

# A fresh look at tropical rainforests

- focus on Africa



A pdf pack to support  
esdgc global learning  
at key stage 3

This pack is published by Cyfanfyd esdgc-schools net in partnership with Size of Wales

It has been developed by a group of teachers

It is available in both Welsh and English

For a copy see [www.cyfanfyd.org.uk](http://www.cyfanfyd.org.uk)



Size of  
Wales  
Maint  
Cymru

[www.sizeofwales.org.uk](http://www.sizeofwales.org.uk)

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# A fresh look at tropical rainforests - focus on Africa

The pack is made up of these pdf materials and a printed set of photographs.  
They are part of an esdgc curriculum project to enhance understanding  
of tropical rainforests and their global significance.

Consultation about these materials in the school year 2011/12 will enable  
teachers to share ideas and experience about esdgc global learning at key stage 3.

To get involved in the process and for copies of the photographs  
please contact [global.learning@esdgc-schools.net](mailto:global.learning@esdgc-schools.net)

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Leigh Tomala, *Monmouthshire PRS*.

We would also like to thank:

All at 'esdgc-schools net' conference workshop, July 2011.

Hannah Scrase and Danielle Johnson, *Size of Wales*.

Edward Parker for advice as well as photos.

Elaine Sinclair, *Pembrokeshire College*.

Barrie Stevens and his team at McLays printers

Liz Thomas, *Cyfanfyd*.



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Photo: Edward Parker



## Introduction ...

Photographs have been chosen as a central stimulus to this fresh look at tropical rainforests because they:

- ❑ enable us to make connections between the variety of complex matters that make up the overall issue of tropical rainforest;
- ❑ enable learners to generate enquiry questions for themselves;
- ❑ start the process of exploring different perspectives;
- ❑ can, at a later stage, be used to help synthesise what has been learnt.

Our work has focused on esdgc and the geography curriculum. It offers enquiry stimulus, investigation frameworks including decision making exercises and approaches to support synthesis. Some of the material has other application for example in the context of Welsh Baccalaureate - Wales, Europe and the World.

Concern about climate change has heightened awareness of the importance of tropical rainforest. **'A fresh look ...'** is about doing the ground work that enables learners to make those connections for themselves ... and engage with the dilemmas involved.

### Consultation process ...

We are seeking feedback about these materials and proposals about other work that could help develop esdgc learning that links the complex realities of global issues with skill development and curriculum learning.



# A Welsh context ...

This material and the photo-pack that supports it has resulted from a partnership between Size of Wales and Cyfanfyd esdgc-schools net working with a teacher group.

The Size of Wales was launched in 2010. Its prime aim is to sustain an area of tropical forest the size of Wales as part of a national response to climate change.

An area the size of Wales is frequently used to measure the rate of forest destruction. The organisation seeks to make *“Wales part of the solution, rather than a measure of the problem”*. This new home grown NGO evolved from the work of the Wales’ Millennium Development Goals Task Force. It responds to the dual challenges of climate change and international poverty reduction.

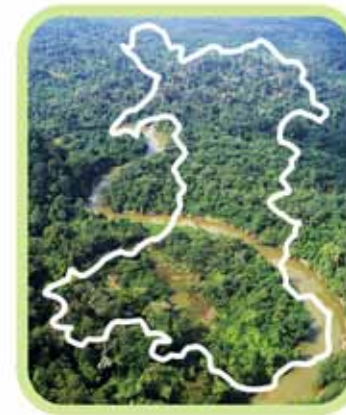
This could be usefully described as an example of Welsh ‘global citizenship’.

The ‘Size of Wales’ is a Welsh NGO, it is backed by the Waterloo Foundation, one of the UK’s most recently formed family foundations, which is based in Wales. It profiles itself ... even in its name using a Welsh identity. It is presented as a distinct Welsh response to climate change. It is therefore, in itself, a ‘case study’ of people in this country being concerned as global citizens and setting up an organisation to tackle a major global issue.

This project complements that work by seeking to engage young learners in understanding the issues that Size of Wales is responding to. It will contribute to the education for sustainable development and global citizenship [ESDGC] work of schools in Wales.

