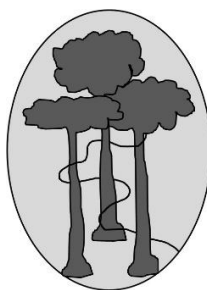


## Human Activity and Ecosystem Processes / Ecosystems Under Threat

# Managing Tropical Rainforest



### Teacher's notes

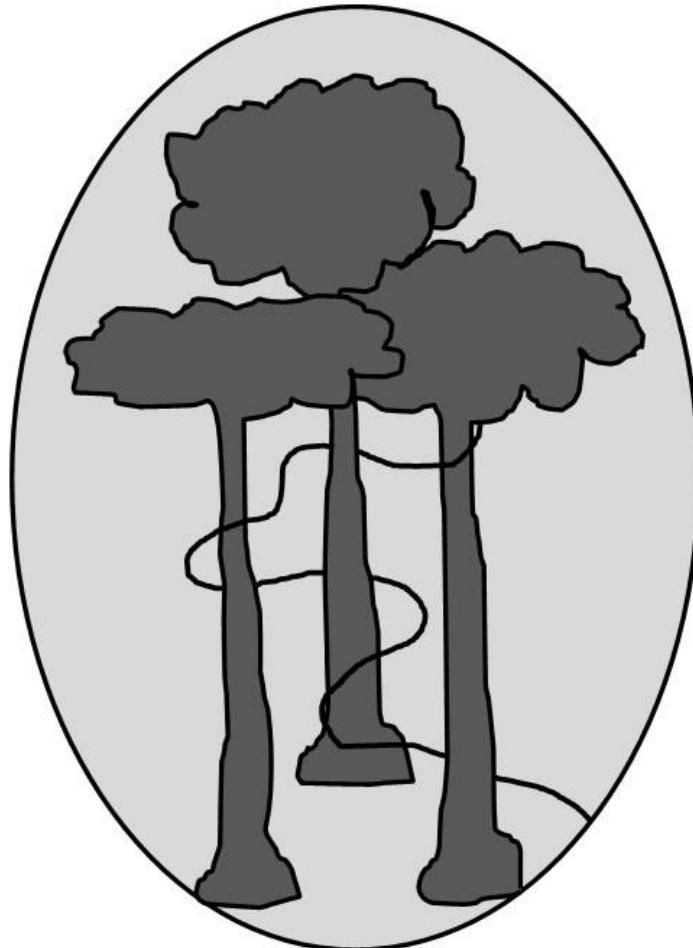
This resource supports teaching the following requirements of the specifications.

WJEC GCSE Geography Specification	
Key Question	
5.4.1	How do people use ecosystems and environments?
5.4.3	How can ecosystems be managed sustainably?

This resource is based on the Korup Project in Cameroon. All the data relates to Cameroon in central West Africa where many of the suggested management techniques have been used to protect the rainforest. As the national park was first established in 1986, it is possible to see the results of the management. The final page of the resource illustrates the successes and failures of the actual Korup project. This can help students understand how successful their plans proposed in part C may be in the future.

Human Activity and Ecosystem Processes /  
Ecosystems Under Threat

**Managing Tropical Rainforest**



Part A: Background information about the rainforest area

Part B: What are the possible management techniques for the forest area?

Part C: What is the best method of management for the rainforest?

## Part A – Background Information

A country in central West Africa still contains some rainforests in pristine condition as it has not been greatly affected by large-scale human activity. With the rapid destruction of rainforest in other parts of Africa, the government of the country wishes to protect and manage an area of the forest. At the end of the year 2000 dense forest covered 170,000 km<sup>2</sup> of the country. The area to be protected would be 1,260 km<sup>2</sup>.

Whilst the country exports products such as oil, bauxite, cocoa and coffee, the main economic activity is agriculture which employs over 70% of the labour force. In the area where the government wishes to protect the forest, the main economic activity for the villagers is hunting. This provides a source of food and also half of the villages income. The next most important activity is collecting fruit and nuts to sell and use as a supply of food.

