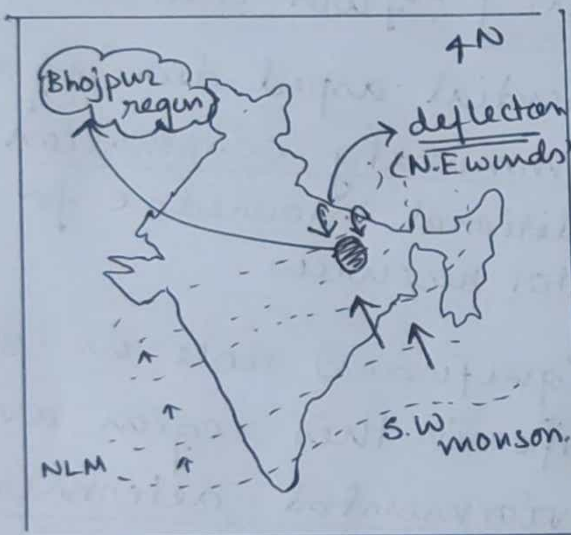


Why is south-west monsoon called "Purvaiya" (easterly) in Bhojpur region? How has the directional seasonal wind system influenced the cultural ethos of this region?

→ Bhojpur region is located in Eastern part of India mainly in Bihar where rain occurs from June to September.

■ Purvaiya (origin)

→ The south west monsoon carries moisture laden winds from Bay of Bengal branch



✓ The winds upon deflection by the Arakan Yoma Range travels north Eastward to India

↓
Hence these winds approach the Bhojpur region from the East, and cause rainfall hence,

known as "Purvaiya" or Easterly

■ Influence on cultural ethos:

- a) Agriculture :
- ✓ primary occupation of this region
 - ✓ crops produced - sugarcane, jute, rice
 - ✓ celebrated by festivals.

- b) Cultural : ✓ Madhushravane celebrated in August (by worshipping snake god)
- c) Cuisine : ✓ deep-fried snacks and hot beverage enjoyed
✓ ghugni commonly taken
- d) Traditional practices : Kajari, a folk song and dance genre of India
- e) Community bonding : shared experience of celebrating monsoon together enhance bonding
- f) Water management : flood control is an essential aspect during monsoon.
✓ community cooperation and traditional knowledge for managing water resources

Purvaiya played a significant role in shaping various aspects of life in this region and gives evidence of environmental determinism. Thus, the monsoon's arrival is eagerly awaited and celebrated as a harbinger of life and prosperity.

■ Comment on the resource potentials of the long coastline of India and highlight the status of natural hazard preparedness in these areas?

→ India's long coastline, stretching approximately 7500 km along Bay of Bengal and Arabian Sea offers a rich array of ^{resource} potentials. This coastline is also vulnerable to various Natural Hazards, which makes preparedness crucial.

■ Resource potential

a) Fishery : ✓ diverse range of fish
✓ Ranks 3rd globally

b) Mineral resource : ✓ mineral oil - Godavari river coast,
✓ salt - Mumbai high salt pan
↳ (3rd) largest producer

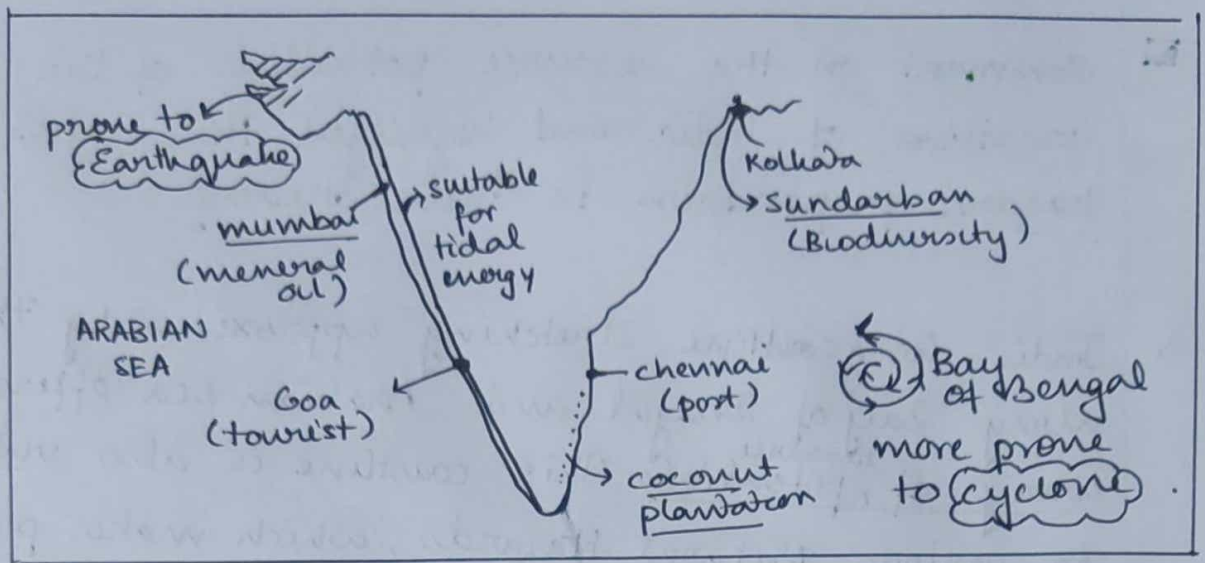
c) Coastal Tourism : ✓ attract domestic ⊕ international tourist
✓ Eg: Goa, Kerala, Andaman & Nicobar
↳ 12 blue flags to Indian beaches