Tropical rainforests have a vital role in the global environment ...

- ▲ What do we know about them?
- ▲ How are we connected?
- ▲ Why is their protection important?
- ▲ What are the implications?



Size of  
Wales  
Maint  
Cymru

[www.sizeofwales.org.uk](http://www.sizeofwales.org.uk)

# A Curriculum context ...

The activities aim to provide thought-provoking opportunities for learners to  
“develop their knowledge and understanding through learning about places, environments and issues”

## From KS3 Geography NC 2008:

Pupils should be given opportunities to ask and answer questions:

- ❑ ‘what are the features, the processes and patterns of the tropical rainforest?’
- ❑ ‘how and why is this environment changing?’
- ❑ ‘how and why is this environment connected to, and interdependent with other places’
- ❑ ‘how do environments and people interact?’
- ❑ ‘how can changes be sustainable and why is it important for the tropical rainforest?’
- ❑ ‘what are the issues for people living in the tropical rain forest?’
- ❑ ‘how can my actions and those of other people make a difference locally, nationally and globally?’

They could be a starter activity for learners to ‘carry out investigations’ of ‘topical issues in the wider world’ based on the range of ‘ask and answer questions’ or supplement existing complementary resources and activities or studies of contrasting locations within Wales and the EU. They are linked to the curriculum in Wales and are referenced against the relevant ‘Skills’ and ‘Range’ for the KS3 Programme Of Study (P12/13 and p14/15 - Geography in the National Curriculum for Wales, Welsh Assembly Government 2008 ).

The suggested learning activities also support the wider revised curriculum and the development of ‘Skills across the Curriculum’ – Developing Thinking (D.T.), Developing Communication (D.C.), Developing ICT (D.ICT) and Developing Number (D.N.) from the (non-statutory) ‘Skills Framework’ as exemplified through Geography. (Skills across the curriculum p 6/7 - Geography in the National Curriculum for Wales, Welsh Assembly Government 2008 and Skills framework for 3-19-year-olds in Wales, Welsh Assembly Government 2008).

**‘Show informed concern for the quality of the natural environment ... tropical rainforest’**

**‘The urgency and importance of protecting biodiversity at a ... global level’**

**‘How human activity changes ... global environments’**

**‘Develop a sense of responsibility for sustainable development’**

**‘Value, celebrate and show sensitivity to diversity globally’**

From ‘ESDGC - A common Understanding for Schools’.  
... Welsh Assembly Government 2008

# The photographs

The photo pack has been compiled to introduce different aspects of the rainforest theme. They are a stimulus to discussion and to generate enquiry questions.

These notes demonstrate the scope of ideas and issues that could arise. They are offered as teacher support not for learners.

## 1. Forest elephants in water ... natural clearing in forest Congo



How are forest elephants different from other elephants? Are their numbers going up... or going down? Why might they be in danger?

What other animals are there in the rainforest?

## 2. Ranger protecting gorillas in Virunga National Park, DR Congo



What is he using a handheld GPS for? How else might this be used in the forests? Who pays his wages? Why has he got a uniform?

What is on the badge?

## 3. Girls collecting water in rainforest town, Pokone, Congo



How far have they travelled? Are they enjoying themselves?

Do they go to school? What would they like to be when they grow up?

What is going on in the background?

## 4. On the road ... Udzungwa Mountains, Tanzania



Where are they going?

What are they talking about?

How do they view the forest?

What are their aspirations for the future?

## 5. Eco-tourists visiting gorillas Parc National des Volcans, Rwanda



Who is looking at who? Where are they from? How much did their holiday cost? What else are they going to do on holiday?

Are they important to protecting the gorillas, or part of the problem? Do they contribute to the local economy? If so how?

## 6. A lone football fan, Loango National Park, Gabon



Where are the players? What is he sitting on? What teams do they support? Do they watch football on TV? Might they support the teams we support?

How was the clearing made?

## 7. A Baka Pygmy family temporary leaf house, Congo close to Cameroon border



How are they using forest products? What are they using for food... for fuel? What do they use that comes from outside the forest?

How are the houses made? What is she weaving?

How are they like your family?