### Why protect this area of forest?

- 1) The forest has been virtually untouched by human activity because;
  - a) The poor quality soils and high rainfall means the area is not suitable for arable farming.
  - b) The terrain is rugged and the area is inaccessible which means it is of little interest to loggers. Also, the types of trees do not have a high commercial value.
- 2) The forest is one of the oldest in the world and has a high biodiversity. There are over 1,100 plant species and over 400 species of tree found there. A number of the plant species are found nowhere else on Earth. Animal life is also diverse. It contains 25% of Africa's primate species and 49% of Africa's perching bird species.

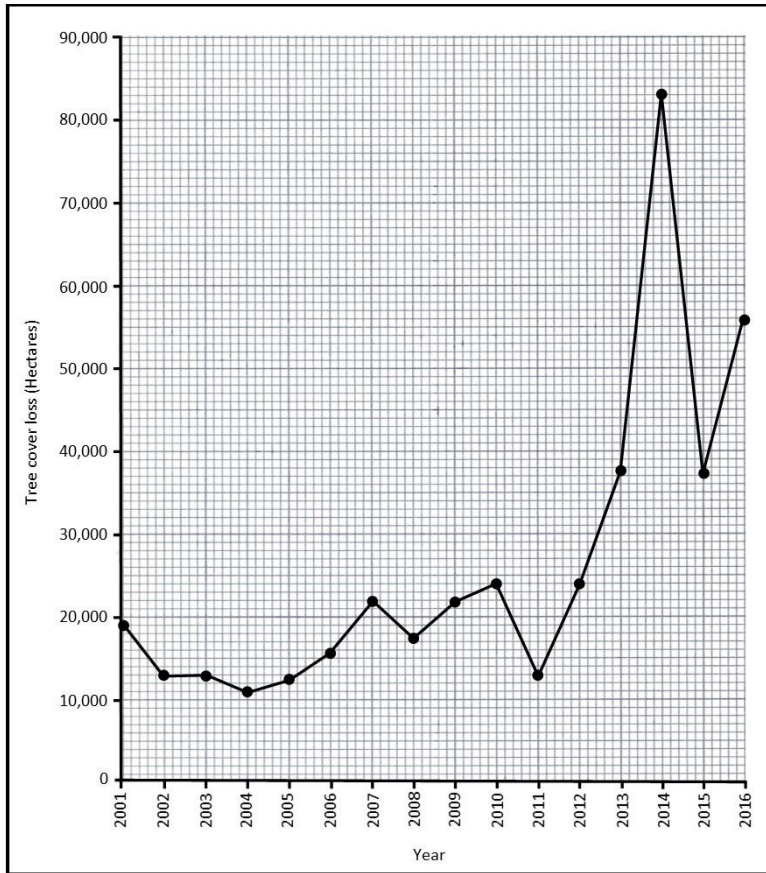
### What is the country like?

- The country is 475,000 km<sup>2</sup> in size (almost twice the size of the UK)
- Population: - 20.2 million
- GDI / person: - US\$ 1,357 (UK GDI / person: - US\$ 41,603)
- Life expectancy: - 57
- Infant mortality (before 1<sup>st</sup> birthday) / 1,000 births: - 55
- Birth rate / 1,000 people: - 36
- Access to clean water: - 75%
- Unemployment rate: - 30%

- 1) Study the information above. Do you think the country should be classified as a high income country (HIC), a newly industrialised country (NIC) or a low income country (LIC)? Give reasons for your answer.
- 2) Use Figure 1 and Table 1 to describe the trends in the amount of forest cover lost since 2001.
- 3) What is the total amount of forest cover lost between 2001 and 2016?
- 4) What is the percentage of forest cover that has been lost since the end of the year 2000? ( 1 km<sup>2</sup> = 100 hectares)

$$\frac{\text{Area of forest lost 2001 – 2016 (hectares)}}{\text{Total forest cover in 2000 (hectares)}} \times 100 = \text{Percentage of forest lost}$$


**Figure 1. Loss of Dense Forest Cover**



Year	Loss (hectares)
2001	19,010
2002	13,007
2003	12,958
2004	11,101
2005	12,460
2006	15,769
2007	21,871
2008	17,371
2009	21,727
2010	24,032
2011	13,315
2012	24,035
2013	37,674
2014	83,361
2015	37,329
2016	55,877

**Part B. What are some possible management techniques for the forest area?**

Below are six methods which have been suggested to help manage the rainforest area.