d) Energy : ✓ off shore wind energy : Gulf of Mannar
✓ Tidal energy → western coast (renewable)

e) Ports and shipping : ✓ hosts ports - Chennai, Mumbai, Kolkata
✓ encourage international trade - economic growth

f) Biodiversity and ecosystem : Mangrove and coral reefs →
→ protection against Tsunami

g) Agriculture : suitable for coconut production



■ Status of hazard preparedness:

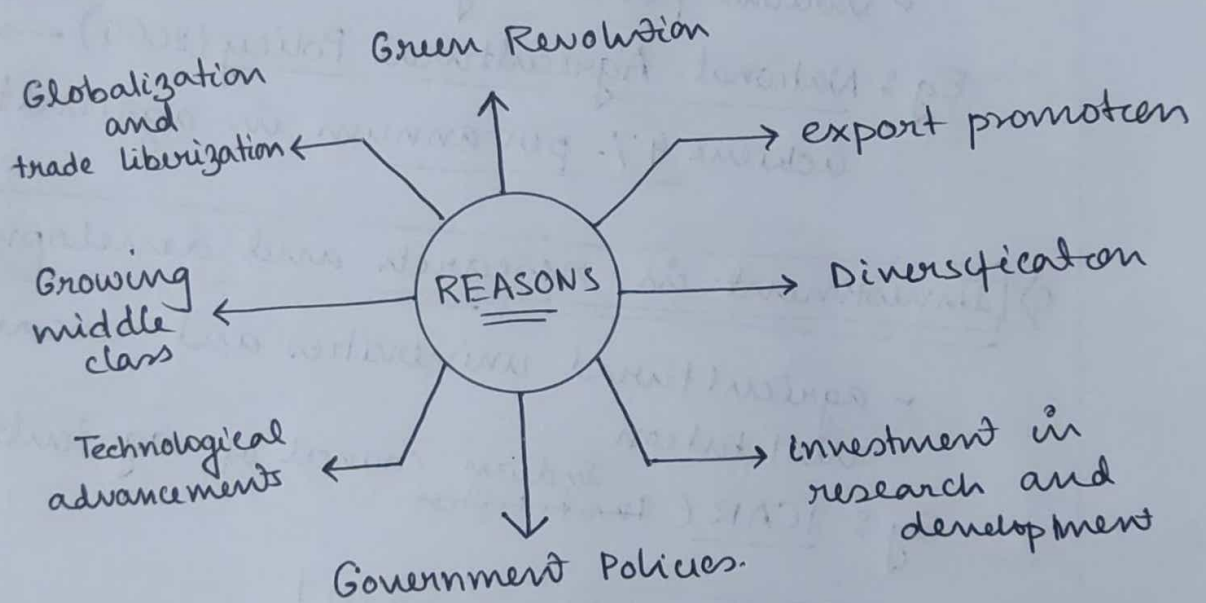
- a) Early warning system : As previous data provided by IMD [Eg: During Amphan cyclone, 2020]
- b) Coastal vulnerability Index : by INCOIS - to keep track of sea level rise
- c) Tsunami mitigation and preparedness : Indian Tsunami early warning center by INCOIS. after 2004 Tsunami
- d) Coastal regulation zone regulation : 2019, to protect coastal environment.
- e) mock drill : for vulnerable communities.
- f) NDRF guidelines : to guide communities
- g) mangrove plantations : to protect against cyclone

Climate variability is increasing the risk of natural hazards. Ongoing efforts are necessary to address the evolving risk and to offer resilient plans by sustainable methods to decrease the risk for vulnerable communities.