### 8. Bush meat, Congo



Why has the monkey been killed?  
How will it be cooked? What does it taste like? Why is protein important?

What animals do we eat? Would some people be against this? Why? Do some animals need protection?

### 9. Fuel-wood, Bamenda Highlands, Cameroon



How far has he got to go? Does he go to school? Does he enjoy helping with this task?

What will the wood be used for? ... cooking? ... heating?

What is the impact of fuelwood demand on the forests?

### 10. Making planks, rainforest saw mill, Congo



What size is this factory? Who owns it? What are the conditions like for the workers? What are they wearing? What is the mask for?

What might the logs be made into? Will this be produced locally or exported for manufacture in other parts of the world?

### 11. Tending young teak tree, women's cooperative nursery, Tanzania



Why is it important to plant trees? How do they need tending?

Are these women being paid? How is that funded?

How long before this becomes a tree? What incentive is there to think- long term?

### 12. Community discussion about plans, Democratic Republic of Congo



What might they be discussing? Why are they sketching in the sand? What different views might there be about future use of land?

Who will decide?

### 13. Logger chain-sawing Sapele tree, Congo



Where did the chainsaw come from? Who decides which tree to fell? Is this legal or illegal felling? What protective clothing is he wearing?

How much is the tree worth? What might it be used for? Where will it go? Who owns it? Does he work for a big company or a local industry?

### 14. Oil palm plantation, south west Cameroon



How was the forest cleared? Who took the initiative to plant these trees?

How is it different from the primary forest?

Who lives in the houses? How old is the plantation? Who owns it? Does it help with the local economy? How?

### 15. Looking to the future



What will the forest be like when he grows up? Is this a tradition of planting for the future, or has it been initiated by a project?

What are the plant pots made of? How many young trees are there in this nursery?

### 16. Tropical rainforest landscape



How big an area is this bit of the forest? How big is this river? Where does it go? Is the river important to people locally? If so, how?

How many different kinds of tree are there? What other plants and animals make up the forest? How has this photograph been taken?



# 1. Developing enquiry skills

This first section concentrates on the photo-set and its potential to introduce the issues and practise enquiry skills. It offers:

- ❑ a framework of basic questions to encourage closer enquiry of a photo;
- ❑ word cards to encourage observation. One pupil describes the photo on the card without using those words ... the others guess which photo it is;
- ❑ support material for generating questions and discussing the process involved. Good questions help focus enquiry that seeks answers ... but questions that do not have an answer also add to awareness.

The question matrix [page 10] has been devised from Anderson's Taxonomy to support pupils in forming high order questions. It can be used by pupils as an aid to improving the quality of their questioning. It can be displayed in the classroom as a visual aid to promote the use of high order questions.

To develop skills to use photos as a source it is useful to enable:

- ▲ individuals to explore photographs in depth, to look more closely at them and to consider their own personal reactions;
- ▲ small groups to explore different reactions and perceptions of what is going on in the photographs and to debate what they would like to find out about;
- ▲ learners to choose a photograph to back up what they want to say about an issue.

- ❑ the photo set
- ❑ photo activities
- ❑ questions



Photographs can help make complex ideas accessible.

Building skills in interpreting visual images is important to esdgc and to geography in its own right. Interpreting visual images is of growing significance in terms of what we understand about what is going on in other parts of the world. The skill also involves recognising what you can't tell from a photograph and how photographs are used to profile messages or viewpoints. It is therefore also useful to explore how captions to a photograph can make a difference to how we see it.

The Development Compass Rose could be used to take the introductory work a little further, with an activity to generate questions about individual photos focusing on economic, social, political as well as environmental dimensions. However we have proposed it for a synthesis activity [see page 46]

Depending on the class's earlier experience of photograph activities, it may be useful to take one photograph [or perhaps a photograph from another source] to demonstrate to them what kind of questions can be generated.

The photographs are a stimulus to group discussion, they are not offered as case studies. It may be useful to discuss why the photos have been selected ... *what other images could have been used to represent this area of Africa?* There are, for example, no photos of cities.

Photographs can also stimulate more speculative questions for example about people's aspirations for the future ...

