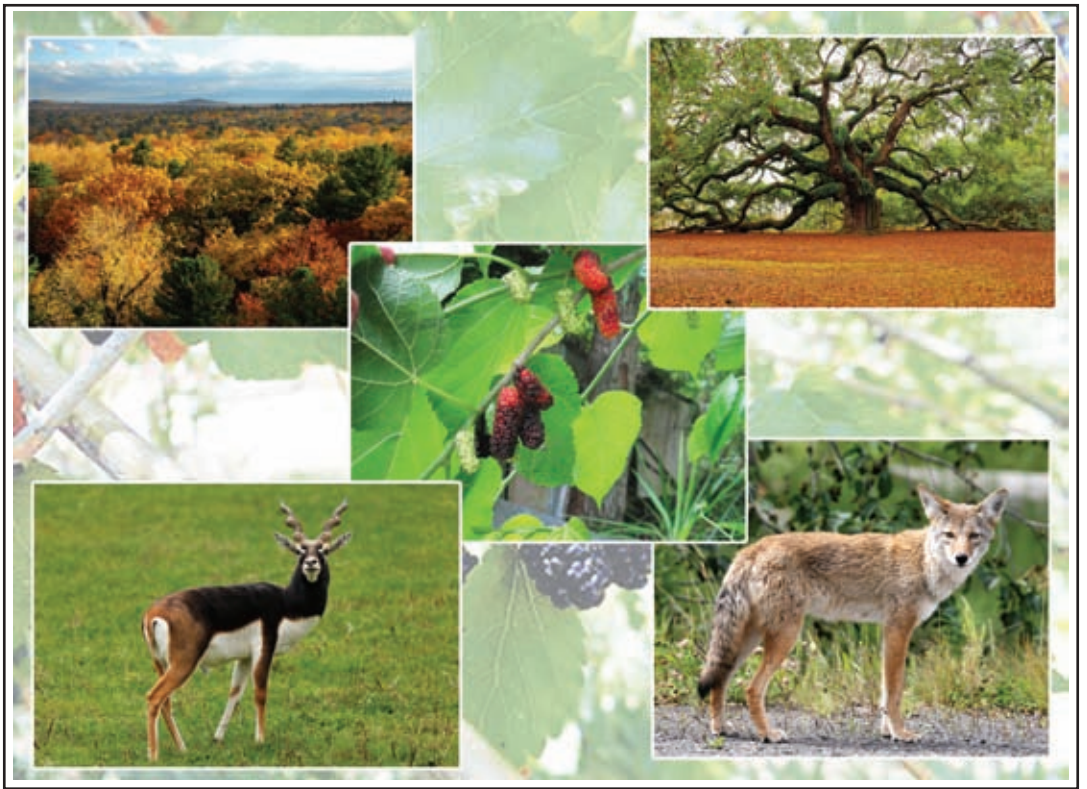


Fig 1.6 - Temperate zone forests and animal species

Frigid zone - Coniferous forests

The specific characteristic of this climatic zone with Taiga and Tundra climate is the prevalence of a longer cold season. Coniferous forests are situated in this region. The trees are in a shape of a cone so as to resist snowfall. Leaves are in a shape of needles. The species of trees grown here are pine, spruce, fir, oak and larch.

Reindeer, Polar bear, Snow fox, Snow dog, Sable, and Mink are animal species that can be seen here.

Fig. 1.7 - Frigid zone forests and animal species

Activities

1. Table three major climatic zones that are seen in the continent of Asia and the types of climate in each of the climatic zones.
2. Write down the types of natural vegetation spread out in each of the climatic zones.
3. Name the animal and plant species grown in each of the natural vegetation zones you mentioned above.

Human landscape of the Asian region

Ancient human civilizations

Several ancient civilizations had been established close to river valleys in the world according to the information found at present about human history. Among them, Euphrates and Tigris, Hwang Ho, Indus and Nile river valley civilizations are major ones. It is special that except Nile river valley civilization, all the other three are located in the continent of Asia.

River Indus flows across present Pakistan and India and falls into the Arabian Sea close to the city of Karachchi. A developed urban civilization established on the basis of the two ancient cities of Mohenjo-Daro and Harappa close to this river valley.

A developed civilization emerged centralizing Anyang city in the river valley of Hwang Ho or Yellow river that flows across China.

The Mesopotamian civilization is the other river valley civilization that was located in the continent of Asia. There are evidences that this civilization had been established between the doab of two rivers, of Euphrates and Tigris that flow across present Iraq.

Systematic town planning, buildings, creation of monuments, agriculture and production of artistic items were specific features that developed in these civilizations.

Types of human races

In the Asian region, different human races as well as many ethnic groups live according to various climatic conditions. Mainly, two types of human races live in the Asian region and the countries where they live are mentioned below;

Mongoloid

- China
- Japan
- Malaysia
- Korea
- Singapore

Caucasoid

- India
- Afghanistan
- Pakistan
- Sri Lanka
- Arabian countries

Population distribution

The present population in Asia is 4.46 billion (4460 million) (***world populationview.com/continents/asia-population*** 2017.02.01) Out of this, more than half is distributed in China and India.

This population is unevenly distributed among countries and it varies from region to region. Physical factors have impacted this unequal distribution of population. Relief features, climate, drainage and soil are such physical factors.

When considering the population in Asia, a higher population density can be found close to the river valleys in South, Southeast and East Asian countries. (Over 500 per km²)

- Indo-Gangatic plain in North India.
- Irrawaddy river valley in Myanmar.
- Hwang Ho river valley in China are given as examples.

Central Asia, Mongolia, Northern flat lands Gobi and Thar deserts are sparsely populated areas in Asia.(1.4 map)

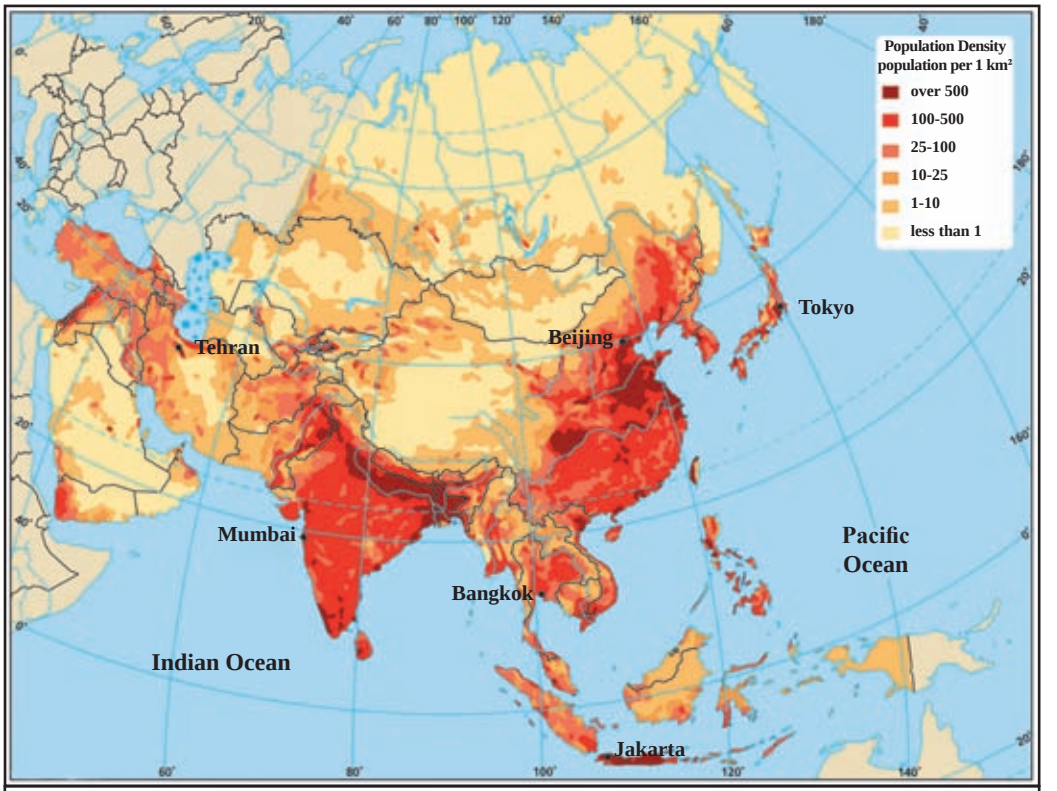
Ten countries with a higher density ofpo pulation by2017

China	1370 millions
India	1299 millions
Indonesia	255 millions
Pakistan	192 millions
Bangladesh	159 millions
Japan	127 millions
Philippine	103 millions
Vietnam	92 millions
Iran	79 millions
Turkey	78 millions

Ten countries with low population by 2017

Maldives	345000
Brunei	421000
Macao	641000
Bhutan	760000
Timor	1.24 millions
Bahrain	1.78 millions
Qatar	2.11 millions
Armenia	3 millions
Mongolia	3.02 millions
Georgia	3.73 millions

Source : ***worldpopulationreview.com/continents/asia-population - 2017.02.01***



Map 1.4 - Population distribution in Asia

Activities

1. State four factors that influenced the unequal distribution of population in Asia.
2. Name five high populated countries, five less populated countries and five high populated cities located in Asia.
3. Mark the five high populated countries and cities located in Asia you stated above in a world map.

Economic activities

Various economic activities can be found in the countries located in the Asian region. In this region, economy of the countries is based on agriculture, industry and service.

Here, the attention is paid to three countries which are significant for each of the sectors.

- Agriculture - Pakistan
- Industries - Japan
- Service activities - Dubai

Pakistan as an agricultural country in Asia

Agriculture is the main economic activity in Pakistan. 25.9% of the Gross Domestic Product in Pakistan is contributed from the agricultural sector. Out of the total labour force, 43% is engaged in agricultural activities. 25% of the land area of the country has been used for agricultural activities.

Pakistan is important as a major country in the world that provides raw cotton. Among the other agricultural products in Pakistan, wheat, rice, sugarcane, mangoes, chick pea, vegetables, milk and dairy products, beef, mutton and eggs are important.

Pakistan is also important as a country with the largest irrigation systems in the world. Water is provided for about 16 millions hectares in the country through the Indus river valley irrigation system.

Figure 1.8 - Agricultural activities in Pakistan

There are two main agricultural seasons in Pakistan and they are known as Khariff and Rabi.

According to the ranking system of the World Food and Agriculture Organization, Pakistan has achieved following places as a food producer to the world market.

Table 1.3 - Two crop seasons, duration and the crops grown in Pakistan

Crop season	Duration	Crops grown
Khariff	From April to October	cotton, paddy, millet, maize and sugarcane
Rabi	From November to March	wheat, barley and oats

Table 1.4 - Place achieved by Pakistan in providing Agricultural Products to the world Market

Type of the product	Place in the world market
Chick pea	3
Apricot	6
Cotton	4
Sugarcane	5
Rice	4
Mango	4

Type of the product	Place in the world market
Dairy products	5
Date palm	5
Onion	7
wheat	7
Types of oranges	6

Source - ***https://en.wikipedia.org/wiki/Agriculture_in_Pakistan//Rankings 21/2/2017***

Accordingly, Pakistan has earned a significant place as an exporter of agricultural products in the world.

Japan as an industrial country

Japan is a major industrial country in Asia as well as in the world. According to the Per capita Gross National Product, Japan is the country that possess the third largest economy in the world. In Japan, 27.5% of the Gross National Product is contributed by the industrial sector. Out of the labour force, 25.2% is engaged in the industrial sector. A specific feature in Japan is maintaining industries on the basis of the import of mineral resources and raw materials completely.

Among the manufacturing industries in Japan, manufacturing automobiles, electronic equipment, machinery, iron and steel, ship-building, chemicals, textiles, computer and computer accessories, robotics technology, pharmaceuticals and processed foods are important.

Manufacturing automobiles is the key field of industry in Japan. Japan has won the sixth place out of the top ten largest automobile manufacturers in the world. Japanese automobiles are in the forefront in the world due to factors of high quality, durability, fuel economy, comfort and inclusion of very modern components and equipment. There are several major automobile manufacturing companies in Japan and some foremost ones are mentioned below.

- Toyota
- Nissan
- Suzuki
- Mazda
- Daihatsu
- Mitsubishi
- Honda
- Isuzu
- Subaru
- Hino

Fig.1.9 - Industrial activities in Japan

Honda, Yamaha, Suzuki and Kawasaki are major motor cycle producting companies in Japan in the world.

Japan has achieved a rapid development in producing various types of electronic and electrical equipment. For these productions, the companies of Sony, Mitsubishi, Electric, Panasonic, Cannon, Fujitsu, Nikon, Yamaha, Sharp, Nec, Hitachi and Casio are important.

Production of plastic, polystyrene and polypropylene are significant as main petro chemical industries in Japan. The other frontline production industry of Japan is producing computers and computer accessories. Among these companies Nec, Fjitzu, Epson and I.B.M are significant.

Japan has achieved its development with regard to Gene Technology which is considered a very important field at present in the world. Gene Technology is used in various sections such as agriculture, livestock farming, pharmaceuticals, chemicals and food processing.

Japan is in the forefront among the countries where that utilizes nuclear power in abundance, in the world.

Dubai as a service center

The United Arab Emirates is a federation of seven states known as Emirates. Out of them Dubai is a small Emirate state.

The total population of Dubai is 2,502,715 and the population density is 644.2 per km^2. Accordingly, Dubai is a highly populated country. Dubai known as global city is important as the business hub of middle east.

The base of the economy of Dubai is the production of mineral oil. The large amount of wealth earned from this resource has been invested in other fields in that country. Dubai has been developed as a service center as its physical environment is not suitable for agricultural purposes.

Among major economic sectors in Dubai, the highest percentage value sector is the service sector. This represents around 37.2% out of the total Gross Domestic Product in Dubai. Out of the total employees, 33.0% is engaged in employment related to the service sector. (Emirates NDB Research-Dubai's service sector overview-18 March 2015)

There are many service industries carried out by Dubai as a service center;

- An aviation center of modern crossroads connecting East and West. Accordingly, Dubai is important as an intermediate transit center in the world.
- Importance of Port Jabil Ali as the major Middle Eastern export center as well as free trade harbour.
- Center for Tourist attractions and tourist services providing center.
- As a center of providing international communication services Eg – CNN, Al Jazeera

- As a center that provides an indoor stadium and day and night cricket stadium for cricket and tennis at international level.
- Establishment of the largest trade center called Dubai Mall.

Activities

1. State four factors why Pakistan is important as a major agricultural country in Asia.
2. Write down the two main agricultural seasons in Pakistan and write the types of crops grown in each of the season.
3. State five major agricultural export products in Pakistan
4. State four reasons to show how Japan has become a major industrial country in Asia.
5. State the major industrial products in Japan
6. State which reasons have influenced the importance of Dubai as a service center in Asia.