- From being a net food importer in 1960's. India has emerged as a net food exporter to the world. Provide reasons.

→ India, today is the largest exporter of Indian Basmati rice and wheat. The increase in production has allowed the country to domestic demand and the surplus is exported.

■ The increase in production is due to some reasons:



○ some, are described below:

a) Green Revolution : began in 1960.

↳ high yielding variety seeds, mechanized farms tools, fertilizers → increased production.

→ 3 phases → 3rd phase ongoing

b) Diversification in agriculture : wide range including, — fruits, vegetables, spices, livestock and

so on.

c) Globalization and trade liberalization :

- ✓ Indian economy opened up to global markets in the 1990's.
- ✓ trade liberalization policies facilitate greater access to international markets
- ✓ enabled farmers to tap global markets

d) Government Policies

- ✓ various policies by Indian gov.

Eg: National Agricultural Policy (2000) → aim, to achieve 4% per annum in agricultural sector

e) Investment in research and development

- ✓ agricultural universities and research institutions

Eg: ICAR (^{Indian Council of Agricultural Research} ~~institution~~)

f) Technological enhancement

- ✓ ~~spring~~ drip irrigation
- ✓ cold storage
- ✓ soil testing
- ✓ hybrid seeds

Regional disparities should be removed and equity should be brought in case of small size farm by various credit methods. India now plays a significant role is global food trade.

Why is the world today confronted with a crisis of availability of and access to freshwater resources?

Freshwater resources are surface water (rivers, lakes etc) and groundwater (between aquifers). The world is confronted with a crisis and availability of and access to fresh water due to some inter connected reasons:

Top 5 water scarcity countries of the world

Rank	Country
1	Qatar
2	Lebanon
3	Israel
4	Iran
5	Jordan

mosty African countries

Reasons for CRISIS :

a) limited freshwater : 3% freshwater (2% is frozen) hence, 1% → accessable

b) Population growth : 4% of world's fresh water and 18% of population — INDIA

c) Over extraction : over exploitation, ARAL LAKE Asia reduced 90%.

d) Agriculture : uses 70% of global fresh water, out of which 44% wasted.

e) climate change : Hindu kush → loss 80% of total glacier by this century

f) alteration in precipitation pattern

g) uneven distribution : uneven access to freshwater

h) Pollution : runoff and industrial waste

■ CRISIS OF ACCESS

a) Geographical causes : African countries → poor access to freshwater

b) Political factors : Kaveri water dispute between three states

c) Poor infrastructure : only 6% of rain water stored

d) effect of Natural Disaster : Dewatering after Bhuj Earthquake, 2001

The global freshwater crisis is a multifaceted challenge that requires coordinated efforts at local, national and international levels to ensure access to clean and safe drinking water.

- Identify and discuss the causes factors responsible for diversity of Natural vegetation in India. Assess the significance of wildlife sanctuaries in rainforest regions of India?

→ India has a vast and varied landscape, starting with Himalayan mountains in the North to peninsular plateau in the south, along with its diversified climatic conditions (acc. to Koppen) contributes to the diversity of vegetation (natural)

- a) climate : Temp and precipitation
- ✓ alpine climate : Himalayas (temperate forests)
 - ✓ Tropical wet evergreen forests - western ghats
 - ✓ desert : tropical thorn forests

