

Pre-Release Booklet Glossary

Humidity – A measure of the amount of moisture in the air.	Micro-organisms – A very small living thing which you can only see if you use a microscope.	Ecosystem – A community of plants and animals that interact with each other and their physical environment.	Decay – Gradually destroyed by natural processes.	Adapted – Become adjusted to new conditions.	Biomass – Renewable organic materials, such as wood, agricultural crops or wastes, especially when used as a source of fuel or energy.
Hectare – A metric unit of square measure, equal to 100 acres.	Food web – A complex hierarchy of plants and animals relying on each other for food.	Global carbon balance – the balance of exchange between the four carbon reservoirs.	Evolution - the process by which different kinds of living organism are believed to have developed from earlier forms during the history of the earth.	Global carbon sink - a forest, ocean, or other natural environment viewed in terms of its ability to absorb carbon dioxide from the atmosphere.	Climate regulator – Rainforests act as a way of controlling and maintaining our climatic conditions.
Erosion – Wearing away and removal of material by a moving force.	Industrial products - Industrial goods are any goods that are bought and used for industrial and business use	Sustainability – Actions that meets the needs of the present without reducing the ability of future generations to meet their needs.	Pharmaceutical – Relating to medicinal drugs, or their preparation, use, or sale.	Deforestation – The cutting down and removal of forest.	Exploitation - the action of making use of and benefiting from resources.
Living conditions - the circumstances affecting the way in which people live, especially with regard to their well-being	Conserved - protect (something, especially something of environmental or cultural importance) from harm or destruction.	Living standards - the quality of housing, material comfort, and wealth experienced by an individual or group.	Acres – Unit of land area, approximately 4,047 m <sup>2</sup> .	Indigenous - originating or occurring naturally in a particular place; native.	World Bank - an international financial institution that provides loans to countries of the world for capital projects
Logging – The business of cutting down trees and transporting the logs to sawmills.	Mining - the process or industry of obtaining coal or other minerals from a mine.	Agriculture - the science or practice of cutting down trees, including cultivation of the soil for the growing of crops and the rearing of animals to provide food, wool, and other products.	Sustainable management - the application of sustainable practices in the categories of businesses, agriculture, society, environment, and personal life by managing them in a way that will benefit current generations and future generations.	Urban - relating to or characteristic of a town or city.	Rural - relating to or characteristic of the countryside rather than the town.
Middle Income - defined as having a per capita gross national income of US\$1,026 to \$12,475 (2011) are a diverse group by size, population, and income level.	Trade corridors - streams of products, services, and information moving within and through communities in geographic patterns	National Park - an area of countryside, or occasionally sea or fresh water, protected by the state for the enjoyment of the general public or the preservation of wildlife.	Biodiverse - (of a habitat or region) having a high level of biodiversity.	Export - send (goods or services) to another country for sale.	Economic - (of a subject) considered in relation to trade, industry, and the creation of wealth.
Environmental - relating to the natural world and the impact of human activity on its condition.	Social - relating to society or its organization (impact on people and/or communities).	Gross National Income (GNI) - is the sum of a nation's Gross Domestic Product and net income it receives from overseas	Infant mortality - the death of children under the age of one year.	Access to sanitation - the provision of clean drinking water and adequate sewage disposal.	Food insecurity – Being without reliable access to enough, affordable, nutritious food.

1. Tropical rainforests

Tropical rainforests cover approximately 6% of the earth's surface and are found near the Equator. Although tropical rainforests only cover a relatively small proportion of the earth's surface they support the largest concentration of plant and animal species on the earth.

FIGURE 1 MAP OF DISTRIBUTION OF TRF



They are generally defined as hot and wet with no real seasonal temperature differences and high annual rainfall. There are variations in the pattern of rainfall across the year but a common characteristic is the high level of humidity which provides ideal conditions for the growth of micro-organisms, an important part of the rainforest ecosystem.

The hot, moist conditions create ideal growing conditions so plants can grow quickly and the high rates of decay return minerals to the soil. These minerals are rapidly absorbed by the plants or washed out by the rainfall, so soils are often poor. Most of the energy is stored in the plants and many have adapted to live successfully within the rainforest.

It is thought that rainforests have the highest biomass of any ecosystem and contain over 60% of the world's biodiversity, being home to over 15 million different species of plants and animals, including over half the world's flowering plants. The vast range of plant life creates the ideal environment for animals to thrive. In the Amazon rainforest it is estimated that on average one hectare of land contains 1500 species of fish, 2000 bird species and over 30,000 species of insect. All of the plant and animal life forms a complex food web, depending on each other to survive.



2. The structure of the rainforest

**Emergent:** A small number of trees break through the general level of the forest, reaching heights of over 30 metres.

**Canopy:** Continuous, dense tree cover protects the ground from heavy rainfall and reduces the amount of light to areas below.

**Understorey:** Woody plants and shrubs grow in the humid, calm conditions with limited sunlight.

**Ground layer:** Largely made up of decomposed material broken down by the hot, humid conditions. This level consists of scattered plants and fungi, used by insects as a source of food.

Over 50 million years of plant and animal species evolution has created a huge diversity of species. It is estimated that over 10 species are being lost every day due to rainforest destruction.

- They act as a global carbon sink and a climate regulator, and also help to reduce local risks of erosion and flooding.
- They provide a wide range of local foods and industrial products, including fibres, resins, dyes and rubber.
- They are home to over a thousand indigenous tribes which depend on the rainforest for their survival. These people have learned to live sustainably within the rainforest over hundred of years.