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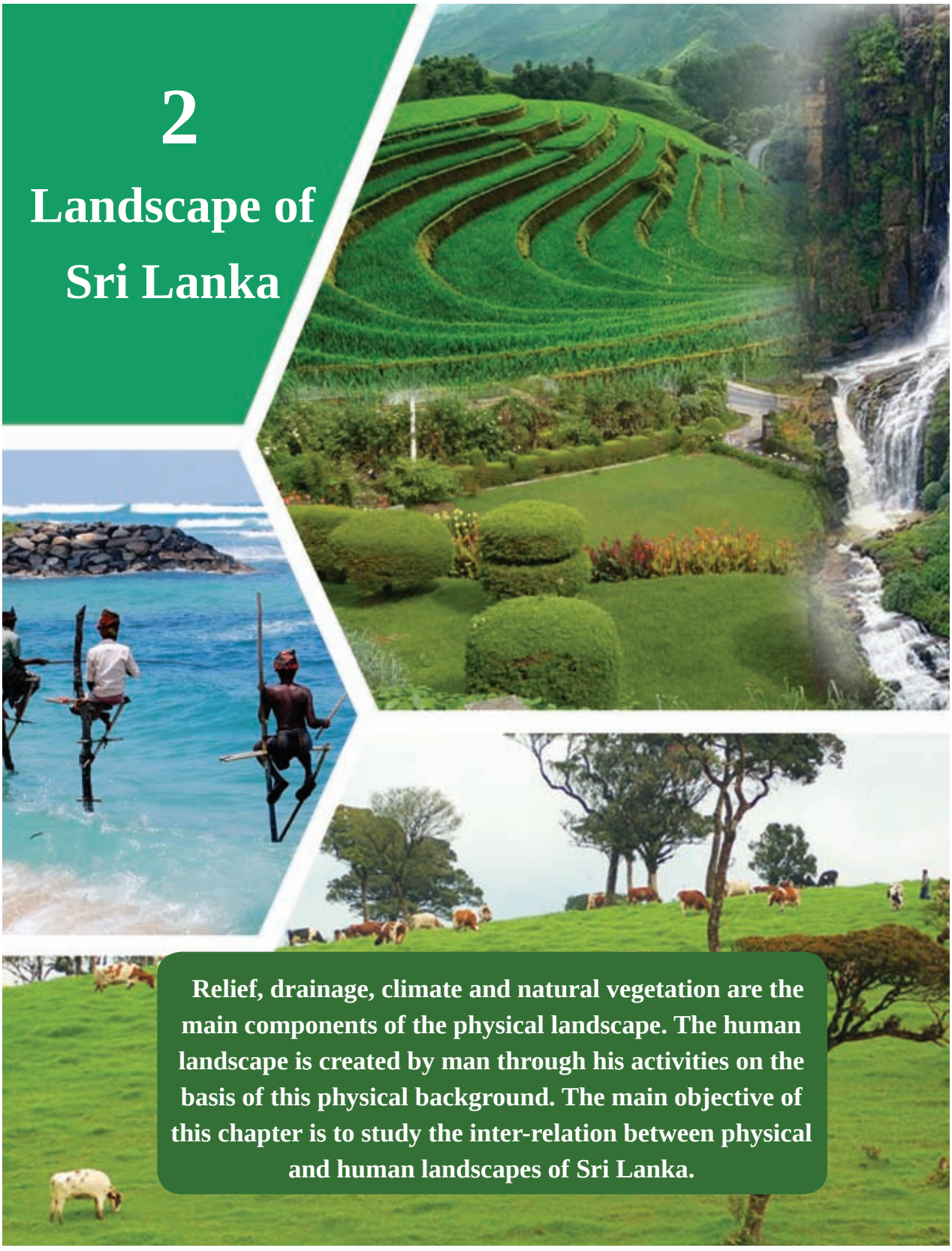
Glossary

• Relative location	- සාපේක්ෂ පිහිටීම	- சார்பு அமைவிடம்
• Absolute location	- නිරපේක්ෂ පිහිටීම	- தனி அமைவிடம்
• Geographical coordinates	- භූගෝලීය බණ්ඩාංක	- புவியியல் ஆட்கூறு
• Bio diversity	- ජෛව විවිධත්වය	- உயிர்ப்பல்வகைமை
• Population density	- ජන ඝනත්වය	- சனதொகை அடர்த்தி
• Tropical zone	- නිවර්තන කලාපය	- அயனவலயம்
• Temperate zone	- සෞම්‍ය කලාපය	- இடைவெப்ப வலயம்
• Polar zone	- ධ්‍රැව කලාපය	- முனைவு வலயம்
• Tropical rainy climate	- නිවර්තන වර්ෂා දේශගුණය	- அயன மழைக் காலநிலை
• Tropical monsoon climate	- නිවර්තන මෝසම් දේශගුණය	- அயன பருவக்காற்று காலநிலை
• Tropical savanna climate	- නිවර්තන සැවනා දේශගුණය	- அயன சவன்னா காலநிலை
• Hot desert climate	- උෂ්ණ කාන්තාර දේශගුණය	- வெப்பப் பாலைவன காலநிலை
• Warm temperate climate	- උණුසුම් සෞම්‍ය දේශගුණය	- இளஞ்சூடான இடை வெப்ப காலநிலை
• Wet temperate climate	- තෙත් සෞම්‍ය දේශගුණය	- இடைவெப்ப ஈரக் காலநிலை
• Polar and tundra climate	- ධ්‍රැව හා තුන්ද්‍රා දේශගුණය	- முனைவு மற்றும் துந்திரா காலநிலை
• Highland climate	- උස්බිම් දේශගුණය	- உயர்நிலக் காலநிலை
• Tropical rain forests	- නිවර්තන වර්ෂා වනාන්තර	- அயன மழைக் காடுகள்
• Deciduous forestes	- පතනශීල වනාන්තර	- இலையுதிர் காடுகள்
• Coniferous forests	- කේතුධර වනාන්තර	- ஊசியிலைக் காடுகள்
• Petro chemical industry	- පෙට්‍රෝ රසායන කර්මාන්ත	- பெற்றோல் இரசாயன கைத்தொழில் மொத்த உள்நாட்டு
• Gross Domestic Product	- දළ දේශීය නිෂ්පාදිතය	- உற்பத்தி
• Tourist attractions	- සංචාරක ආකර්ෂණ	- சுற்றுலா கவர்ச்சிகள்

2

Landscape of Sri Lanka



Relief, drainage, climate and natural vegetation are the main components of the physical landscape. The human landscape is created by man through his activities on the basis of this physical background. The main objective of this chapter is to study the inter-relation between physical and human landscapes of Sri Lanka.

Physical Landscape

Sri Lanka is an island with a beautiful landscape located in the Indian Ocean. The island consists of mountains, plains, rivers, waterfalls, beaches and various types of vegetation as well as buildings, roads, tanks, industries and croplands built by man on this physical environment.

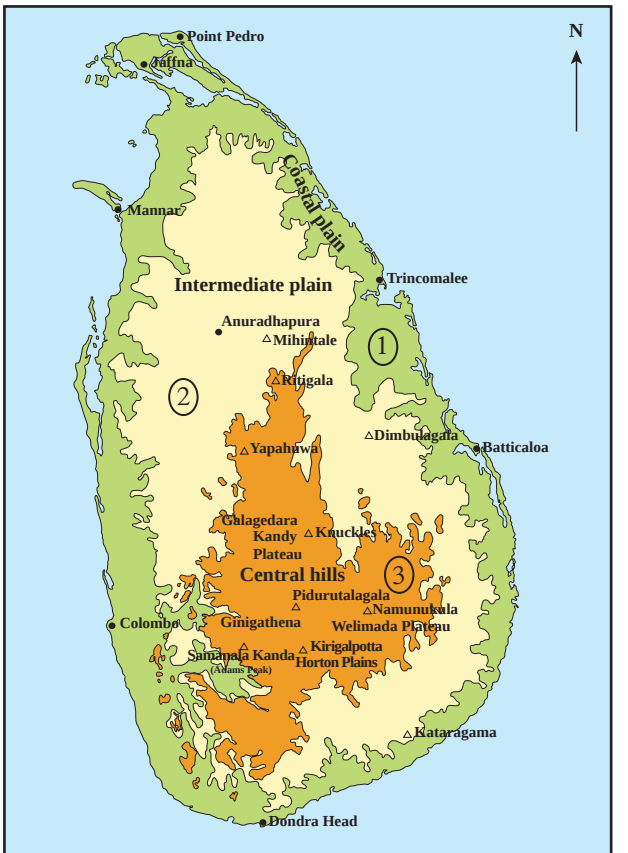
Relief

The land of Sri Lanka consists of complex physical features as a result of geo-activities that occurred during a long period in the geo history. Among them, a salient feature is the central mountains located in the center of the country and the plain that extends towards the coastal belt from there. The island can be divided into three zones on the basis of relief. Identify it by studying Map 2.1

① Coastal plain
Up to 30 m from the sea level

② Intermediate plain
From 30 m to 300 m

③ Central mountains
Over 300 m



Map 2.1 - Relief map of Sri Lanka

Coastal Plain

The region from sea level up to the 30m contour line along the coast belongs to the coastal plain. In the South in certain places, the coastal plain is about 3 km narrow and in the North it is about 32 km wide. The coastal plain consists of various relief features. The lower areas of river valleys and the river mouth regions belong to this. The coastal plain has several special features such as flat land, points, lagoons, sand dunes as well as the features like braided rivers, marshy lands and deltas.

Fig 2.1 - Coastal plain

Marshes - Marshes are formed when the sediments brought by rivers are deposited as sand banks and blocking the estuaries or water remaining in lowlands due to overflowing of rivers. Examples of marshes are Muthurajawela, Bundala, Kalametiya, Somawathiya, Anawilundawa and Kirala kele.

Bays - A bay has a wider opening of the sea protruding towards the land filled with saline water. Many such bays are located along side the coastal line in Sri Lanka. Some of them are Koddiyar Bay, Arugam Bay and Weligama Bay.

Lagoons - A lagoon is a lengthy stretch of an area filled with brackish water, separated from the sea by sand bars which have narrow outlets to the sea only during a certain period of the year. Negombo, Jaffna, Puttlam, Chillaw and Batticaloa are examples.

Points or Headlands - A land area with hard stone that protrudes towards sea is called a point. Dondra head, Fowl Point, Sangamankanda Point and Point Pedro are examples.

Islands - Small land areas completely covered with water are called islands.

Sea Cliffs - A sea cliff is a land area composed of hard rocks standing at an edge of the coast with a steep slope. Trincomallee, Kirinda and Rumassala are examples.

Fig 2.2 - Blow hole at Kudawella

Delta - Delta is a land area formed with the deposit of sediments carried by a river close to river mouths with a shape of a triangle. Deltas can be seen close to the river mouths of Mahaweli Ganga, Mee oya and Kala oya.

There are attractive places located close to the coastal line. Blow hole is such a feature. This name has been given as a result of splashing water up through a cave making a sound.

Intermediate plain

The intermediate plain is 30-300 m in altitude. According to the Map 2.1, the plain is wider in the North and becomes narrower towards the South. The features that can be mostly seen are contour hedges, residual hills, rivers, flood plains and plains.

Parallel mountains

Rakwana Mountains and Bulutota hills that extend North - West to South - East directions

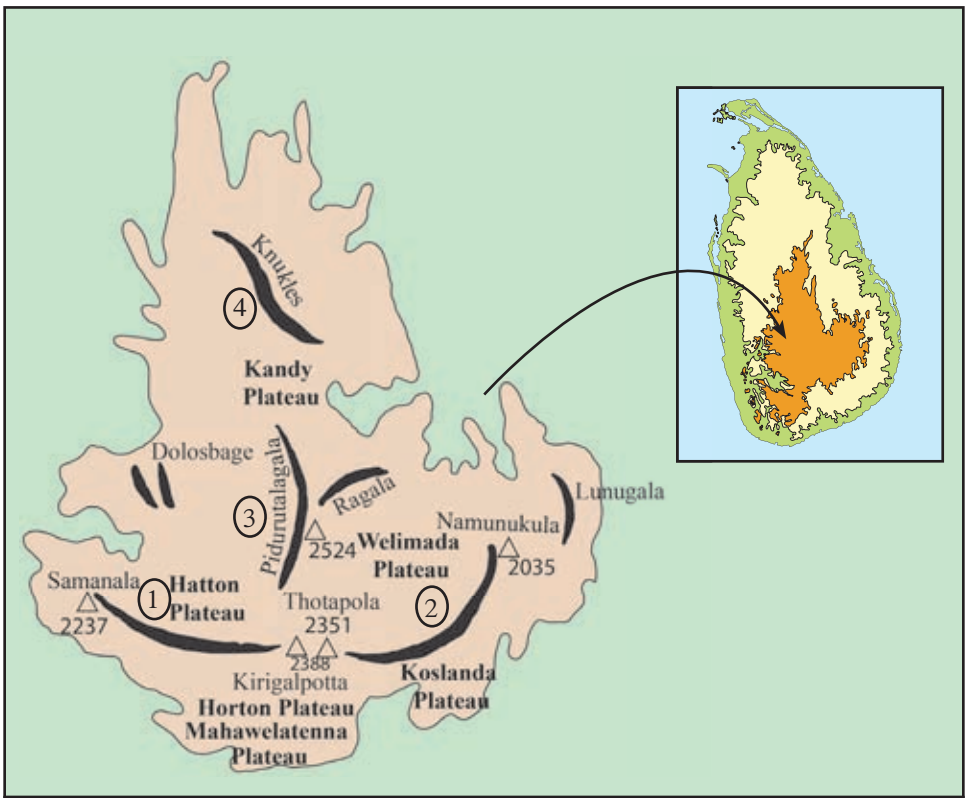
Residual hills

Residual hills are the remains of hard mountains which had been subjected to erosion. Kataragama, Mihintale, Sigiriya, Ritigala and Govindahela are examples.

There are many rivers flowing across the intermediate plain. Specific features located in between them are plains, flood plains and undulated lands.

Central Hills

The areas over 300 m belong to this zone. This is indicated in No. 3 of Map 2.2. This region is more complex than the other two relief zones.



Map 2.2 – The Central Hills

There are four principal mountain ranges in the Central Hills with higher peaks;

1. Samanala Mountain Range
2. Namunukula Mountain Range
3. Pidurutalagal Kirigalpotta Mountain Range
4. Knuckles Mountain Range (Map 2.2)

Plateaus - A plateau is an area of flat land at a high elevation. There are five Plateaus in the Central Hills. (Map 2.2)

- Kandy Plateau
- Hatton Plateau
- Welimada Plateau
- Mahawelatenna Plateau
- Koslanda Plateau

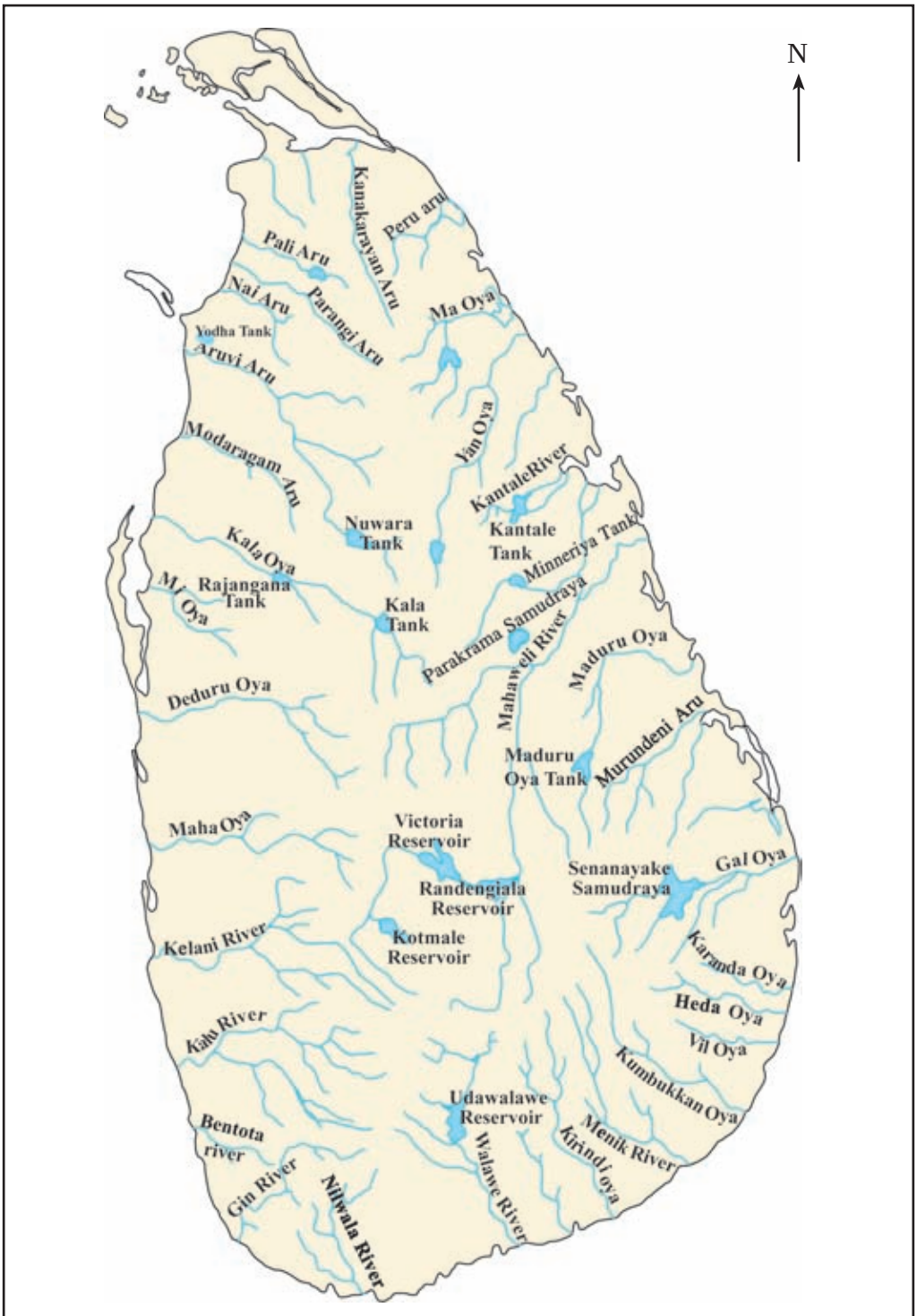
Gaps or Passes - A pass is a low area located between two mountains. Haputale, Balana, Galagedara and Ginigathhena are examples.