*How do they see their future?*

*What are their aspirations ... socially? ... economically?*

*Who will decide?*

*What are the connections to us here in Wales?*

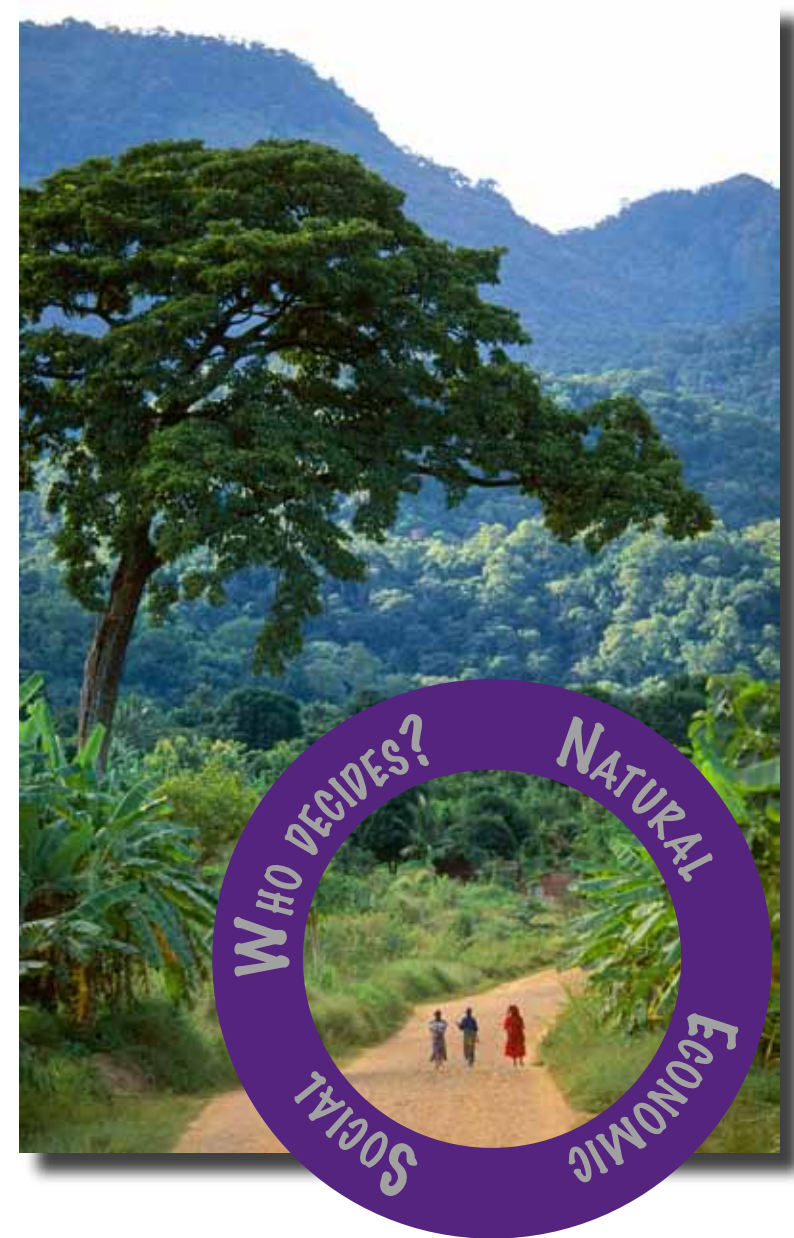


Photo: Edward Parker



# A question matrix

	Is	Did	Can	Would	Will	Might
What						
Where						
When						
Which						
Who						
Why						
How						

With thanks to Bassaleg School Developing Thinking

# Questioning

What ...

When ...

Where ...

Who ...

Why ...

How ...



Photo: Biosphoto, Ruoso Cyril, Specialist Stock



**Bushmeat**  
**Monkey**  
**Dead**  
**Tail**  
**Food**

Photo: Edward Parker



**People**  
**Women**  
**Road**  
**Mountains**  
**Tree**

Photo: Edward Parker



**Wood**  
**Head**  
**Deforestation**  
**Happy**  
**Cooking Heating**

Photo: Mark Edwards



Use your resource sheet to ask questions that will help you understand what is happening in this picture

Learning skill objective: **We are learning to ask questions**

Learning knowledge objective: **We are learning about the Tropical Rainforests of Africa**

We are learning to **ASK QUESTIONS** What is questioning?

