YEAR 10 GEOGRAPHY – TERM 3&4

Tropical Rainforests: Case Study Malaysia

Malaysia is a LIC country is south-east Asia. 67% of Malaysia is a tropical rainforest with 18% of it not being interfered with. However , Malaysia has the fastest rate of deforestation compared to anywhere in the world

Adaptations to the rainforest

Orangutans	Large arms to swing & support in the tree canopy.
Drip Tips	Allows heavy rain to **run off leaves easily**.
Lianas & Vines	**Climbs** trees to reach sunlight at canopy.

Rainforest inhabitants

Many tribes have developed sustainable ways of survival. The rainforest provides inhabitants with…
- **Food** through hunting and gathering.
- **Natural medicines** from forest plants.
- **Homes and boats** from forest wood.

Issues related to biodiversity

Why are there high rates of biodiversity?

- **Warm and wet climate** encourages a wide range of vegetation to grow.
- There is **rapid recycling of nutrients** to speed plant growth.
- Most of the rainforest is **untouched.**

Main issues with biodiversity decline

- **Keystone species** (a species that are important to other species) are extremely important in the rainforest ecosystem. Humans are threatening these vital components.
- **Decline in species** could cause tribes to be unable to survive.
- **Plants** & **animals** may become **extinct.**
- Key medical **plants** may become **extinct.**

Impacts of deforestation

Economic development

+ Mining, farming and logging creates employment and tax income for government.
+ Products such as palm oil provide valuable income for countries.
- The loss of biodiversity will reduce tourism.

Soil erosion

- Once the land is **exposed by deforestation,** the soil is more **vulnerable to rain**.
- With **no roots to bind soil together**, soil can easily **wash away.**

Climate Change

-When rainforests are cut down, the climate becomes **drier.**
-Trees are **carbon 'sinks'**. With greater deforestation comes more greenhouse emissions in the atmosphere.
-When trees are burnt, they **release more carbon in the atmosphere**. This will enhance the **greenhouse effect.**

What are the causes of deforestation?

Logging

- Most widely reported cause of destructions to biodiversity.
- Timber is harvested to create **commercial items** such as furniture and paper.
- **Violent confrontation** between indigenous tribes and logging companies.

Agriculture

- Large scale **'slash and burn'** of land for ranches and palm oil.
- Increases **carbon emission**.
- **River saltation** and **soil erosion** increasing due to the large areas of **exposed land.**
- Increase in **palm oil** is making the **soil infertile**.

Mineral Extraction

- **Precious metals** are found in the rainforest.
- Areas **mined** can experience **soil and water contamination**.
- **Indigenous people** are becoming **displaced** from their land due to roads being built to transport products.

Tourism

- **Mass tourism** is resulting in the building of hotels in extremely **vulnerable areas**.
- Lead to **negative relationship** between the government and indigenous tribes
- Tourism has **exposed animals** to human **diseases.**

Energy Development

- The **high rainfall** creates ideal conditions for **hydro-electric power (HEP).**
- The **Bakun Dam** in Malaysia is key for creating energy in this developing country, however, both people and environment have suffered.

Road Building

- **Roads** are needed to bring supplies and **provide access** to new mining areas, settlements and energy projects.
- In Malaysia, logging companies use an **extensive network of roads** for heavy machinery and to transport wood.

Sustainability for the Rainforest

Uncontrolled and unchecked exploitation can cause irreversible damage such as loss of biodiversity, soil erosion and climate change.

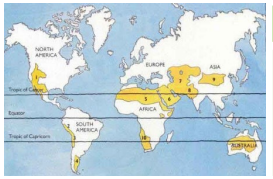
Possible strategies include:
- **Agro-forestry** - Growing trees and crops at the same time. It prevents soil erosion and the crops benefit from the nutrients.
- **Selective logging** - Trees are only felled when they reach a particular height.
- **Education** - Ensuring those people understand the consequences of deforestation
- **Afforestation** - If trees are cut down, they are replaced.
- **Forest reserves** - Areas protected from exploitation.
- **Ecotourism** - tourism that promotes the environments & conservation

Hot Desert: Case Study Thar Desert – India/Pakistan

The Thar Desert is located on the border between India and Pakistan in Southern Asia. With India soon becoming the most populated country in the world in the next five years. With this, more people will plan to live in the desert.

Distribution of the world's hot deserts

Most of the world's hot deserts are found in the **subtropics** between **20 degrees and 30 degrees north & south** of the Equator. The **Tropics of Cancer and Capricorn** run through most of the worlds major deserts.



Major characteristics of hot deserts

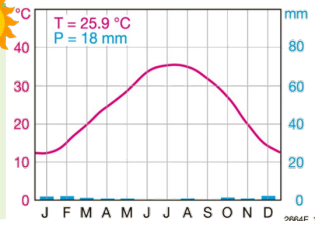
- **Aridity** – hot deserts are extremely dry, with annual rainfall below **250 mm**.
- **Heat** – hot deserts rise over **40 degrees.**
- **Landscapes** – Some places have dunes, but most are **rocky** with **thorny bushes.**

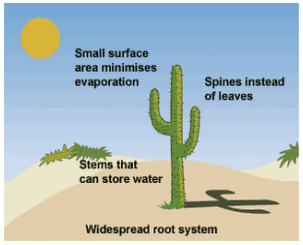
Hot Deserts inhabitants

- People often live in large **open tents** to **keep cool.**
- Food is often **cooked** slowly in the **warm sandy soil.**
- **Head scarves** are worn by men to provide **protection from the Sun.**

Climate of Hot Deserts

- **Very little rainfall** with less than **250 mm per year.**
- It might only **rain once every two to three years.**
- Temperatures are **hot in the day** (45 °C) but are **cold at night** due to little cloud cover (5 °C).
- In winter, deserts can sometimes receive occasional frost and snow.