Waterfalls - The plateaus which are located in the central hills are of different heights and rivers flow across steep slopes or escarpments forming waterfalls. Bambarakanda, Dunhinda, Luxapana, Diyaluma and Ramboda are examples.

Drainage

Sri Lanka which is rich in water resources contains main 103 river valleys. Out of them, 34 rivers starting from hill country, flow in different directions in an aerial pattern. These rivers are known as **permanent rivers** since they are abundant with water through out the year. Some rivers that are starting from undulated lands in dry zone, flow during rainy season and become dry during dry season. These are known as **seasonal rivers**.

Details of a few major rivers in Sri Lanka are stated in Map 2.3 and Table 2.1



Map 2.3 - A few main rivers of Sri Lanka

Table 2.1 – Details of a few major rivers in Sri Lanka

River	Length km	Catchment area (km^2)
1. Mahaweli Ganga	335	10,327
2. Malwatu Oya	164	3246
3. Kala Oya	148	2772
4. Kelani Ganga	145	2278
5. Yan Oya	142	1520
6. Deduru Oya	142	2616
7. Walawe Ganga	138	2442
8. Kalu Ganga	129	2688

80% of the rivers located in Sri Lanka flow across the dry zone. Mahaweli is the longest river as well and has the largest river basin. Out of the total land area in Sri Lanka 1/6 belongs to this.

When we consider the total drainage pattern, Sri Lanka has a radial pattern. However, various drainage patterns are formed when tributaries are added to main rivers. Among them, Dendritic and Trellis drainage patterns are important. When we compare River Mahaweli with kalu Ganga, Kelani Ganga and Gin Ganga, they flow through a shorter area and the catchment area is also smaller. During the rainy seasons floods occur in abundance close to these rivers.

Activities

1. Mention the difference between relief and landscape.

I. Complete the following table in association with the characteristics and examples of main relief zones in Sri Lanka.

Coastal plan	Intermediate plain	Central mountains
1	1	1
2	2	2
3	3	3
4	4	4

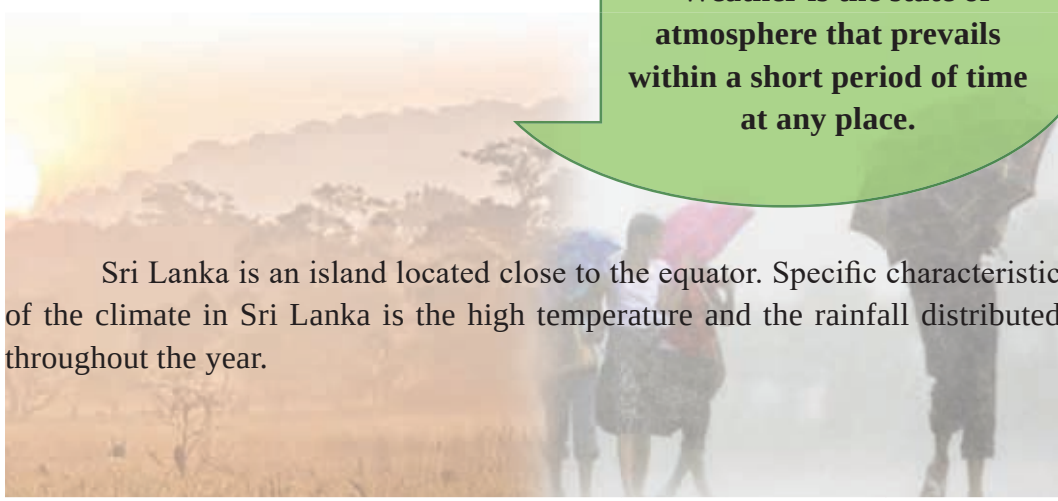
II. Mark the following in a model of Sri Lanka map

- Mahaweli river
- Kelani river
- Malwathu oya
- Walawe river
- Menik river
- Piduruthalagala mountain
- Knuckles mountain range
- Sigiriya
- Katharagama mountain
- Govinda hela
- Batticaloa
- Puttalam lagoon
- Jaffna lagoon
- Ritigala
- Dondra head
- Point Pedro
- Mannar islands
- Delft

Climate

Climate of a particular place is the general condition of the atmosphere which is determined by analysing and concluding on weather for a long time.

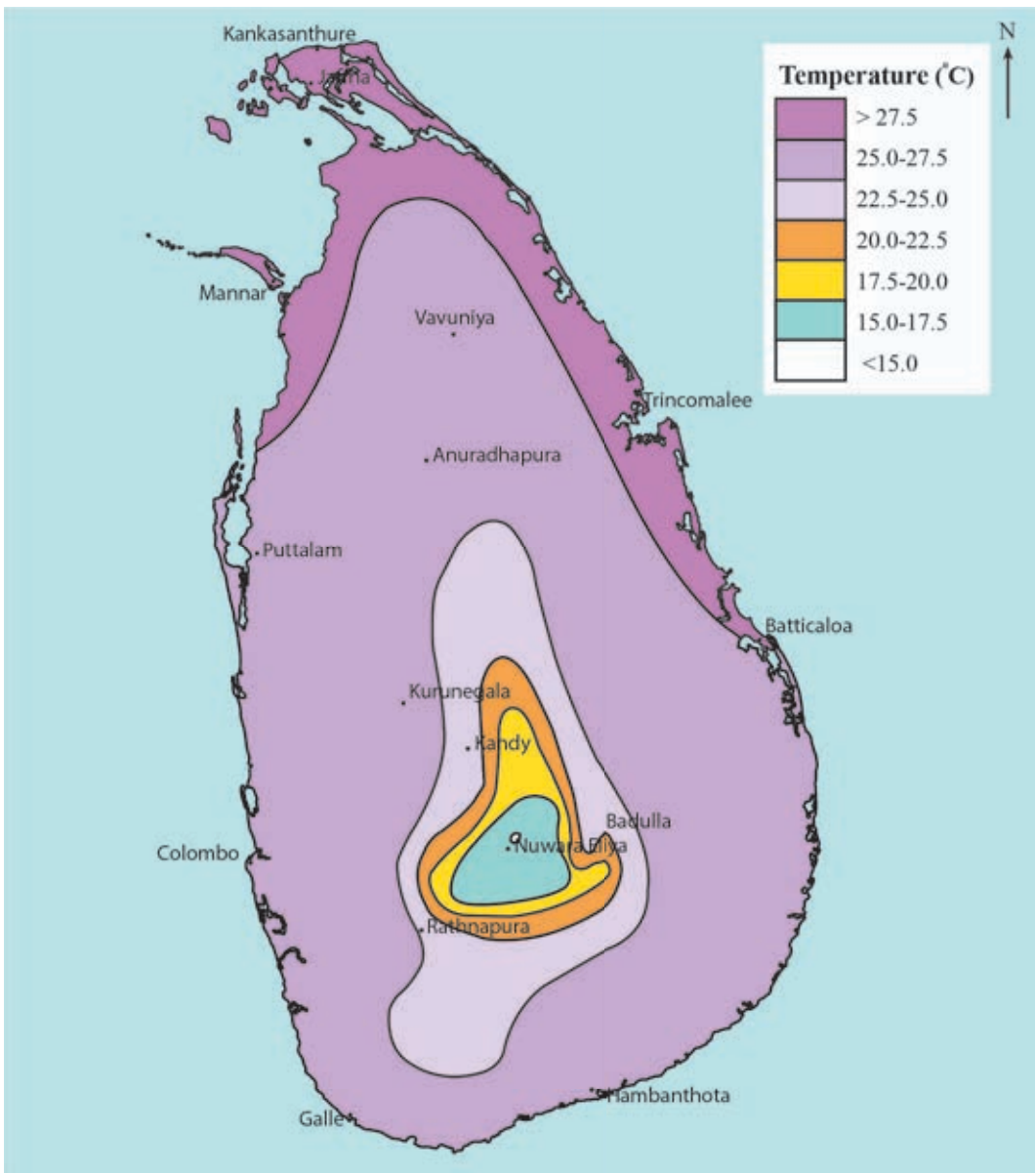
Weather is the state of atmosphere that prevails within a short period of time at any place.



Sri Lanka is an island located close to the equator. Specific characteristic of the climate in Sri Lanka is the high temperature and the rainfall distributed throughout the year.

Temperature

Average annual temperature in Sri Lanka is 27^0C. Yet there are small regional variations. Map 2.4 clearly shows this.



Map 2.4 - Distribution of Annual Temperature of Sri Lanka

Several factors influence the variation of temperature in Sri Lanka.

- Proximity to the Indian subcontinent
- Altitude (height of land)
- Distance from the sea
- Changing wind pattern

According to the Map 2.4, the Northern part of Sri Lanka has a high temperature while Eastern, Southern and South-Western low lands experience low temperature. The reason for high temperature in the Northern part of Sri Lanka is its proximity to the Indian sub continent. Areas like Jaffna, Anuradhapura and Mannar are subjected to high temperature when temperature increases in India.

When you go to Kandy, Nuwaraeliya or Sri pada you would feel that the temperature is very low in these areas. The reason for this is the decrease of temperature according to altitude. (Table 2.2)

Table 2.2 - Decrease of temperature according to the altitude

	Height (m)	temperature
Kandy	447	24.4 ^{0}C
Nuwaraeliya	1882	15.4 ^{0}C
Piduruthalagala	2524	11.5 ^{0}C

The decrease of the temperature according to altitude is called the lapse rate.

Although Sri Lanka has a high temperature due to its location close to the equator, the temperature decreases as it is surrounded by the ocean. But high temperature prevails in the regions of the interior plains in the country due to the low influence of the ocean.

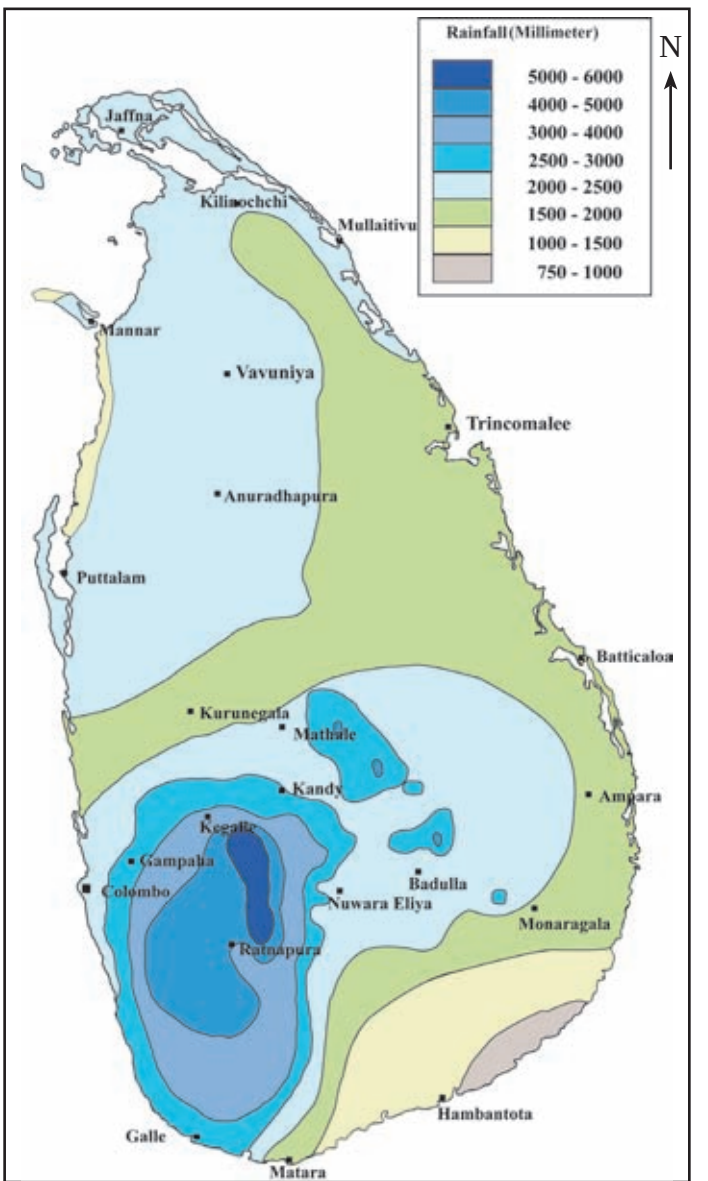
Seasonal winds also influence the decrease of temperature in Sri Lanka. The temperature becomes balanced according to the seasonal monsoons and cyclones.

Rainfall

Rainfall is the total quantity of rain received at a place within a specified period of time.

Map 2.5 indicates the annual rainfall in Sri Lanka. Accordingly, a clear feature shown by this map is the regional change of rainfall. Also it can be clearly seen that there is less rainfall is received in the Northern, Eastern and the South-Eastern parts of Sri Lanka while central mountains receive more rainfall. Sri Lanka receives rain in three ways.

1. Convectional rain
2. Monsoon rain
3. Cyclonic rain



Map 2.5 - Annual rainfall in Sri Lanka

Convectional rain

Since Sri Lanka is situated close to the equator, convectional process occurs throughout the year. However this process is subdued in certain periods due to the process of

monsoons and cyclones. When monsoons and cyclones are over, convectional process re-appears. According to that, the convectional rain is experience in Sri Lanka prominently during two periods.

1. The first inter monsoon period is between the months of March and April.
2. The second inter monsoon period is between the months of October and November

As Sri Lanka is situated close to the equator, it has a high temperature throughout the year. During the months of April and September, the sun is overhead in Sri Lanka and the air near the surface of the earth gets heated and begins to rise. They are called convectional air currents. The air that has risen up, gets cooled and the water vapour is condensed to form clouds and bring rain thereafter. Here, a special feature is that the rainfalls in the evenings. During the morning period a clear sky is visible and more heat is received. In the afternoon, the sky is covered by clouds and it brings rain in the evenings. These are known as convectional rain, thunder showers or evening showers.