- b) soil : marshy, delta soil - mangrove
sandy soil - cacti, thorny bushes

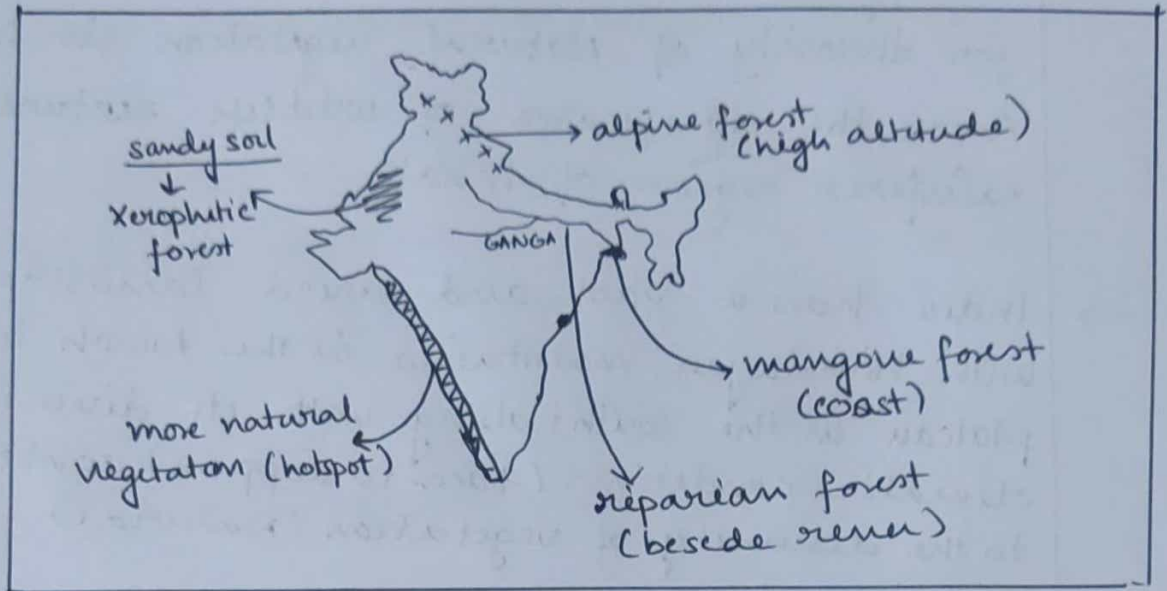
- c) waterbodies : coastal - mangrove forest
 river - riparian forest

- d) altitude : montane forest - pine, deodar
lower elevation - sal, teak

- e) Geographical Feature : western ghat more diversified forest than Eastern ghat

- f) Photoperiod : Larkspur - long day light (S. Himalaya slope)
Cosmos - shorter day light

g) Alien species : Eg: Parthenium during British colonisation



■ Significance (rainforests)

- a) Biodiversity conservation : home for various species.
Eg: Periyar Wildlife sanctuary - Kerala (Asian elephant)
- b) Climate change mitigation : rainforests acts as carbon sink. Eg: western ghats
- c) Eco-tourism : Eg: Sundarban (Royal Bengal Tiger)
- f) soil conservation : Bhimashankar Wildlife sanctuary, Maharashtra
- g) habitat preservation : of various species, maintain food web

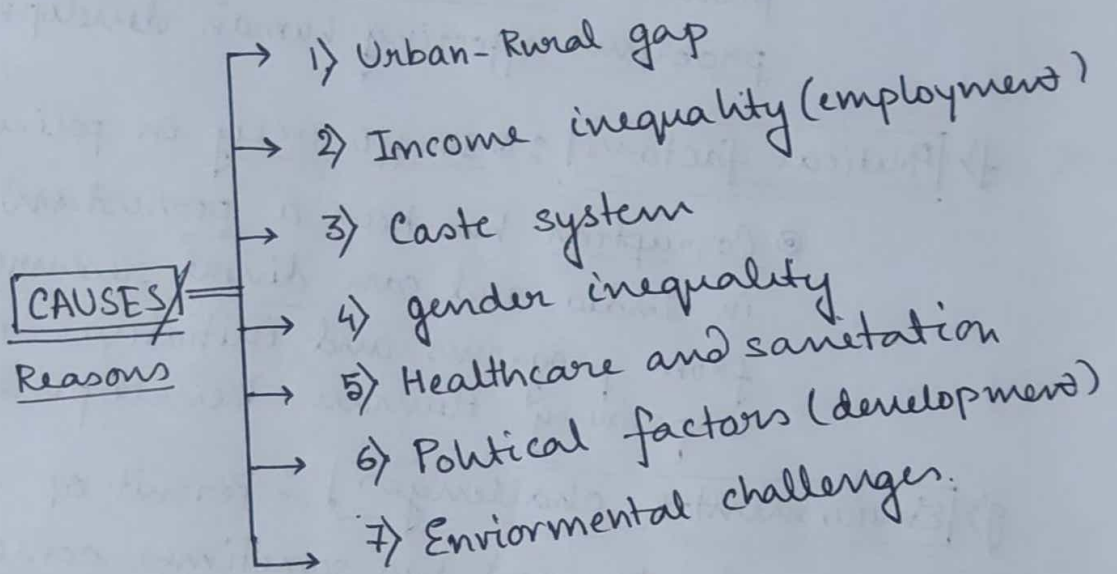
Others → cultural preservation, ecosystem services, water conservation, research work.