<p>A. Establish the area as a national park. Build a fence around the 1,260 km<sup>2</sup> protected area and set up guard posts.</p>	<p>B. Relocate the six villages that are in the area to be protected. The 750 people that live in the villages would be moved to an area which is away from the main area of forest being protected.</p>
<p>C. Ban all hunting (including that which had been allowed previously) within the forest area to be protected. Illegal hunting would be controlled by using local people as guards.</p>	<p>D. Create a buffer zone. This would be an area around the main part of the forest where some development would be allowed such as new roads and schools.</p> 
<p>E. Develop education for the local people. Establish a 'Rural Development Advisory Service' to help encourage villagers to grow crops and keep animals so that there is less need to hunt animals for food. Set up workshops to train villagers in new skills such as carpentry.</p>	<p>F. Encourage tourism. This would provide a source of income to the economy as well as employment and business opportunities for the local population.</p>

# GCSE Geography

1) For each of the management techniques in part B, complete the following table.

<b>A. Establish the area as a national park</b>	
<b>Advantages</b>	<b>Disadvantages</b>
<p>How is this a sustainable method of management?</p>	

<b>B. Relocate the six villages in the area</b>	
<b>Advantages</b>	<b>Disadvantages</b>
<p>How is this a sustainable method of management?</p>	

<b>C. Ban all hunting</b>	
<b>Advantages</b>	<b>Disadvantages</b>
<p>How is this a sustainable method of management?</p>	

<b>D. Create a buffer zone around the area to be protected</b>	
<b>Advantages</b>	<b>Disadvantages</b>
<b>How is this a sustainable method of management?</b>	

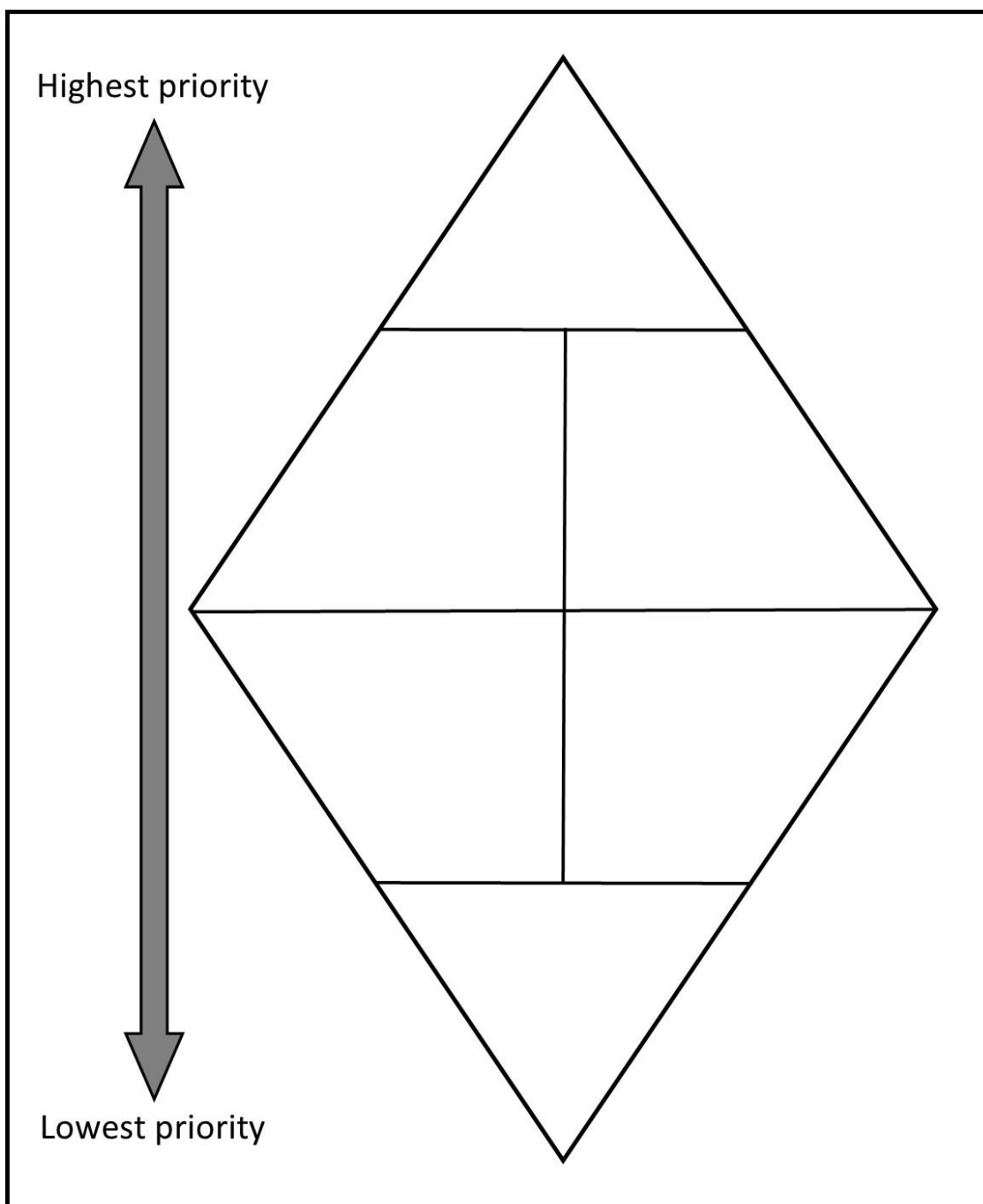
<b>E. Develop education for local villagers</b>	
<b>Advantages</b>	<b>Disadvantages</b>
<b>How is this a sustainable method of management?</b>	