Monsoon rain

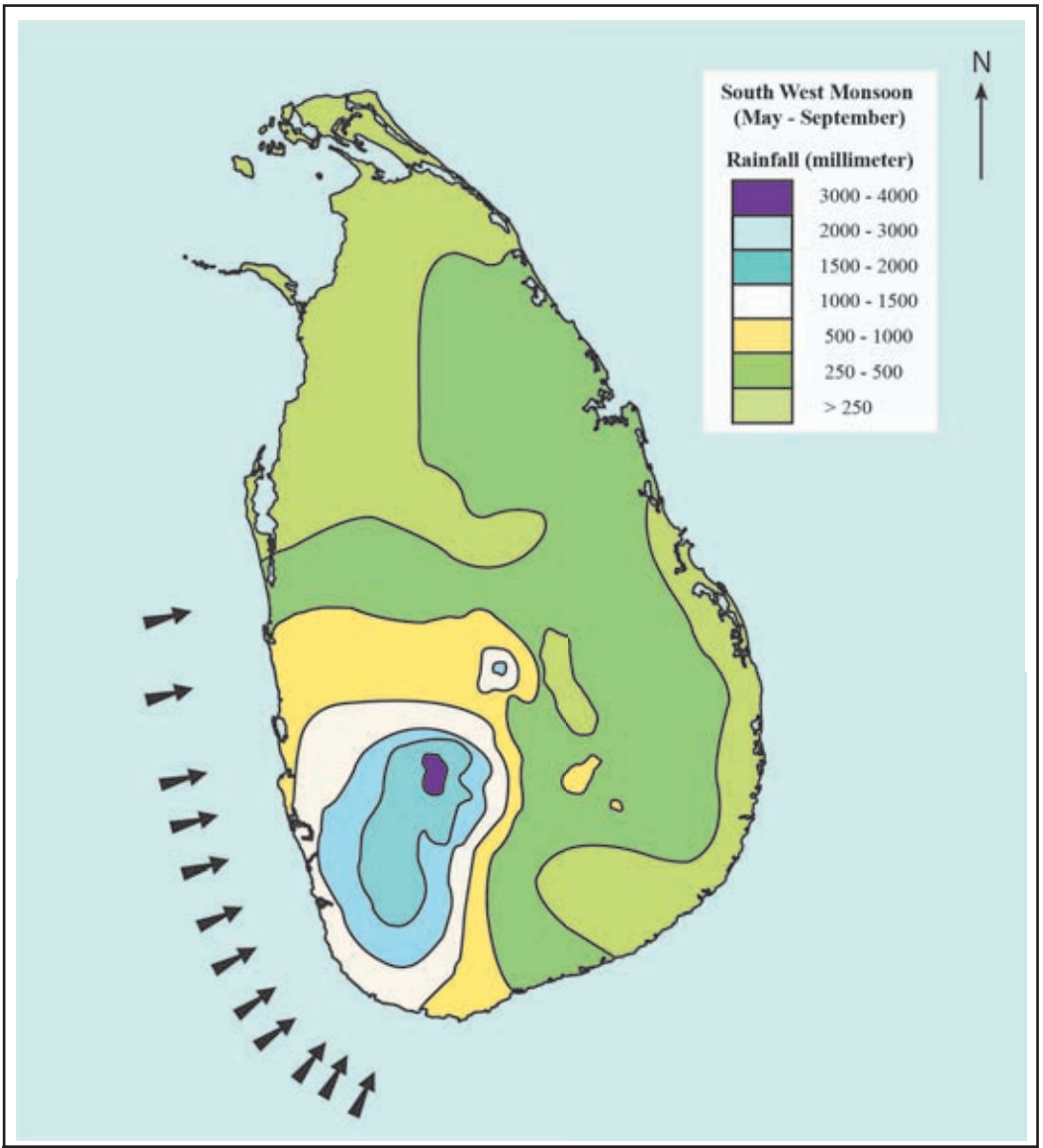
Monsoon is a specific type of winds that blow during a definite time period of a year across the land. Monsoon means blowing during a particular time period only. Sri Lanka receives monsoon rain during two time periods namely.

1. The South West monsoon (From May to September)

2. The North East monsoon (From December to February)

South West Monsoon rain

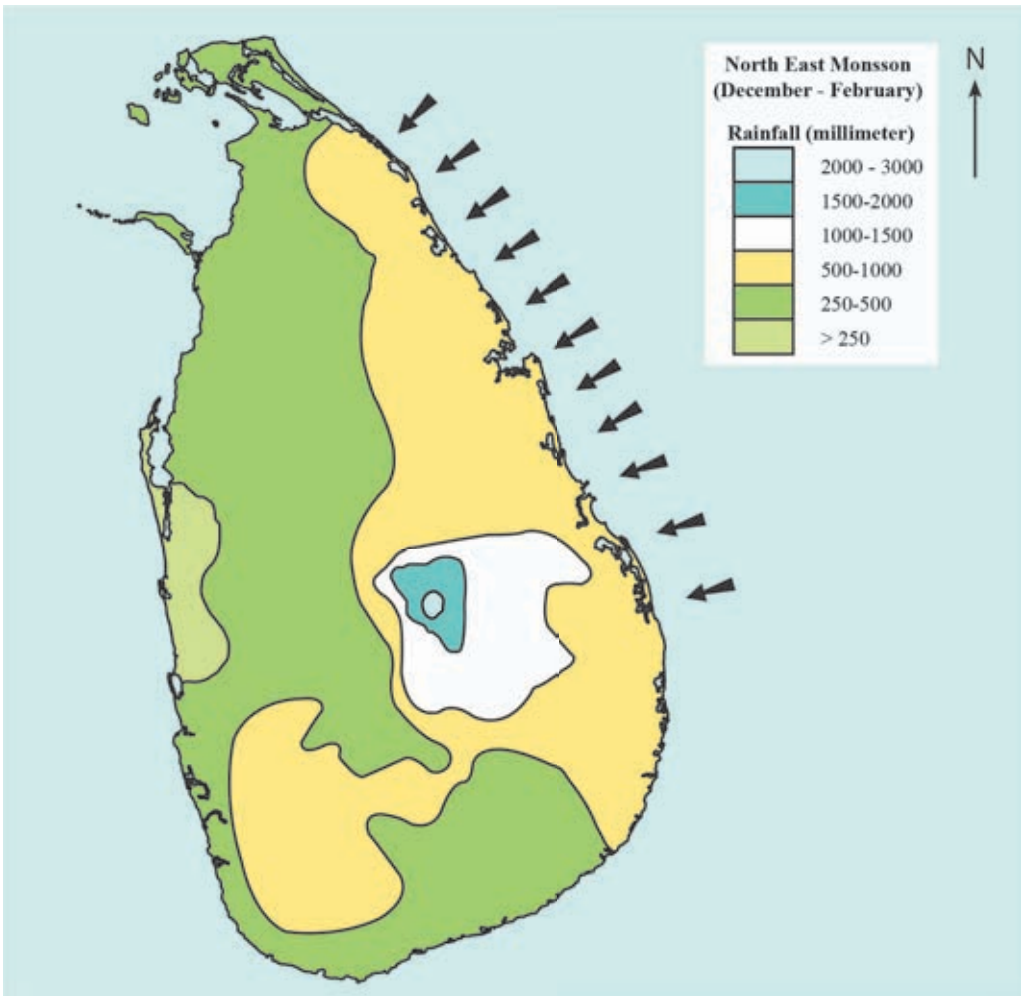
The wind that blows across the Indian Ocean towards Sri Lanka from the South West includes much water vapour. When these winds with water vapour reach the Central Hills and rise up, they bring heavy rains to the Western and South Western parts of the country. The Eastern and the Northern areas located in the leeward areas of the central hills do not receive rain from these winds because they blow as dry winds. These dry winds are called 'kachchan' in the areas of Batticaloa.



Map 2.6 - South-West Monsoon rainfall

North East Monsoon rain

As the North East Monsoon winds blow in the direction of North-East it is called North-East Monsoon. Water vapour carried by these monsoonal winds is very low as they blow across a small water area of the Bay of Bengal from India. Therefore, much rainfall is not received as during South-West Monsoon. More rainfall is received in the North falls in Eastern parts of Sri Lanka.



Map 2.7 – North East Monsoon rainfall

Cyclones

Cyclones that affect Sri Lanka mostly occur in the area of the Bay of Bengal. Cyclones mostly occur in the months of November and December. But, cyclones may occur at any time of the year. More areas in the North and East receive rainfall from cyclones. These cyclones enter the island from the Eastern coast of Sri Lanka and pass over the South Eastern coast. Whenever there are cyclones a large area throughout Sri Lanka receives rain. Cyclones may occur during the period of monsoonal winds. On such occasions, heavy rainfall is experienced and floods occur. Strength of these winds is introduced as whirlwinds, depressions or storms.

Activities

1. Define weather and climate.
2. Name three factors that influence the distribution of temperature in Sri Lanka.
3. Complete the following table with reference to rainfall in Sri Lanka.

Method of rainfall	Duration	Areas receiving rainfall

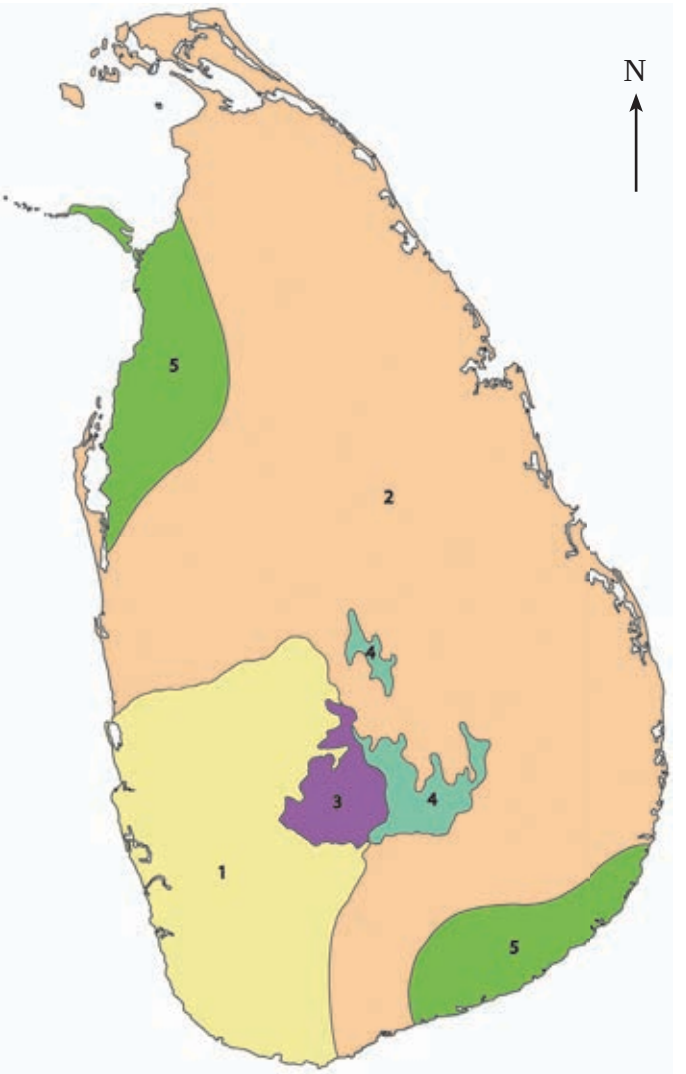
Assignment

Collect pictures and diagrams about disastrous conditions related to rainfall in Sri Lanka and prepare a wall-paper article.

Climatic zones of Sri Lanka

An area where similar climatic features are seen is identified as a climatic zone. According to the factors such as temperature and rainfall, Sri Lanka can be divided into five climatic zones.

1. Low country wet zone
2. Low country dry zone
3. Hill country wet zone
4. Hill country dry zone
5. Semi-arid zone



Map 2.8 - Climatic zones in Sri Lanka

Low country wet zone

- The areas of the South Western flat lands of Sri Lanka belong to this zone.
- The average annual rainfall in this area is 2000 mm.
- The average annual temperature is about 27^0C.
- Though this area receives rain throughout the year, South West Monsoon period is the main rainy season that prevails from May to September.

- The months of February and March are dry to some extent, but there is almost no definite dry season.

Low country dry zone

- The areas of the North and Eastern flat lands of Sri Lanka belong to this zone.
- The average annual rainfall is between 1250 mm-2000 mm.
- Presence of a dry and wet period of time.
- During the period of December to February, this area receives rain from the North-East Monsoon. During this period cyclones too may bring rain.
- During some periods, rain is impermanent. High evaporation prevails.

Hill country wet zone

- The western part of this is formed when a line joining the cities of Matale, Kandy, Nuwaraeliya and Haputale of the Central Hills is drown.
- This area receives rain throughout the year.
- The average annual rainfall is about 3000 mm.
- Maliboda,Watawala and Kenilwerth that receive the highest rainfall in Sri Lanka are located in this zone.
- Dry winds occur from December to February.

Hill country dry zone

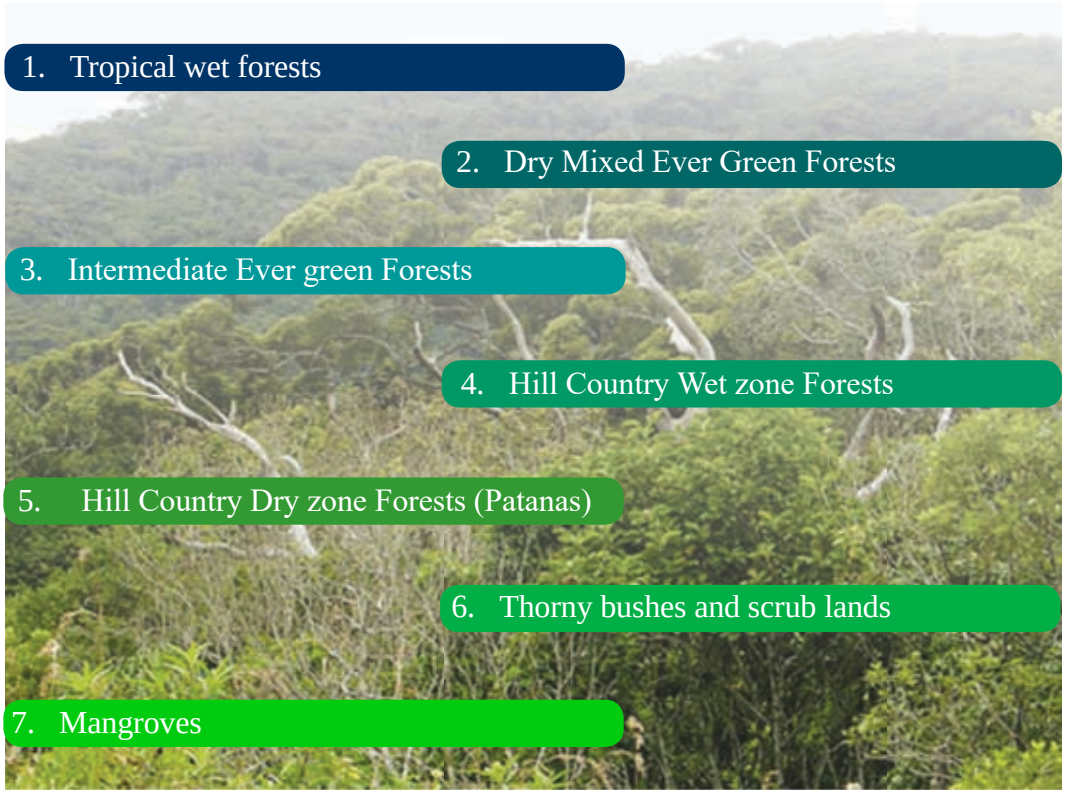
- The Eastern part of the hill country belongs to this zone.
- The average annual rainfall is between 1750 mm-2000 mm.
- More rain is received from the North East monsoon, but this area does not receive rain from the South West Monsoon as a result of the location being on the leeward side.
- Dry winds occur during a long period of the year.

Semi-arid zone

- This area is consisted of Mannar and the surrounding areas located in the North Western part as well as in Hambantota area located in the South Western part of Sri Lanka.
- The average annual rainfall is between 650 mm - 1250 mm.
- Rainfall is less and it is limited to 3 or 4 months.
- Convectional rains are in operation.
- Evaporation is high.

Natural vegetation in Sri Lanka

Trees, plants and creepers that grow without the intervention of man are defined as natural vegetation. The factors that influence the growth of natural vegetation are temperature, rainfall and soil. Vegetation of Sri Lanka is classified mainly on the basis of the factors of temperature and rainfall. Accordingly, there are seven vegetation zones identified in Sri Lanka.



Map 2.9 - Natural vegetation zones in Sri Lanka

Tropical wet forests (Wet evergreen forests/ Tropical rain forests)

Areas distributed / expanded

Western and South Western parts of Sri Lanka

- Sinharaja
- Kanneliya
- Dediyagala
- Nakiyadeniya
- Morapitiya
- Bambarabotuwa

Main trees

- Hora
- Keena
- Na
- Godapara
- Milla
- Midella
- Kithul
- Nedun

Features of vegetation

- Height of the trees is between 30-40 meters.
- There are several layers.
- Trees grow throughout the year.
- Colour of the trees is dark green.
- There is a canopy formed at the top and there is no light inside the forest.
- Plants growth is dense.
- Under growth is abundant. There are plenty of creepers, ferns, lichens and orchids here.
- Higher bio diversity.