Adaptations to the desert

Cactus	• **Large roots** to absorb water soon after rainfall. • **Needles** instead of leaves to reduce surface area and therefore **transpiration**.
Camels	• Hump for storing **fat (NOT water).** • **Wide feet** for walking on sand. • **Long eyelashes** to protect from sand.

Desert Interdependence

Different parts of the hot desert ecosystem **are closely linked together and depend on each other**, especially in a such a harsh environment.

Opportunities and challenges in the Hot desert

Opportunities

- **There are valuable minerals for industries and construction.**
- **Energy resources such as coal and oil can be found in the Thar desert.**
- **Great opportunities for renewable energy such as solar power at Bhaleri.**
- **Thar desert has attracted tourists, especially during festivals.**

Challenges

- **The extreme heat makes it difficult to work outside for very long.**
- **High evaporation rates from irrigation canals and farmland.**
- **Water supplies are limited, creating problems for the increasing number of people moving into area.**
- **Access through the desert is tricky as roads are difficult to build and maintain.**

Causes of Desertification

Desertification means the turning of semi-arid areas (or drylands) into deserts.

Climate Change
Reduced rainfall and rising temperatures have meant less water for plants.

Fuel Wood
People rely on wood for fuel. This removal of trees causes the soil to be exposed.

Overgrazing
Too many animals mean plants are eaten faster than they can grow back. Causing soil erosion.

Over-Cultivation
If crops are grown in the same areas too often, nutrients in the soil will be used up causing soil erosion.

Population Growth
A growing population puts pressure on the land leading to more deforestation, overgrazing and over-cultivation.

Strategies to reduce Desertification

- **Water management** - growing crops that don't need much water.
- **Tree Planting** - trees can act as windbreakers to protect the soil from wind and soil erosion.
- **Soil Management** - leaving areas of land to rest and recover lost nutrients.
- **Technology** – using less expensive, sustainable materials for people to maintain. i.e. sand fences, terraces to stabilise soil and solar cookers to reduce deforestation.

Knowledge Questions on tropical rainforests

1. What is a tropical rainforest?
2. Name one adaptation an animal has made in the rainforest
3. Name one adaptation a plant has made in the rainforest
4. Why is biodiversity on the decline?
5. What is logging?
6. What is one cause of deforestation in the rainforest?
7. Explain how climate change is affecting the rainforest
8. What does HEP stand for?
9. What is sustainability?
10. What is being done in the rainforest to make it more sustainable?

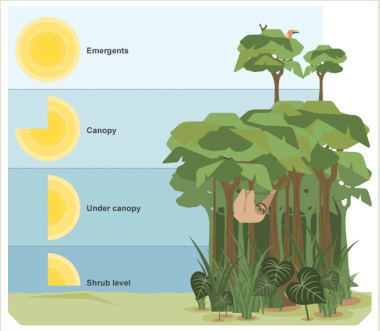
Knowledge Questions on hot deserts

1. What is a desert?
2. Where is the Thar desert located?
3. Name 2 characteristics of Hot deserts
4. How have cactus adapted in the desert?
5. How have camels adapted in the desert?
6. Give two opportunities in the desert
7. Give two challenges in the desert
8. Explain two causes of desertification
9. How does soil management help reduce desertification?
10. How does water management help reduce desertification?

Tasks on tropical rainforests

- Create an information poster about the characteristics of the tropical rainforests. Make sure to include the wide range of animals and plants that can be found there.
- Using the image of the layers of the rainforest research why each one is unique.

What happens in each layer?
What animals live there?
What adaptations have the plants had to make?

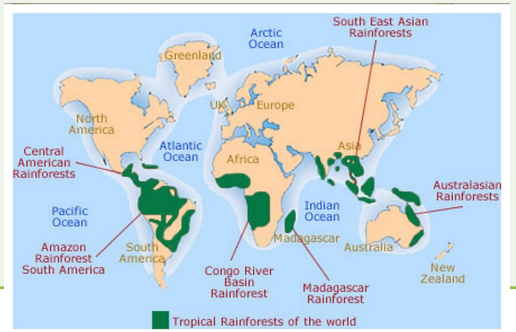


Tasks on hot deserts

- Research the Thar desert and create a fact file on it. What animals and plants are there? Where is it located? Is desertification happening there?
- Type the following link into a search engine. Watch the video on characteristics of the deserts and make notes. www.youtube.com/watch?v=2QdlF6Ld1oc
- Make a key words bank of the key words from last term on tropical rainforests and this term on hot deserts

Exam questions on tropical rainforests

- Give on economic advantage of deforestation in the rainforest (1 mark)
- Identify one abiotic part of the rainforest (1 mark)
- Describe the global distribution of tropical rainforests using the figure below (2 marks)



- Using a named example, explain How they are trying the make the Rainforest more sustainable (6 marks)

Exam questions on hot deserts

- State one characteristic of a hot desert climate (1 mark)
- Explain one adaptation of a hot desert animal (2 marks)
- For a hot desert you have studied, evaluate the effectiveness of strategies used to reduce desertification (8 marks)