The diversity of natural vegetation is due to various interconnected factors. Wildlife sanctuaries in rainforests is essential for the wellbeing of both local ecosystems and the planet as a whole.

■ Why did human development fail to keep pace with economic development in India?

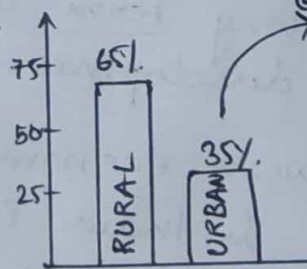
→ The divergence between human development and economic development in India is a complex and multifaceted issue with various historical, social, political and economic dimensions.

India ranks 5th in case of nominal GDP but ranks 132 in Human Development Index.



These are described as follows:

a) Urban-Rural Gap :



⊙ 35% population have high per-capita income

⊙ more development in urban areas.
Eg: Kolkata, Mumbai

b) Income inequality : India, has high economic inequality. Economic growth not reached to every segment
Eg: 45% of the population engaged in agriculture, contribute 15% GDP only

c) caste system : since history → limiting opportunities hence, hindered development for people belonging to lower caste and scheduled tribes.

d) Gender inequality : directly influence human development and literacy rates. India ranks 127 out of 147 countries

e) Healthcare and sanitation : In spite of economic growth, equity in case of healthcare and sanitation is not maintained. Rural areas prone to child mortality and various health problems effecting human development.

f) Political factors :
⊙ Inefficiency in policy implementation
⊙ Corruption has been a persistant challenge in India and can divert resources away from programs and initiatives aimed at improving Human Development.

g) Environmental challenges : Pursuit of economic development has sometimes comes at the expense of enviormental sustainability having long term consequences on human development.

The gap between economic development and human development in India is a complex and ongoing challenge. Measures such as Investment in education, Enhance healthcare access, promote gender inequality, rural development, ~~promote~~ in sustainable measures should be taken to dissolve the gap between them.

■ Discuss the consequences of climate change on food security in tropical countries?

→ Climate change has far reaching consequences for food security in tropical countries ($23\frac{1}{2}^{\circ}\text{N}$ - $23\frac{1}{2}^{\circ}\text{S}$) where most of the population is dependent on agriculture, but they have limited scope and resources to deal with climate change.

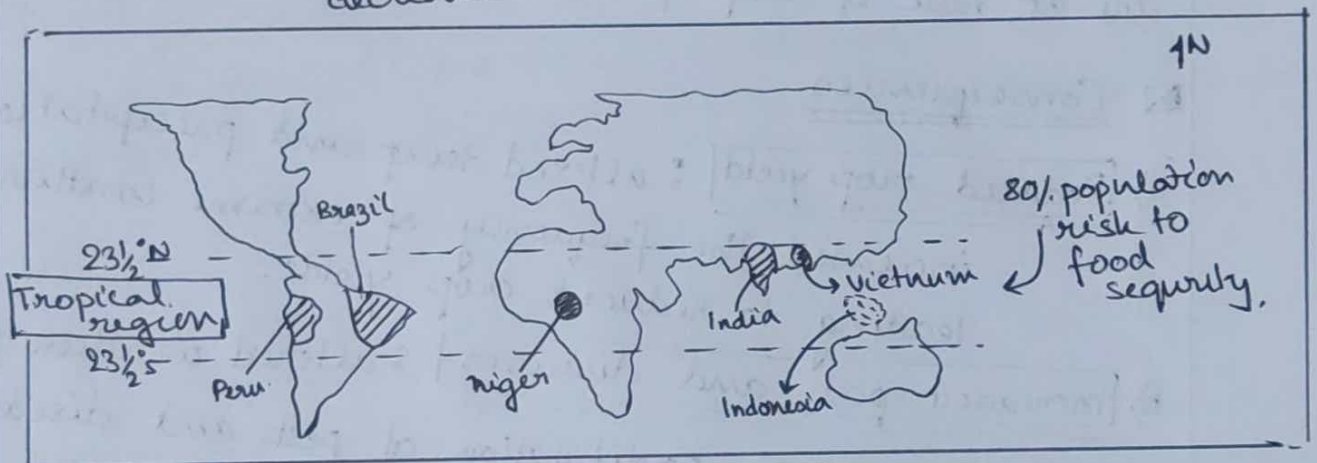
80% of global population lie in the tropical region who are at risk of crop failure