Figure 2.3 - Tropical wet forests

Dry mixed evergreen forests

Main Areas of Distribution

These forests are distributed throughout the low country dry zone.

- Somawathiya
- Wilpattu
- Maduru oya
- Udawalawa
- Wasgomuwa
- Floodp lains ofr iver Mahaweli
- Yala

Trees

- Satinwood
- Ebony
- Margosa
- Weera
- Teak
- Suriyamara
- Milla
- Palu

Features of vegetation

- Height of the trees is between 20 m -30 m.
- Trees grow during the rainy season and growth rate is less during the dry season.
- Bushes of 2 m - 3 m in height could be seen.
- They do not grow densely and there are tall trees at intervals.
- The forests are light green in colour and there are hardwood trees.

Figure 2.4 - Dry Mixed evergreen forests

Intermediate Evergreen Forests

Areas of distribution

These forests can be seen in the transitional zone that separates the wet zone and dry zone.

- Kurunegala
- Badulla
- Matale
- Tangalle

Main trees

- Jak
- Pihimbiya
- Lunumidella
- Mahogany
- Sapu

Features of vegetation

- These forests have trees that grow in the wet and dry zones as it changes to the dry zone from the wet zone.
- The trees that grow in wet and dry zones are mixed.
- Height of the trees is 10 m - 25 m.

Figure 2.5 - Intermediate evergreen forests

Hill country wet zone forests

Areas of Distribution

They are found in areas over 1200 m in the Western slops of the Central hills.

- Samanalakanda
- Pidurutalagala
- Knuckles
- Horton plain

Main trees

- Walsapu
- Keena
- Mihiriya
- Dawata
- Beraliya
- Mora
- Hulanheek

Features of the vegetation

- Average height of the trees is 8 m - 10 m.
- With the increase in the altitude, height of the trees gets reduced gradually.
- Trees grow as a canopy. Colourful leaves can be seen.
- Epiphytes and undergrowth are in abundance.

Figure 2.6 - Hill country wet zone forests

Hill country dry zone forests

Areas of distribution	Main trees
They are found in areas over 1400m in the Eastern part of the Central Hills • Horton plains • Sandatenna • Sitaeliya • Ambewela • Kandapola	• Maharathmal • Aralu • Bulu • Nelli • Domba • Kahata

Features of vegetation

- Grasslands are distributed with different types of patanas. (Patana, Talawa, Damana, Villu)
- Isolated trees can be seen here and there.
- Trees have grown so as to resist the winds. The trees are short and they resist the cold and winds. Trees are twisted by nature.
- These forests are called cloud forests. It is because the canopy is seen as clouds when is seen from above.
- Leaves are small and looks folded.
- Trees do not grow well as there is a thin layer of soil.

Figure 2.7 - Hill country dry zone forests

Thorny bushes and shrub lands

Areas of Distribution

These forests are distributed in the North Western and South Eastern parts of Sri Lanka.

- Areas in the Hambantota district.
- Areas in the Mannar district.

Main trees

- Eraminia
- Cactus
- Palu

Features of vegetation

- Leaves of the trees are thick, scanty and thorny.
- Leaves are small.

  It is because they have adapted to the dry climate.
- There are trees that get adapted to resist a long dry period.

Figure 2.8 - Thorny bushes and shrub lands

Mangroves

Areas of Distribution

Mangroves are found near estuaries and around lagoons in the coastal areas.

- Kalametiya
- Bundala
- Muthurajawela
- Anavilundawa
- Trincomalee

Main plants

- Kirala
- Ginpol
- Katu Ikili
- Kadol
- Diyakanduru
- Wal Anoda

Features of vegetation

- Plants have many roots ; Prop roots and stilt roots
- Roots spread above water. They are known as respiratory roots.
- Those plants have adapted to brackish water

Figure 2.9 - Mangroves

According to the facts mentioned above, it is clear that there is a physical diversity in Sri Lanka. Even in a small land, this diversity could be seen in relief, climate, vegetation and drainage. It is because Sri Lanka is a small island.

In Sri Lanka, there is a climatic condition that one can experience from dry climate to cold climate. This scenic beauty can be experienced when one travels from Hambantota to Nuwaraeliya. We are able to see the diversity in climate, drainage and vegetation in a few hours. This physical diversity has contributed to the sustainability of the environment as well as to the constant sustainability of man. Physical diversity of Sri Lanka is a tourist attraction to locals and foreigners.

Assignment

Plan an educational trip to identify relief, climate and vegetation in Sri Lanka. Prepare a brochure to include the features such as relief, climate vegetation.

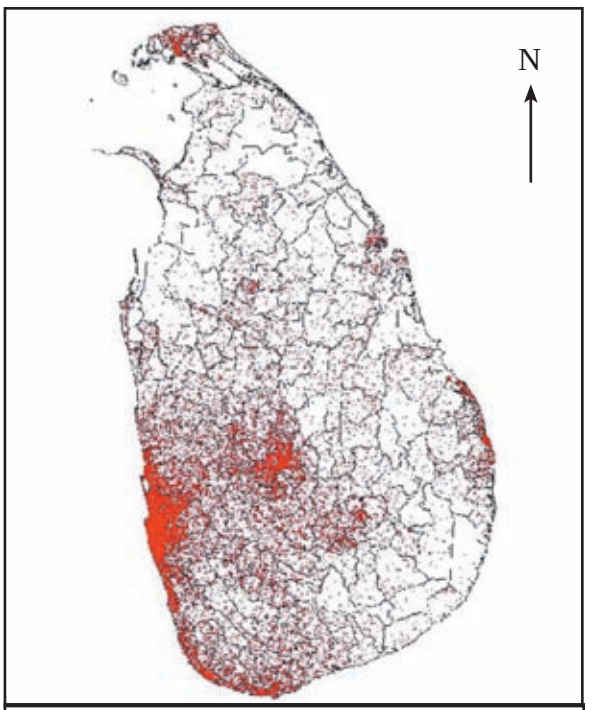
Human landscape

Population and human activities are the main factors affecting in creation of human landscape.

Population of Sri Lanka is 20.2 million. It increases every year. Information on population is obtained from the census conducted by the Department of Population and Census once in ten years.

Distribution of population

Population of Sri Lanka has spread unevenly. The Majority of population lives in the wet zone. In comparison, less population is distributed in the dry zone. (Map 2.10) From the total population,

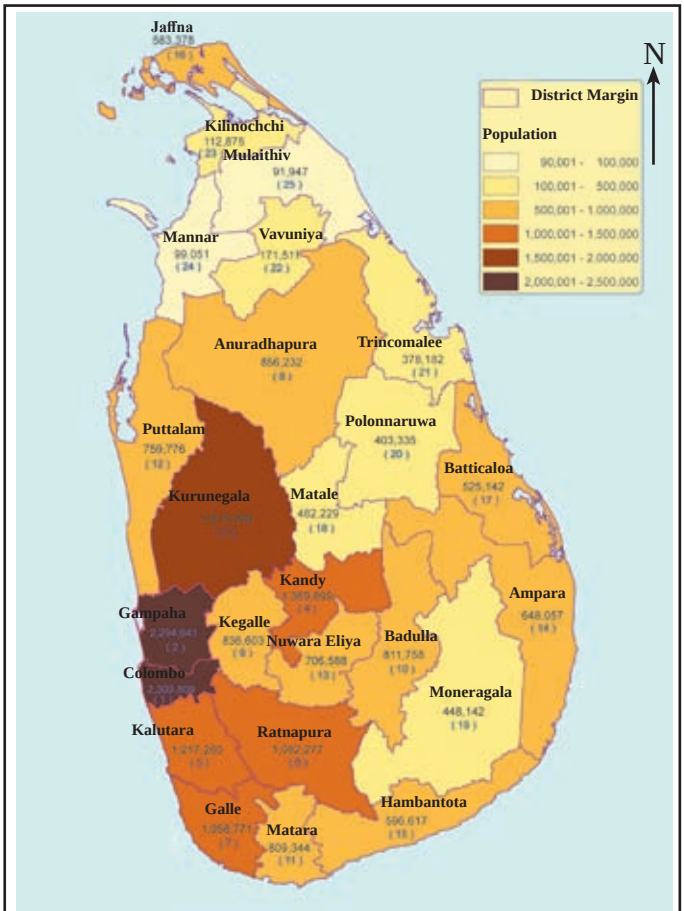


Map 2.10 - Distribution of population in Sri Lanka

¼ is accumulated in the Western Province and the least distribution is shown in the Northern Province. The reasons for the increase of population in the vicinity of Colombo are the location of the administrative and the commercial city and the abundance of service facilities such as health, education, transportation and industries in the province. A low population distribution is shown in the districts of Moneragala, Vauniya, Mannar and Mullatiu. The reasons are less physical, infrastructure facilities and unavailability of economic opportunities in these areas. These changes in the population distribution can be shown through the density quantitatively. It is depicted by Map 2.11.

This uneven distribution can be explained according to the districts and provinces. These quantitative changes can be shown though population density. According to the population census 2012, density of population was 323 per square kilometre in Sri Lanka. This does not mean that the population is distributed in every region equally. It is clearly indicated in Map 2.11.

Regional changes of population distribution in several selected districts can be identified according to the population density as shown in table 2.3.



Map 2.11 - Population density according to the districts of Sri Lanka

Table 2.3 - Population Density in a few districts of Sri Lanka

District	Population density
Colombo	3305 km^2
Gampaha	1541 km^2
Kandy	664 km^2
Hambantota	210 km^2
Moneragala	72 km^2

Composition of Population

Composition of the population in Sri Lanka can be expressed in various ways such as distribution by gender, age, ethnicity and religion.

Distribution by sex

According to the population census 2012, out of the total population, 51.5% are females while 48.5% are males. It is clear from the data that the percentage of the males is gradually decreasing. This can be clearly expressed by sex ratio. The number of males for 100 females in the population is called the sex ratio. The following table indicates how sex ratio has changed according to the census reports of 1981 and 2012.

Table 2.4 - Sex ratio in Sri Lanka

Year	Sex ratio
1981	104.0
2012	94.3

Source: Reports of the census and statistics

Age structure

According to the age structure in Sri Lanka the aging population has increased to a certain amount. It is expressed in the following table.

Table 2.5 - Population according to age structure

Age	Census % (1981)	Census % (2012)
Below 14 years	35.2	25.3
Between 15-59 years	58.2	62.3
Above 60 years	06.6	12.4

Source : Reports of the census and statistics

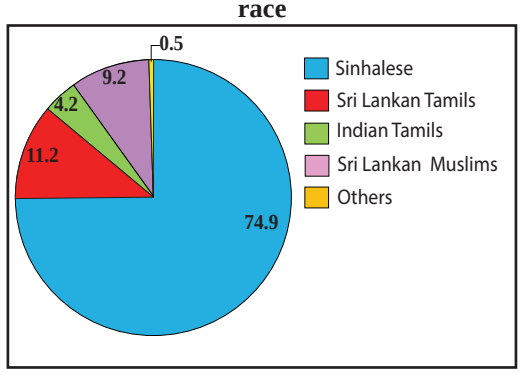
Population structure according to the race

According to the races, ethnic structure is shown as given below;

Table 2.6 - Population structure according race

Race	Percentage (2012)
Sinhalese	74.9
Sri Lankan Tamils	11.2
Sri Lankan Muslims	9.2
Indian Tamils	4.3
Others	0.5

Graph 2.1 - Population structure according race



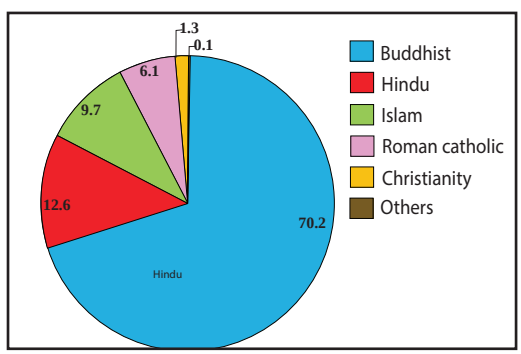
Population structure according to the religion

Population structure according to the religion is given below;

Table 2.7 - Population structure according to the religion

Religion	Percentage (2012)
Buddhist	70.2
Hindu	12.6
Islam	9.7
Roman catholic	6.1
Christianity	1.3
Others	0.1

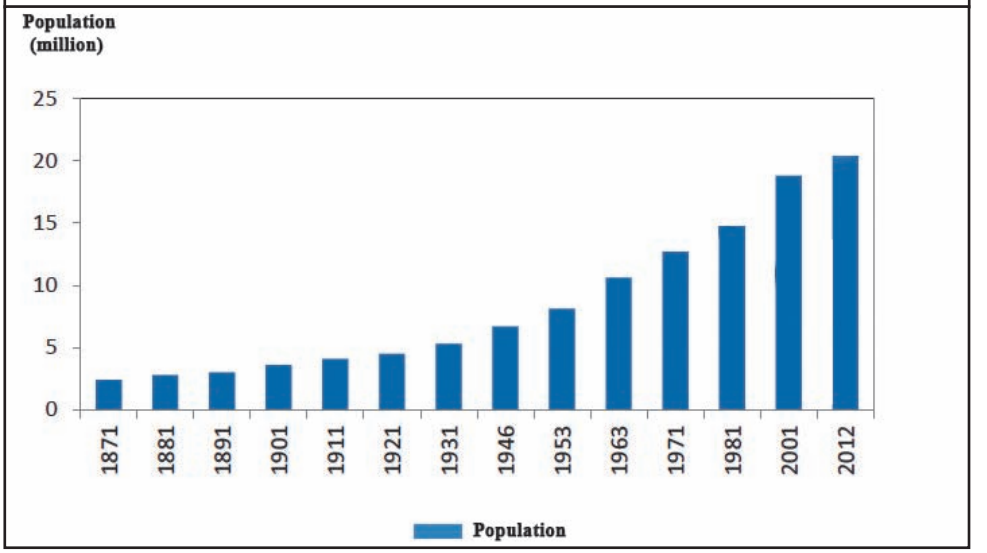
Graph 2.2 - Population structure according to the religion



Growth of population

The difference between the crude birth rate and the crude death rate is called the natural growth of population in a particular country. When it is added to the net migration (the difference between in and out migration of the country) it is called the growth of the total population. Graph 2.3 indicates how the population increased in Sri Lanka from 1871 to 2012.

Graph 2.3 - Growth of population 1871 - 2012

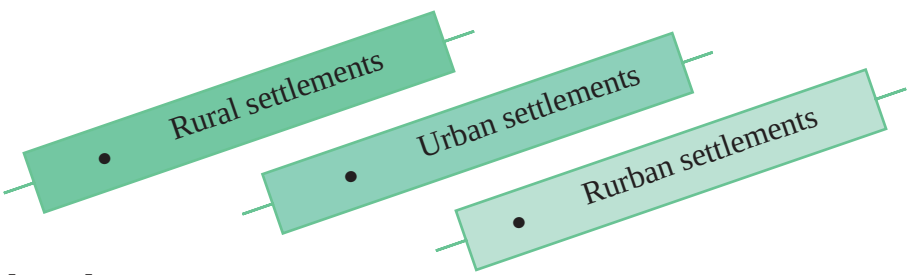


Settlements

Settlements are established by groups of people to live together with co-operation to be protected from enemies and wild animals and to avoid a harsh environment.

A settlement cannot be considered a mere habitat only. Settlement is a unit which consists of various institutions of economic, social and cultural activities of man and religious places, buildings, gardens, agricultural lands as well as infrastructure facilities.

Settlements can mainly be categorized into three groups.



Rural settlements

The settlements which are based on agriculture and fisheries industry, paying more attention on primary economic activities when using resources, are called rural settlements. The villages located close to tanks in the dry zone and fishing villages are examples.


Fig 2.10 - A few rural settlements

Urban settlements

Urban settlements are areas with higher density of population concentrated in a limited land area, centred on non agricultural activities. Colombo, Gampaha, Kandy, Jaffna and Matara are examples.