3. The importance of the tropical rainforests

The rainforest is important for worldwide health. It is a pharmaceutical wonderland providing necessary ingredients to lead healthy lives and cure disease.

Medicines from rainforest animals:

- Bat – saliva helps prevent heart attacks
- Leech – saliva dissolves blood clots in humans
- Frog – secretions treat infections, mental illnesses and HIV.



Medicines from rainforest plants:

- Vincristine/Vinblastine – from Rosy periwinkle, used to treat Leukaemia and Hodgkin's disease
- Quinine – from the Cinchona Tree, used to treat Malaria
- Novocaine – from the Coca plant, used as a local anaesthetic.
- Cortisone – from Wild Yarns, used in birth control pills

Tropical rainforests are both a local and global resource. They are coming under increasing pressure as countries see the exploitation of rainforest resources as a way of earning money in order to improve living conditions in some of the poorest parts of the world. Consequently, these are often a conflict with people who feel that the rainforest should be conserved for future generations.

FIGURE 1 STRUCTURE OF TRF

### 3. Deforestation of tropical rainforests

Peru

Deforestation is a historic problem – people have been deforesting the tropic for thousands of years for timber and farming. However, the rate of deforestation has increased, half the of the world's rainforests have been destroyed in the last 100 years.

FIGURE 2 GRAPH OF FOREST LOSS IN THE AMAZON REGION

It is estimated that 50% of the deforestation of tropical rainforests is a result of illegal activities such as logging, mining and agriculture. These activities create few opportunities for local people and bring no benefit to the government, so they add very little to the wellbeing of the population. In addition, illegal deforestation causes huge amounts of environmental destruction because it is unregulated and ignores any environmental laws.

FIGURE 2 IMAGES OF IMPACTS OF DEFORESTATION

- Middle Income Country
- Ranks 77<sup>th</sup> out of 187 countries on the Human Development index
- 30% of the population live below the national poverty line
- 50% of the population are considered poor
- GNI = \$11.295
- Infant mortality = 19 per 1000 population
- Doctors = 1.1 per 1000 population
- Internet access = 40%
- Access to clean water = 91% urban, 69% rural
- Access to sanitation = 82% urban, 53% rural

Thirty years ago, a wide belt of rainforest circled the earth, covering much of Latin America, south-east Asia and Africa. Today, it is being rapidly replaced by great swathes of palm oil trees and rubber plantations, land cleared for cattle grazing, soya farming, expanding cities, dams and logging.

In 2015, at the Paris Climate, all countries agreed to reduce carbon emissions, and 50 countries who share the world's tropical rainforests promised to crack down on illegal forestry and restore and replant millions of acres of forest by 2030.

### 4. Road development in the Peruvian Amazon Impacts



### 5. Should road building in the Peruvian Amazon continue?



#### Positive Impacts ☺

- ✓ Connect major settlements and create opportunities for development in rural areas
- ✓ Will create trade corridors and links with other countries such as Brazil
- ✓ Create new travel opportunities
- ✓ Roads will pass through protected areas to keep environmental damage to a minimum
- ✓ Will help reduce poverty by encouraging the growth of the mining industry
- ✓ Will bring employment
- ✓ Increase export earnings from trade will increase government earning

#### Negative Impacts ☹

- ✗ Puts over a quarter of a million of hectares of rainforest at risk – crossing two indigenous reserves and a National Park
- ✗ Building roads will encourage other activities
- ✗ Significant disruption to wildlife habitats and local communities
- ✗ Nearly half a million people directly depend on the forest for their survival
- ✗ Limited benefits for indigenous people
- ✗ Loss of biodiversity
- ✗ Impact on medicinal supplies

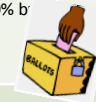
The Stakeholders: How will they be affected & is it worth it?

#### Peruvian Government

- Significant economic benefits – believe this will outweigh environmental impacts
- Open up new trade links with countries such as Brazil
- Rise in employment – leads to more taxes
- Increase export earnings for the government which will give the government the opportunity to invest in social improvements
- Increase in tourism- leads to more income
- Connect major settlements to improve infrastructure
- Development fulfils a government pledge to cut poverty by 50% by 2021
- Significant government investment

#### Indigenous communities

- Loss of biodiversity and habitats
- Limited resources for the half a million people who directly depend on the forest for their survival
- Destruction to local communities
- Change way of life
- Improved living conditions such as access to water, sanitation and doctors (if wanted)



#### Alternatives to the road?

- Ecotourism
- Selective logging and replanting
- Conservation and education
- International agreements
- Debt reduction
- Trade agreements
- Alternative forms of transport



#### Local people

- Provide employment opportunities
- Improved living conditions such as access to water, sanitation and doctors
- Improved transport infrastructure
- Encourage growth of local industry/businesses such as the mining industry
- Less local people living in poverty

#### Conservation groups

- Concerns over the impact on indigenous communities
- Concerns over the loss of biodiversity
- Amazon Conservation Association has shown that when a new highway is built through the rainforest it encourages a number of other activities – resulting in a band of land up to 10 km wide being lost



#### Local businesses

- Improved infrastructure
- Multiplier effect
- Creation of trade corridors and links with other countries such as Brazil
- Growth of tourism
- Easier exports



#### Making your mind up!

It's likely that the 9 mark question will be something along the lines of:

Should the planned road developments in the Peruvian Amazon go ahead? Justify your choice

- Tick the box of your choice: Yes or No - you can explain in the answer if you are not 100% yes or no & this is probably good!
- Use evidence from the resource booklet and your own knowledge to explain your decision. (9 marks + 3 SPAG)

It would be an excellent idea to plan your answer for this question before you go into the exam.

Good luck ☺