■ Consequences

- a) Reduced crop yield : altered temp and precipitation increased the frequency of extreme weather events leading to reduced crop yields.
- b) Increased pests and diseases : altered weather patterns encourage proliferation of pests and diseases that affect crops and livestock.
- c) Water scarcity : Tropical region agriculture is highly dependable on rain~~to~~ water. Change in precipitation affects crop yields causing a negative effect on food security.
- d) Shifts in crop suitability : generally effects the traditional and indigenous crops to decrease production.
- e) Reduced fishery yields : Ocean acidification, changing currents, warming waters disrupt fishery ecosystem leading to decreased fish stock.
- f) Sea level rise : salt water intrusion in agriculture land.

Effect on various tropical countries:-

- a) **BRAZIL** : Drought and reduced crop yields impacted corn and beans production.
- b) **INDIA** : Heatwaves effect in reducing wheat and rice yields 2022, bann on wheat exports
- c) **VIETNAM** : sea level rise, impact on rice and shrimp cultivation.
- d) **NIGERIA** : changing rainfall pattern, droughts - decreased millet production



- e) **INDONESIA** : altered climate, tea and coffee production reduced.
- f) **BANGLADESH** : sea level rise, salt water intrusion reduced rice cultivation.
- g) **PERU** : melting of glacier, affecting water supply.

To minimise the effect of climate change on food security various ^{sustainable} measures are to be adopted, such as drought resistant crop varieties, improving water management systems and various ways of international cooperated is crucial to mitigate the global impacts of climate change and ensure food security.

How are Fjords formed? Why do they constitute some of the most picturesque areas of the world?

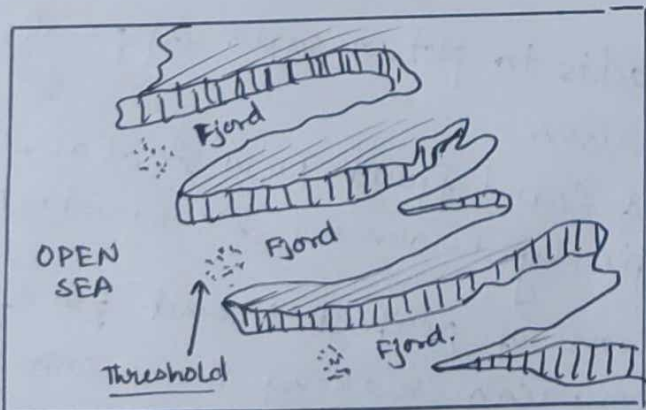
→ Fjords also known as Fjords are primarily found in high altitude coastal regions such as Norway, New Zealand, Canada, Chile and Iceland. They are characterized by narrow and are bordered by steep-sided walls and are somewhat shallow towards the mouth, and are known for their breathtaking natural beauty.

Formation :

They are formed due to a combination of glacial, geological and oceanographic processes. (erosional landform)

a) Glacial activity : vast ice sheets of last ice age flowed down the valleys and carved out deep channels in the landscape as they moved

b) U-shaped valleys : Glacier erosion creates U-shaped valley. As glaciers advance and retreat, they scrape and pluck rocks and sediments, deepening and widening the valleys they occupy.



c) Glacier Retreat : Due to climate change the glacier begins to melt and withdraw from the valleys they have carved.

d) Sea-level rise : when sea water enters the U-shaped

valley, may also be due to tidal influence they tend to shape the fjord's topography

Picturesque areas of the world:

- a) Unique geological features: Unique landscape characterise by steep, towering cliffs on either side, with deep narrow waterways in between.
- b) Majestic mountains: surrounded by towering mountains creating a stunning backdrop.
Eg: Milford Sound, New Zealand (Alps)
- c) Waterfalls: home for many waterfalls.
Eg: seven sisters waterfall, Norway
- d) Rich biodiversity: home for various ecosystem
Eg: Doubtful sound in New Zealand
- e) Cultural heritage: Sognefjord in Norway, UNESCO certified world heritage site
- f) Recreation and exploration: for adventure opportunities
Eg: Chile's Torres de Paine National Park
- g) Remote location: adds to picturesque appeal and attracts tourism.
Eg: Milford Sound fjord, New Zealand (unofficially known as 8th wonder)

Fjords are a combination of perfect blend of geological wonders, and diverse ecosystems, making them some of the most picturesque areas in the world. ~~then~~ creating opportunities for exploration and adventure.