Fig.2.11 - Urban settlements

Rurban settlements

The settlements which have both rural and urban features are called rurban settlements. In these areas, rural features disappear and Urban features are being emerged. Urban areas of cities can be cited as examples.

Fig. 2.12 - Rurban settlements

Activities

1. Name the two districts that have the highest and the least population density in Sri Lanka.
2. Mention 4 reasons as to what the increment in population in Western province.
3. What are the reasons for the increment of elderly population in Sri Lanka.
4. Mention in short what a settlement is.

Economic Activities

Economic activities of Sri Lanka can be divided mainly into three sections.

- Agricultural sector
- Industrial sector
- Service sector

Agricultural sector

There are various agricultural activities seen in Sri Lanka. Examples are paddy cultivation, gardening and chena cultivation in the dry zone and also tea, coconut, paddy, rubber and vegetables are cultivated in the wet zone while tea is cultivated in mountainous areas. Fisheries industry and livestock farming too belong to the agricultural sector. For example, fishing industry is carried out in the coastal areas and in inland reservoirs. Livestock farming is done in the areas of Ambewela, Pattipola, Polonnaruwa and Hambantota.

Industrial sector

Most of the industries in Sri Lanka are located in the Western Province. There are various types of industries. Among such, main industries are assembling industries, plastic, tyre, textiles, confectionery and handicrafts. The government has also established Industrial Zones in Sitawaka, Polonnaruwa, Ratmalana and Minuwangoda and Free Trade Zones in Biyagama, Katunayaka and Koggala.

Agricultural sector

Industrial sector

Fig 2.13 - Service sector

Service sector

Service sector is important for the improvement of living standards of people in a country. Service sector includes various services such as education, health, transportation, electricity, water supplies, security, sanitary and communications. Contribution of the service sector is increasing with reference to employment in Sri Lanka. Service facilities are mostly expanded in urban areas.

Infrastructure facilities

During the recent times, special attention has been focused to develop the infrastructure facilities to promote the living standards facilities of people. Among them, building roads, providing electricity and water are major.

When developing infrastructure facilities, a prominent place has been given to the road development and transportation. This field is developing at a rate between 5% - 6% annually. The road system has spread in every region so that there are facilities for anyone to reach any place in the country within a day. In urban areas, although the road system is developed, the congestion is still there. Recent governments have taken various steps to develop the field of road transportation like;

- Widening roads
- Building roads in the rural sector
- Building fly-overs
- Building express ways

Fig 2.14 - An express way in Sri Lanka

Electricity

Almost all the regions in Sri Lanka have been provided with electricity facilities. Electricity is generated from the electricity projects constructed, in association with the major rivers of Mahaweli, Kalu, Kelani and Walawe. Hydro electricity and thermal power are major ways of providing electricity in Sri Lanka. In addition, the use of regenerative energy sources like solar power is increasing.

Water

Sri Lanka is a country rich with the water resource. Water sources like rivers, streams, wells, ponds, tap water and ground water are used to fulfil the needs of water of the people. Water taken from these sources is used for different simple purposes like cooking, drinking, sanitary needs and also for complex necessities such as agriculture, industry, and generation of electricity. Economic affairs and living needs of people depend on water.

Water sources which are used to fulfil these needs are getting polluted at present. In urban areas, tap water is important for drinking purposes. Wells, ponds and tanks are important in rural areas in this regard. Importance of water sources has been decided depending on particular areas.

Water and electricity are limited resources not only for us but for many countries in the world. It is our duty and responsibility to get the maximum use of this resource, without wasting to protect it for the future generations.

Activities

1. Mention three main sections of economic activities in Sri Lanka
2. Water and electricity should be used sparingly. State three reasons for this.

Influence of physical landscape of Sri Lanka on human activities

Physical landscape of Sri Lanka influences human activities decisively. There are regional changes in the physical landscape and accordingly, regional changes too can be seen in the human landscape.

Coastal plain

Fig 2.15 - Coastal landscape

Several human activities in the coastal plain are indicated in figure 2.15. The fisheries industry, coir industry, excavating limestone and the tourist industry have emerged using the physical environment.

Activities

1. What are the human activities which are common to the coastal plain indicated by the above diagram?
2. What are the other human activities in the coastal plain which are not shown in the diagram?
3. State the physical facilities available in the coastal plain for human activities mentioned by you.

The wet zone

Fig 2.16 - The wet zone landscape

In the wet zone, there is a suitable physical environment for various human activities. Various types of cultivation, distribution of high population and a developed road system can be seen here. Several human activities which are carried out in the wet zone are indicated in figure 2.16.

Activities

1. What are the human activities shown by the Fig. 2.16? Form a table to include them.
2. Name several crops grown in this area.
3. State the physical factors necessary that are affected for growing these crops.
4. Name the services and employment that can be seen in abundance in this area.
5. Mention two factors that caused this area to become high populated.

The dry zone

Fig. 2.17 - Dry zone landscape

Tank system is an outstanding feature in the dry zone landscape. The tank system has been constructed according to the relief and is connected the irrigation system. It is a specific feature in this area.

Paddy cultivation, chena cultivation, villages established in association with tanks, ancient cities and various types of cultivation too can be seen in the dry zone landscape.

Activities

1. According to Fig. 2.17, what are the human activities that can be seen in the dry zone?
2. What are the major physical factors that influence the development of paddy cultivation in this zone?

Hill country landscape

Fig. 2.18 - Hill country landscape

A specific relief and climatic condition exist in the hill country landscape and the human activities have been adjusted accordingly.

Activities

1. What are the specific human activities in the hill country landscape?
2. State the specific crops grown in this zone.
3. What are the physical factors that influence growing each of the crops?
4. Hill country roads have bends. Why is it?
5. What are the reasons in making roofs with less height and in colour green?
6. What are the factors that influence tourist attractions in the hill country?
7. Why do the people living here use warm clothes?

Jaffna Peninsula

Fig. 2.19 - Jaffna Peninsula

There is a specific landscape in the Jaffna Peninsula in the Northern part of Sri Lanka. In this zone, limestone is in abundance and the climate is arid. The people who live here have developed agriculture using the ground water and the red soil. Several features found in this landscape are indicated in figure 2.19

Activities

1. According to the Figure 2.18, what are the human activities found in Jaffna Peninsula?
2. What are the methods used by the people in this area to get ground water?
3. What are the specific crops cultivated and industries that can be seen in this area?
4. There are many islands located in the Jaffna region. What are the human activities that have been established in association with them.
5. Write few products related to Palmyrah tree?

Influence of human activities on the physical landscape of Sri Lanka

In the above lesson, we studied that human activities are determined according to different types of environments. With the increase of population, the uses of physical environment and resources too increase. Accordingly, influences that affect the physical environment too increase. Human activities influence the physical environment in Sri Lanka.

Fig. 2.20 - The influence of human activities on physical landscape of Sri Lanka

Study the above pictures well and identify several environmental problems related to various landscapes in Sri Lanka.

Activities

1. Name a few instances where man uses the physical environment in the areas of the dry zone.
2. What are the impacts that affect man due to loss of habitats of wild animals?
3. Prepare a list of human activities that destroy physical environment in these areas.

Assignment

1. Prepare a brochure including pictures of human activities that could be identified in various landscapes.
2. Name one environmental problem that prevails in your area and explain how human activities have contributed for causing it.

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Glossary

• Landscape	- භූ දර්ශනය	- நிலத்தோற்றம்
• Relief	- භූ විෂමතාව	- தரைத்தோற்றம்
• Braided river	- හැඩපලු ගංගාව	- பின்னிய ஆறு
• Marsh	- වගුරු බිම	- சதுப்பு

• Point	- තුඩුව	- முனை
• Bay	- බොක්ක	- குடா
• Lagoon	- කලපුව	- கடனீரேரி
• Gap	- කපොල්ල	- கணவாய்
• Radial drainage pattern	- අරීය ජලවහන රටාව	- ஆரைவடிகால் பாங்கு
• Dendritic drainage pattern	- ශාඛීය ජලවහන රටාව	- மரநிகர் வடிகால் பாங்கு
• Trellised drainage pattern	- ජාලාකාර ජලවහන රටාව	- அறியடைப்பு வடிகால் பாங்கு
• Elevation	- උන්නතාංශය	- தரை உயர்ச்சி
• Lapse rate	- පතන ශීඝ්‍රතාව	- நழுவு வீதம்
• Convectional rain	- සංවහන වර්ෂාව	- மேற்காவுகை மழை
• Monsoon rain	- මෝසම් වර්ෂාව	- பருவக்காற்று மழை
• Cyclone rain	- වාසුලි වර්ෂාව	- சூறாவளி மழை
• Condensation	- ඝනීභවනය	- ஒடுங்கல்
• Evergreen forests	- සදාහරිත වනාන්තර	- என்றும் பசுமையான காடு
• Mangrove	- කඩොලාන	- கண்டல்
• Population distribution	- ජන ව්‍යාප්තිය	- சனத் தொகை
• Population composition	- ජන සංයුතිය	- சனத்தொகை சேர்க்கை
• Sex ratio	- පුමිතිරි අනුපාතය	- பால் வீதம்
• Crude birth rate	- දළ උපත් අනුපාතය	- பிறப்பு வீதம்
• Crude death rate	- දළ මරණ අනුපාතය	- இறப்பு வீதம்
• Rural settlements	- ග්‍රාමීය ජනාවාස	- கிராமியக் குடியிருப்பு
• Urban settlements	- නාගරික ජනාවාස	- நகரக் குடியிருப்பு
• Rurban settlements	- ගැමි නාගරික ජනාවාස	- கிராமநகர் குடியிருப்பு
• Infrastructure facilities	- යටිතල පහසුකම්	- உட்கட்டமைப்பு வசதிகள்
• Water sources	- ජල මූලාශ්‍ර	- நீர் மூலாதாரம்
• Environmental Pollution	- පරිසර දූෂණය	- சூழல் மாசடைதல்

3
Spatial Changes of Development in Sri Lanka

Development is a continuous process. It differs from country to country and from region to region. Different indicators are used to measure development. The main objectives of this chapter are, identifying the indicators and examining the spatial changes of the development in Sri Lanka, based on these indicators.

Development

Development is the improvement of the quality of life of people in economic, social and cultural aspects. There are many different definitions of Development. The UNESCO declaration on development is,

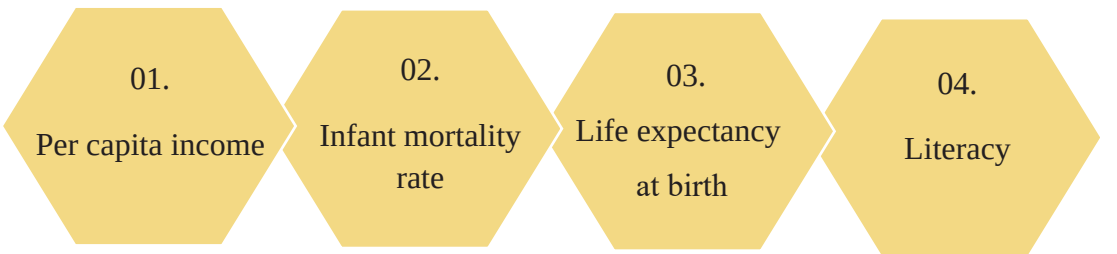
1978 - UNESCO Declaration

In a country social development should take place along with economic development. Social development should take place within sectors encompassing food and nutrients, health, education, housing, social security, clothing, leisure and human freedom.

According to this definition, development means, giving a better standard of living to the people of a country with improved economic, social and cultural standards. The definition of Development changes from time to time. Development changes from region to region and from country to country. There are several indicators to reflect these changes.

Indicators used to measure Development

Different countries utilise different indicators to measure Development in the world. The following indicators are important among them,



Living conditions of people and how it differs from region to region can be made clear using these indicators. Such regional changes can be identified as spatial changes.

Per capita income

The amount of money that is being earned per person in a country in a given period is called per caprita income.

It is calculated as given below;

$$\text{Per Capita Income} = \frac{\text{Total income oft he country}}{\text{Midyear population}}$$

Income of the population of the country can be calculated by this indicator. If the per capita income rises in a country, people can have the benefit of good living conditions.

Infant mortality rate

Infant mortality rate is the number of deaths of infants under the age one year per 1000 live births. Infant mortality rate of a country reflects the health and medical facilities and level of nutrition level in a country.

Life expectancy at birth

Life expectancy is the average time a new born is expected to live. The condition of health facilities and their distribution in a country, food and level of nutrition, good health practices, distribution of facilities for sports and leisure of the country can be identified by these indicators.

Literacy

Literacy is the ability of reading and writing of individuals above 15 years of age. This is calculated as a percentage of the whole population over 15 years old.

$$\text{Literacy} = \frac{\text{Number of people above 15 years of age who has ability to read and write}}{\text{The total population over 15 years old}} \times 100$$

Literacy indicators reflect the distribution of facilities of schools, education and poverty.

Spatial variations in Development in Sri Lanka

Sri Lanka is a developing country but regional differences also can be seen. Let us examine these differences according to each indicator.

Per capita income can be used to understand the uneven distribution of the income of people within Sri Lanka regionally. Monthly per capita income in 2009 in Sri Lanka is about Rs. 36,451. Table 3.1 depicts the regional differences in the country.

Table 3.1 – Per capita income by districts of Sri Lanka - 2009

District	Monthly per capita income in Rs.	District	Monthly per capita income in Rs.
Colombo	51,070	Kilinochchi	No details received
Gampaha	48,870	Batticaloa	22,844
Kalutara	35,780	Ampara	24,721
Kandy	33,063	Tricomalee	24,291
Matale	30,013	Kurunegala	36,922
Nuwara Eliya	31,029	Puttalam	32,918
Galle	31,376	Anuradhapura	37,586
Matara	30,980	Polonnaruwa	31,526
Hambantota	36,879	Badulla	32,313
Jaffna	18,917	Monaragala	22,161
Mannar	No details received	Ratnapura	41,312
Vavuniya	39,640	Kegalle	29,342
Mulatiu	No details received	Sri Lanka	36,451

Source : ***Sri Lanka Human Development Report 2012***

It is clear that per capita income differs according to Districts.

According to World Bank Reports, infant mortality rate was 8.4 in the year 2015. Still there are regional differences in infant mortality rate. The table 3.2 shows the distribution of infant mortality rate according to the districts of Sri Lanka in 2010.

Table 3.2 - Infant Mortality Rate in the Districts of Sri Lanka - 2010

District	Infant Mortality Rate - 2010	District	Infant Mortality Rate - 2010
Colombo	14.1	Mulative	No details received
Gampaha	02.7	Batticaloa	25.1
Kalutara	03.3	Ampara	04.5
Kandy	11.1	Tricomalee	02.5
Matale	07.2	Kurunegala	09.7
Nuwara Eliya	14.8	Puttalam	07.0
Galle	09.9	Anuradhapura	10.3
Matara	09.4	Polonnaruwa	04.6
Hambantota	04.3	Badulla	06.2
Jaffna	03.0	Monaragala	03.6
Kilinochchi	00.9	Ratnapura	05.7
Mannar	03.5	Kegalle	05.7
Vavuniya	08.6		

Source : ***Sri Lanka Human Development Report 2012***

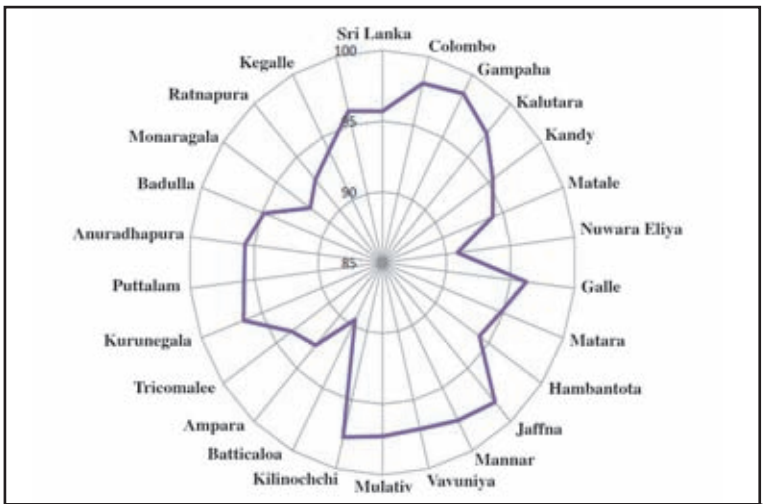
There are regional differences even in life expectancy. The life expectancy of the whole population of Sri Lanka is about 74.2. This differs according to the gender. Life expectancy of women is 78.6 while it is 72 of males. When considering the life expectance rate of different districts, these changes can be clearly understood.