<b>F. Encourage tourism</b>	
<b>Advantages</b>	<b>Disadvantages</b>
<b>How is this a sustainable method of management?</b>	

**Part C. What is the best method of management**

- 1) Complete the diagram (Figure 2) below to show what you consider to be the best way to protect and manage the rainforest area. Place the management techniques you would be most likely to adopt at the top of the diagram. Place those you would give the lowest priority in the lower section.
- 2) Justify your decision.

**Figure 2. Priority of management techniques**



## The Korup Project – Korup National Park: Cameroon, Africa

### Aims of the project

- To conserve the pristine rainforest environment and its biodiversity.
- To encourage scientific research:
  - i) Into forest products that could be of economic use to the local communities;
  - ii) Into tree and crop varieties that could meet the needs of the local communities.
- To provide education to local communities so that they can gain new skills which will help minimise their impact on the ecosystem.
- To develop tourism in the area.



### Success of the Project

- The Korup National Park was set up in 1986. The ecosystem is protected in a way that no other rainforest in the world has managed.
- Funding was given from the World bank, UK, USA and Germany. 15 million euros was spent on the project between 1988 and 2000.
- 6 villages relocated to create true national park status in the area.
- Living Earth's Cameroon Environmental Education Programme set up to train local farmers in sustainable environmental management such as agro-forestry, crop rotation and fruit farming.
- Locals can still hunt and gather fruit in parts of the buffer zone established around the park.
- Tree nurseries were established for local communities.
- Research has been carried out into tree and crop varieties that could be of economic use to local communities.
- Experiments have been carried out into fast growing tree crops to meet the demand for wood for fuel and construction.
- Scientists have discovered 90 chemicals in plants which could be of use to humans in things like medicines.
- Money from ecotourism is an incentive to preserve the ecosystem.

### Failure of the Project

- Local communities were not consulted about the plans and resented being resettled.
- The promised incentives for moving were not always given. The incentives that were used did not change everybody's behaviour about using the ecosystem.
- Local communities felt there were limited financial benefits especially as income was lost from hunting.
- Tourism is still limited in the area:
  - i) No major natural attraction in the area;
  - ii) No large animals as an attraction. The main wildlife attractions are butterflies, birds and plants.
  - iii) The forest is not easily accessible. There is only one road into and out of the forest. The road is often impassable due to mud.

The Cameroon government realises the rainforest is still under threat from commercial logging as well as increasing pressures due to population growth. This is an attempt to enable local communities to co-exist with the forest in a sustainable way. The involvement of communities is a positive approach which helps a sustainable use of the forest as a resource.