Table 3.3 - Life Expectancy at birth according to the districts of Sri Lanka - 2002

District	Male	Female	District	Male	Female
Colombo	61.9	71.9	Badulla	68.9	75.4
Gampaha	71.5	80.4	Kegalle	72.5	80
Kalutara	72.7	80.2	Kilinochchi	No details received	No details received
Kandy	67.3	75	Batticaloa	66.8	73.8
Matale	70.7	77.5	Ampara	70.3	75.9
Nuwara Eliya	70.8	74.7	Tricomalee	68.5	74.2
Galle	70.5	78.4	Kurunegala	68.9	78
Matara	73.5	80.4	Puttalam	69.1	78.9
Hambantota	76.9	82.3	Anuradhapura	66.5	76.1
Jaffna	No details received	No details received	Polonnaruwa	68.9	77.6
Mannar	No details received	No details received	Badulla	75.2	80.5
Vavuniya	No details received	No details received	Monaragala	72	78.4
Mulatiu	No details received	No details received	Ratnapura	73.7	78.7

Source : ***Sri Lanka Human Development Report 2012***

It is clear that there are differences regionally according to the indicators of literary rate. Although Sri Lanka has a higher literacy rate among South Asian countries, there are changes in according to various districts. (Graph 3.1)



Graph 3.1 - Proportional Literacy Rate Based on Districts - 2002

Literacy rate differs according to the urban, rural and estate sectors in Sri Lanka.

Urban – 94.7 %

Rural – 91.8%

Estate – 74.3%

By this, It is clear that the proportional literacy rate is high in urban areas where there are more facilities.

Activities

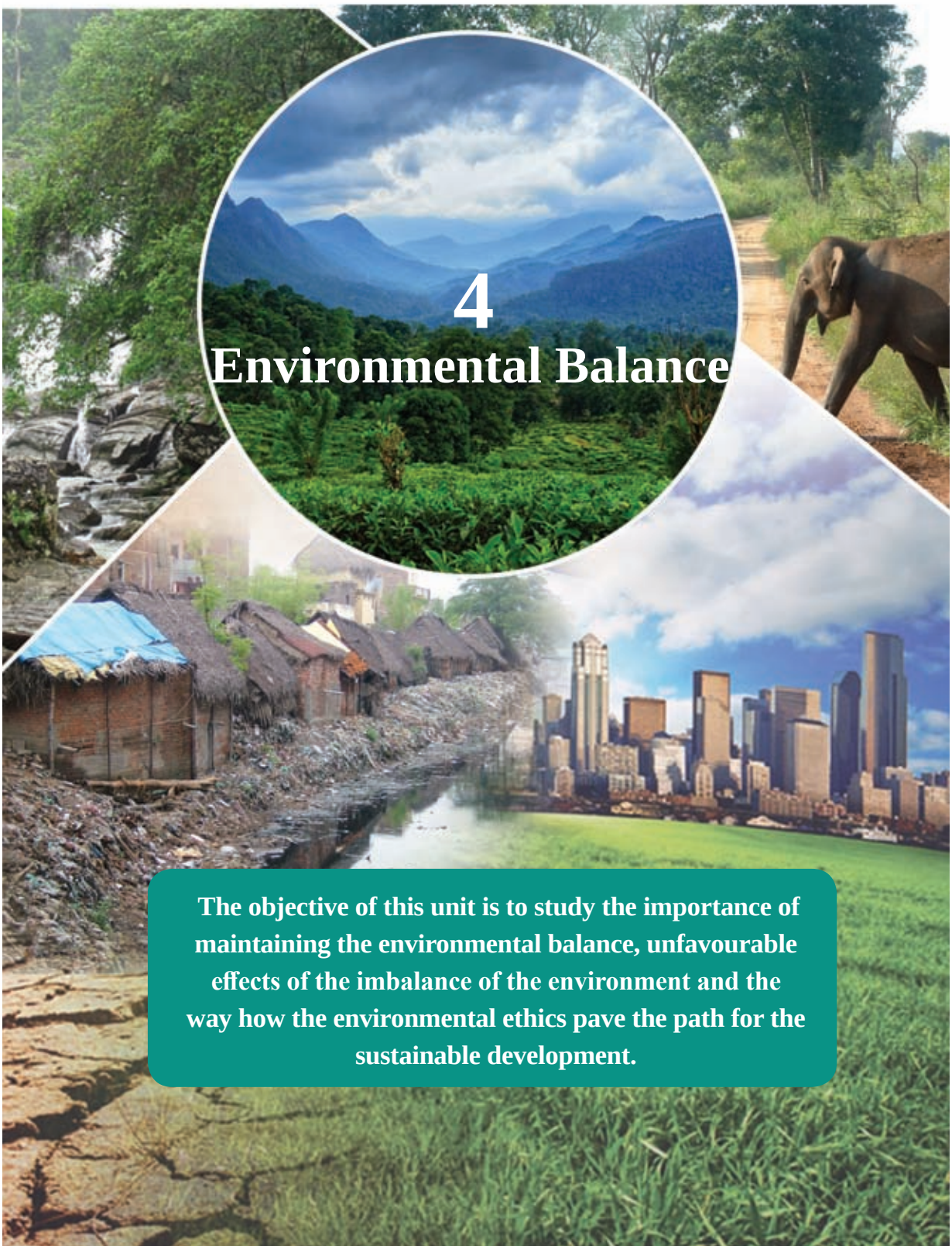
1. Explain what Development is.
2. Name four indicators that are used to measure the level of development.
3. Explain briefly how per capita income, infant mortality rate and literacy affect the position of development of a country.

References

- Human Geography I - II Educational Publications Department
- Annual Report of the Central Bank of Sri Lanka - 2015
- Protection of water Recourse - 2015 Sarath Amarasiri
- Household Income and Expenditure Survey 2012/2013 - Final Report, Department of Census and Statistics
- Sri Lanka Human Development Report - 2012

Glossary

• Development indices	- සංවර්ධන දර්ශක	- அபிவிருத்திக் குறிகாட்டிகள்
• Per capita income	- ඒක ශීර්ෂ ආදායම	- தலா வருமானம்
• Infant mortality rate	- ළදරු මරණ අනුපාතය	- சிசுமரண வீதம்
• Life expectancy at birth	- උපතේ දී ආයු අපේක්ෂාව	- பிறப்பில் ஆயுள் எதிர்பார்ப்பு
• Literacy	- සාක්ෂරතාව	- எழுத்தறிவு அபிவிருத்தியில் இடம்சார்
• Spatial variations in development	- සංවර්ධනයේ අවකාශීය වෙනස්කම්	- மாற்றம்



4
Environmental Balance

The objective of this unit is to study the importance of maintaining the environmental balance, unfavourable effects of the imbalance of the environment and the way how the environmental ethics pave the path for the sustainable development.

Environmental balance

The surrounding that is created by biotic (living) and abiotic (non-living) components is environment. While plants and animals of this environment belong to the living part, solar energy, air, water, soil, land forms, rocks etc. belong to the non-living part. These living components maintain mutual relationships with the non-living components in the eco system. The environmental balance depends on this relationship.

Importance of maintaining the environmental balance

All plants and animals living on the earth are called the bio-community. Maintenance of the environment where bio-community lives, while protecting the environmental attributes by reacting to the changes that naturally occur is environmental balance.

Interactions occur between plants and animals. Those living beings maintain relationships with the physical environment. The environmentalists consider man too as an essential component of the environment. Similarly the environmental factors too influence the activities of the living beings; activities of living beings too influence the environment. Maintenance of this mutual balance of influence is important for the existence of living beings.

Factors causing the collapse of environment balance

All living beings (plants and animals) including man get their basic needs fulfilled from the physical environment. The environment is composed of the components which are linked to each other. A change that occurs in one component, causes to changes in the whole environment.

Man utilizes the physical environment in different ways for the following needs;

- To Fulfil the basic needs like food, clothes, costumes and housing
- For transport and communication
- For trade

When population increases, the needs as well as their complexity too increase. Hence due to the use of modern technology and increase of production, man has to go a speedier journey, surpassing the environment.

During the period when the traditional agriculture was the main economic activity of man, the impact on the environment was minimum. However, after the industrial revolution, the impact of man on environment became acute. The damage caused to the environmental balance due to the expansion of agriculture and industries at a rapid speed along with modern technology was immense. The environmental balance began to collapse due to the excessive addition of waste material to the environment and adverse effect on the components of it. Collapsing of the environmental balance in this manner is termed as environmental imbalance.

Factors that cause environmental imbalance

- Excessive utilization of resources
- Irregular development processes
- Excessive burning of fossil fuel
- Use of agro-chemicals
- Deforestation
- Reclamation of low lands
- Irregular utilization of land
- Employment of improper technology

Figure 5.1 - Factors influencing environmental imbalance

It is clear that such processes which are carried out targeting the development of a country have damaged the environmental balance. Though development is essential, it must be achieved while protecting the environmental balance with minimum damage to the environment.

Activities

1. State three human activities that cause environmental imbalance.
2. State three problems that have emerged due to such human activities in an area in your District/ Province.

Unfavorable effects of collapsing of environmental balance

Unfavorable effects that occur due to the collapse of the environmental balance affects the whole environment on the earth. At present, as never before in the human history, the earth's environment has faced a severe crisis. Scientists and environmentalists have warned that if the present environmental damage continues further, around another 200 years, the earth will convert into a condition which is not conducive for man and other living beings to live.

Figure 5.2 - Unfavourable effects of the collapsing of environmental balance

Human activities are the root cause for most of these environmental problems. All the countries in the world must corporate to find solutions for these problems.

Human activities that affect the environment

1. Destruction of forests.
    - Destruction of flora and fauna
    - Destruction of water sources
2. Use of Agro-chemicals.
    - Destruction of soil and aquatic life
    - Contamination of water
3. Use of fossil fuel for energy.
    - Air pollution
    - Increase of the environmental temperature
4. Improper urbanization.
    - Adding of waste to environment
    - Blocking the water ways
5. Improper disposal of waste
    - Emergence of environmental health hazards
    - Destruction of natural beauty
6. Experimentation of military weapons (armament)
    - Atmospheric pollution
    - Water pollution in oceans

Assignment

1. Prepare a report on an incident relating to collapsing the balance of the world environment based on the following titles.
    - Incident
    - Date
    - Country
    - Impact

Necessity of environmental ethics

Favorable habits which are necessary to maintain the environment in a desirable manner are called environmental ethics.

Ethics are bound with personal behaviour. They are accorded to the standard rules and regulations, customs and traditions followed by the people in the societies where they live. Man has acted inquisitively since he began to deal with the environment. Then, he used to treat natural environment and natural objects which have created in the conducive surrounding for living with devotion and respect. Man who lived then, received knowledge about the environment as he worked basing on beliefs, faiths and religions. Faiths and beliefs like respecting trees and creepers, protecting them, making offerings and beseeching for the protection of the guardian deities of the forest when entering to the forest are linked to the religious and social life.

Since ancient times, as man considered the environment as essential for survival, he began to worship and protect it.

Likewise, man lived with nature in harmony and protected it. It is important to identify the necessity of environmental ethics as strategies of environmental conservation, in the journey towards sustainable development. If it is necessary to maintain the environmental balance, we must adjust to the strategies mentioned in environmental ethics. Every religion has highlighted the importance of protecting the environment.

Sustainable Development

The development that is conducted fulfilling the present needs while building an environment that ensures the rights of fulfilling the needs of future generations could be termed as sustainable development.

The necessity of having a sustainable development approach in preparing development plans, is of paramount importance. In following such an approach, more attention must be focused on environmental ethics as well. The present day development problems prove that in sustainable development both environment and development must be maintained in collaboration. There, the attention must be focused on the ability of the future generations to fulfil their needs.

Due to the lack of sufficient attention paid to the environment in present day, when large scale when development projects are done, there is a danger of collapsing the environmental balance.

Different national level as well as international level procedures have been followed to protect the environmental balance.

Under the national conservation plan the following procedures have been followed;

- Planning of land use
- Conservation of wild life and forests
- Promotion of agriculture without damaging the forests, water and soil
- Coastal conservation
- Launching environmental educational programme
- Establishment of the Central Environmental Authority
- Establishment of the Ministry of Environment

Two Acts have been passed to protect the environmental balance in Sri Lanka

- Coastal Conservational Act
- National Heritage Forest Act

Procedures that have been taken at international level

- Ramzar Convention on the conservation of wet lands
- Montreal Convention aiming at the protection of the ozone layer

Under this situation, the concept of sustainable development clarifies the guideline about the factors on which utilization of resources must be based on. Accordingly, while fulfilling the needs of the present generation, the environment must be secured for the needs of the future generations too.

Activities

1. State a few environmental ethics found in different religions.

Assignment

Explain how you, as a student of a school can act to minimize the unfavourable effects occur due to the breaking down of environmental balance.

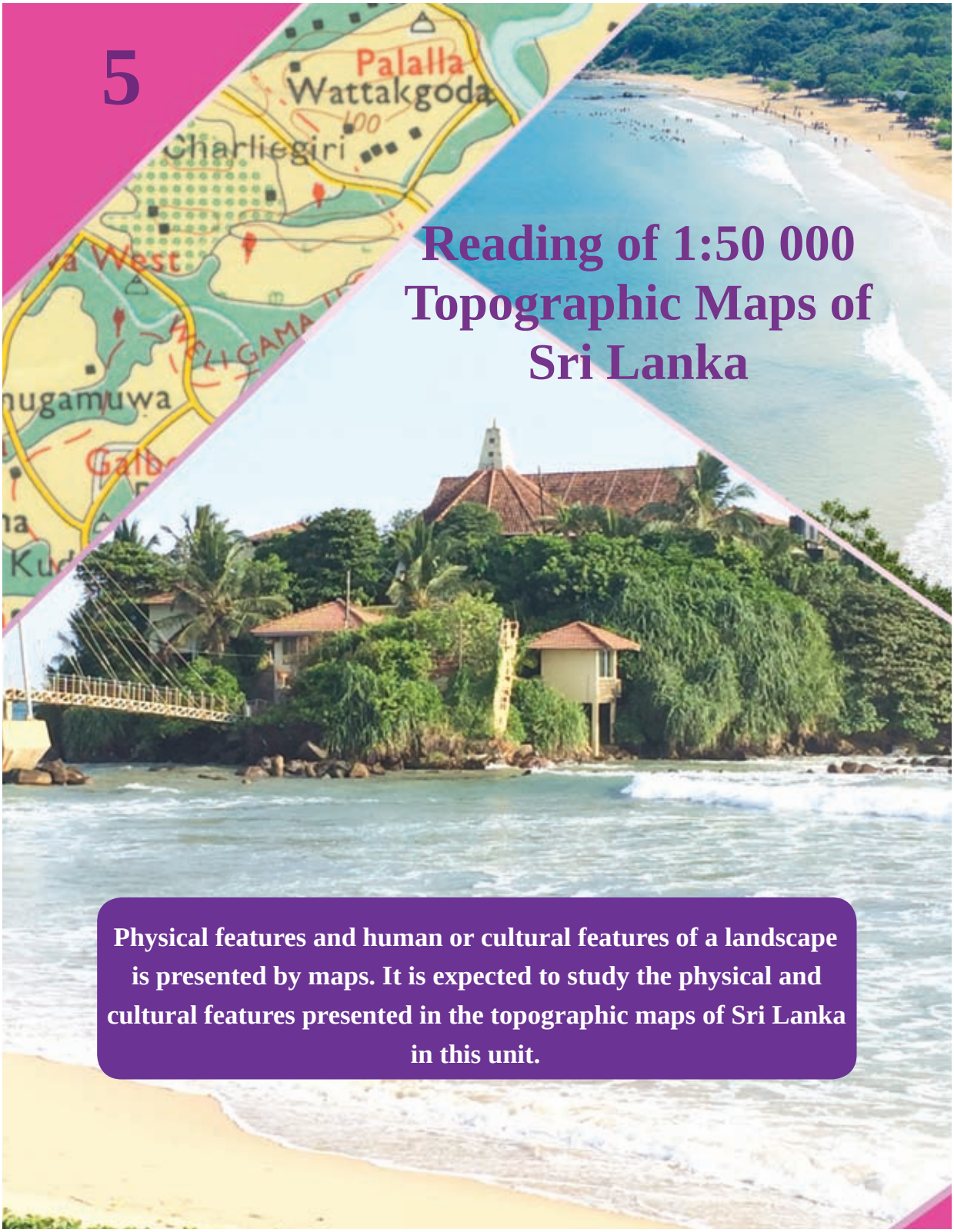
References

- Physical Environment on earth, H.K.N. Karunarathna
- Physical Geography : Part I, Educational Publications Department

Glossary

• Environmental balance	- පාරිසරික තුලිතතාව	- சூழலியல் சமநிலை
• Environmental system	- පරිසර පද්ධතිය	- சூழலியல்தொகுதி
• Components	- සංරචක	- கூறு
• Bio system	- ජෛව පද්ධතිය	- உயிர்த் தொகுதி
• Modern technology	- නව තාක්ෂණය	- நவீன தொழினுட்பம்
• Production capacity	- නිෂ්පාදන ධාරිතාව	- உற்பத்தி இயலளவு
• Environmental imbalance	- පාරිසරික අසංතුලනය	- சூழலியல் சமநிலையின்மை
• Fossil fuels	- පොසිල ඉන්ධන	- சுவட்டு எரிபொருள்
• Environmental ethics	- පරිසර ආචාර ධර්ම	- சூழலியல் ஒழுக்கநெறிகள்
• Sustainable development	- තිරසර සංවර්ධනය	- பேண்தகு அபிவிருத்தி
• Urbanization	- නාගරීකරණය	- நகராக்கம்
• Central Environmental Authority	- මධ්‍යම පරිසර අධිකාරිය	- மத்திய சூழல் அதிகார சபை
• Coast Conservation Act	- වෙරළ සංරක්ෂණ පනත	- கரையோரப் பாதுகாப்புச் சட்டம்
• National heritages	- ජාතික උරුම	- தேசிய மரபுரிமைகள்

5



Reading of 1:50 000 Topographic Maps of Sri Lanka

Physical features and human or cultural features of a landscape is presented by maps. It is expected to study the physical and cultural features presented in the topographic maps of Sri Lanka in this unit.

1:50,000, Topographic maps of Sri Lanka

You have studied the scale, size of a topographic map as well as selected physical and cultural features presented in a topographic map in grade eight. Ninety two map sheets have been prepared to the scale of 1: 50 000 to show the topographic features of Sri Lanka. The key that consists of conventional signs and symbols shown in the lower margin of the outer border of the map sheet can be used to read physical and cultural features presented in these topographical maps. Identify the convectional signs and symbols shown in the lower margin of the outer border using a 1:50 000 topographic map found in your school.

So far you have studied that relief features are presented in 1:50 000 topographic maps by contour lines. Topographic features can be easily identified by understanding the distribution of contour lines.

All things built on the physical environment by the intervention of man are called cultural features.

Map 5.1 - A segment of a 1:50 000 topographic map

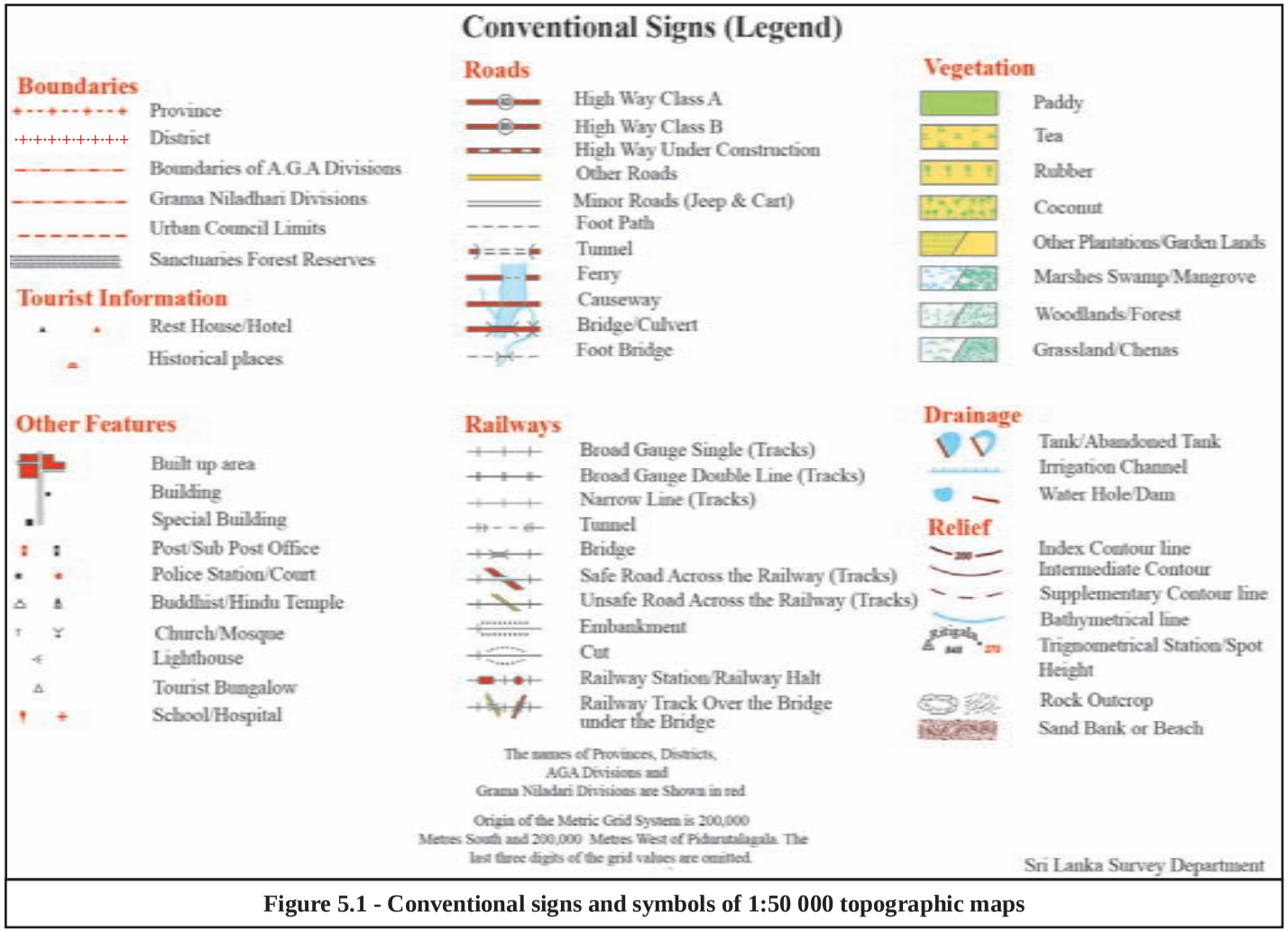


Figure 5.1 - Conventional signs and symbols of 1:50 000 topographic maps

Activities

1. Study the key shown in figure 5.1 well.
2. After studying map 5.1 thoroughly, name the physical and cultural features used from 1 - 20, according to the numbers separately.
3. Draw these features using conventional colours and symbols.

Let us identify physical and cultural features of 1:50,000 topographic map of Sri Lanka by studying a segment of it.

Physical Features

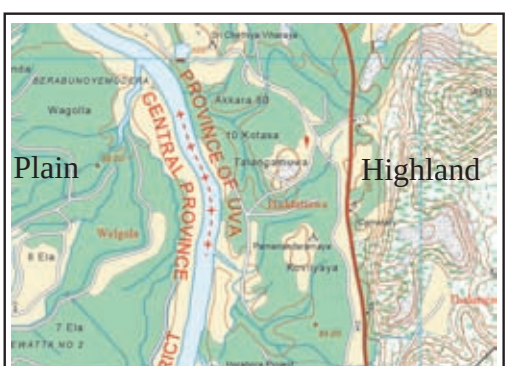
Several selected physical features found in a 1:50 000 topographic maps are shown below.

- Plain
- Highland
- Main river
- Tributary
- River valley
- Island
- Point/ Head
- Bay

Plain - A plain is a flat area on land. A plain in a map can be identified by the widening of the gap among the contour lines. Even in a plain, small higher places are found scattered. Such places can be identified by a spot height. (Figure 5.2)

Highland - Regions located at higher elevation are called highlands. A highland can be identified in a topographic map as contour lines that are distributed close to each other.

Figure 5.1- Plain



Map 5.2 - Plain and highland

River Valley - Elongated low lands located among highlands are called valleys. Main rivers and tributaries flow through valleys.

Main river - Massive water which flows to a lake or to the ocean across an area from a highland is know as a main river.

Tributary - Small water streams from which water is provided to the main river are known as tributary.

Figure 5.3 - River valley

Map 5.3 - River valley

Various topographic features are found in coastal areas too. Islands, point, bay are some of them.

Fig 5.4 - Island, Point and Bay

Island - Small land areas surrounded by the sea are called islands. Many islands are located on the North East coast close to Jaffna peninsula.

Point - Narrow pieces of land that jut out towards the sea are also found in the coastal belt. They are known as heads or points.

Bay - The sea area that indents into land is called a bay.

Figure 5.4 - Island, Point and bay

Cultural features

Several cultural features selected from a 1: 50 000 topographic map are used for studying.

- District Boundary
- Express ways
- Main Roads (A and B Grade)
- Other Roads (Secondary/ Not main)
- Railway Lines
- Paddy, Tea, Coconut, Rubber and Home gardens
- Religious Places
- School, Hospital, Police, and Post Office

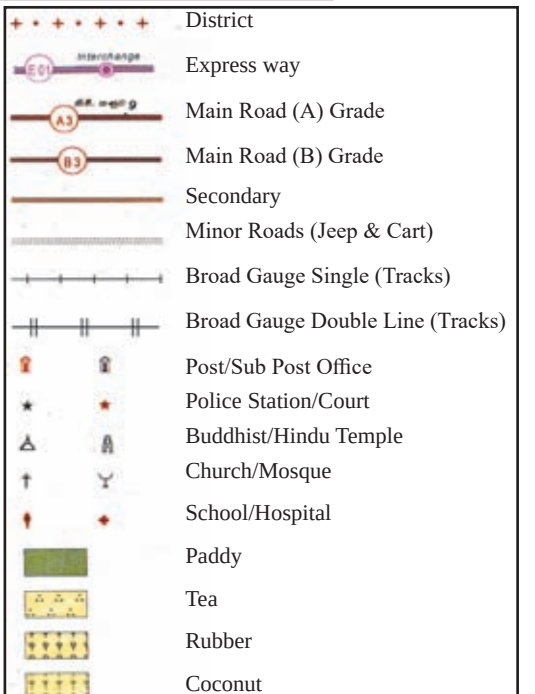


Figure 5.5. - Different cultural features

These cultural features are shown on maps by different colours and symbols.

New map are being printed by the Sri Lanka Survey Department using standard symbols and colours.
Map 5.5 indicates Point Pedro, an extraction of Map no 02, which is completed up to now.
Symbols and colours of these new maps have been altered.

Map 5.5 - Point Pedro - New Map (2017)

The relationship between physical and cultural features

When you read 1: 50 000 topographic maps of Sri Lanka, it is clear that there is a relationship between the physical and cultural features. There is a close relationship between the physical features such as relief and drainage of a region and cultural features such as housing and settlements, land tenure, irrigation system and road network of that particular area. Physical features have been mostly utilized when the administrative boundaries are determined.

- Settlements are widely distributed in plains. Settlements in mountainous regions are distributed in low lands located in between mountain ranges and in valleys.
- The agricultural land use is distributed in accordance with the relief and drainage. This is clear in topographic maps.
- Paddy lands are distributed widely in river valleys in flat lands. They are also distributed as narrow belts along the river valleys in hilly areas.

- Tea cultivation in hilly areas, rubber cultivation on slopes at medium elevation and coconut cultivation in coastal regions and suburbs are seen.
- It is clear that relief has influenced the construction of tanks and irrigation systems. Tanks have been built damming the rivers by constructing bunds at the place where they flow through the gaps in ridges. Water is supplied through the canals constructed following the gradient of the land.
- The physical features have influenced the construction of main roads too. Though the road network runs straightly on flat regions, in a hilly region it runs according to the relief. River valleys and river gaps have been mostly used in road construction.
- When administrative boundaries are decided, it is clear that, they have been based on physical features like rivers and mountain ranges.

Observe the relationship between physical and cultural features using the segments of topographical maps provided.

5.6 and 5.7 - Relationship between physical and cultural features

Activity

Answer the questions based on Map 5.8

1. Name three physical features shown in the map 5.8
2. Name the types of roads which have been mapped out.
3. Name three cultivation of crops that can be seen in the region.
4. What is the administrative boundary separated by the river?
5. Write five sentences indicating the relationship between relief and crop cultivation

Map 5.8 - Segment of 1:50, 000 topographic map

Activity

Across

1. Widely distributed in plains

3. A famous plain in Sri Lanka.

5. The largest water bodies.

7. Row of bushes or small trees

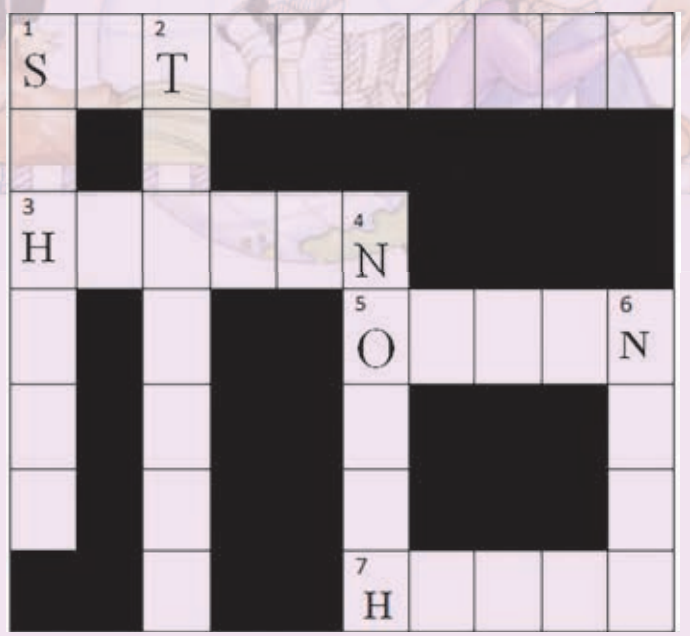
Down

1. Cultural feature shown in key.

2. A method of farming in hilly regions.

4. The direction shown in maps

6. The longest river in the world



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- Physical Geography - Part I - Educational Publications Department

Glossary

• Physical features	- භෞතික ලක්ෂණ	- பௌதிக அம்சங்கள்
• Cultural features	- සංස්කෘතික ලක්ෂණ	- பண்பாட்டு அம்சங்கள்
• Plain	තැනිතලාව	- சமவெளி
• Highland	- උස්බිම	- உயர்நிலம்
• Main river	- ප්‍රධාන ගංගාව	- பிரதான ஆறு
• Tributary	- අතු ගංගාව	- கிளையாறு
• River valley	- ගං නිම්නය	- ஆற்றுப் பள்ளத்தாக்கு
• Island	- දූපත	- தீவு
• District boundary	- දිස්ත්‍රික්ක මායිම	- மாவட்ட எல்லை
• Expressway	- අධිවේගී මාර්ගය	- அதிவேக நெடுஞ்சாலைகள்
• Highways	- මහාමාර්ග	- பெருந்தெருக்கள்