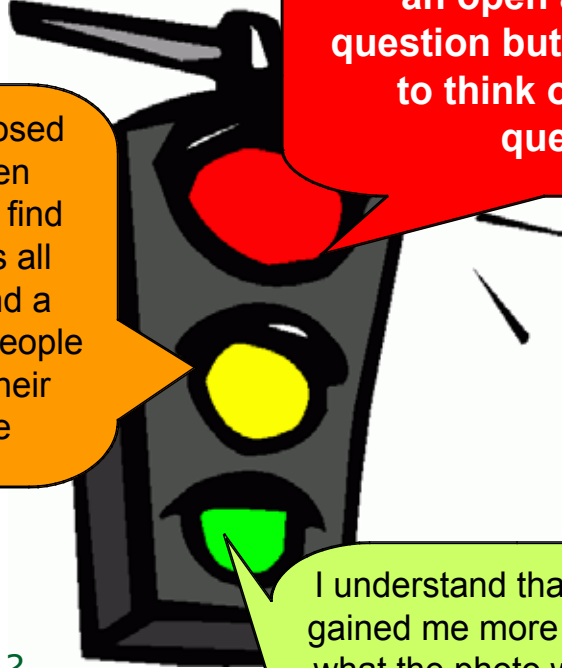
A question is used to seek a response.

It helps us to understand, further our knowledge and make sense of things

Remember there are both open and closed questions.

An open question is one that allows you to come up with an extended answer.

A closed question is one that provides a limited response.



I could think of many closed questions and my open questions helped me to find out what the photo was all about. I now understand a little bit more about the people in the photo and how their lives differ from mine

I know the difference between an open and a closed question but found it difficult to think of many open questions.

I understand that open questions gained me more understanding of what the photo was all about and I now understand more fully how their lifestyle differs from mine. I can see where questioning skills could be used in others subjects

### What we need to do ...

- ❑ Think about the material you are studying
- ❑ Start with: How ? When ? What ? Where ? Who ? Why ?
- ❑ Make use of the question mats to help you ask better questions
- ❑ Remember there are lots of different types of questions you can ask

## Knowledge

What?  
How?  
Can?  
Describe?  
Find?  
Which?

## Comprehension ...

Can you ... ?  
What do you think?  
Who do you think?  
What was ... ?  
Who was ... ?

## Application ...

Did you know ... ?  
What factors would you ... ?  
What questions would ... ?  
From the information ... ?  
Can you apply ... ?  
Could this ... ?

## Analysis ...

Which events ... ?  
Can you compare ... ?  
How was this similar to ... ?  
What was ... ? Why did ... ?  
What was the problem ... ?  
Can you explain ... ?  
What might the ... ?

## Evaluation ...

Is there a ... ?  
Do you think ... ?  
Judge the value of ... ?  
How would you feel ... ?  
What do you think about ... ?  
How effective are ... ?  
What changes to ... ?  
Can you defend ... ?

## Synthesis ...

Why not ... ?  
Why don't you ... ?  
How many ways ... ?  
What would happen if ... ?  
Can you develop ... ?  
If you had ... ?

Higher order questions

With thanks to Brynteg School Development



## 2. Investigation frameworks

Each framework starts from one of the photographs ... The investigations focus on a key question. It is proposed that they can be modified as you see fit for your own learners. Clearly there is also scope for adding your own questions.

We gave priority to Biodiversity as an introductory enquiry following a group discussion that concluded:

***“You can’t look at rainforests without looking at biodiversity ... seeing it as an ecosystem. That is the context for learning about rainforests.”***

Building on that, the investigation focussing on palm oil highlights the connections between different issues and offers an example of pressure to change the ecosystem. It could be developed as a decision making exercise [DME] but we offer it as a focus for a class working together on an investigation.

The ‘resources’ in the four DMEs [introduced on page 28] could be used in a less structured way. However they are used, it is suggested that small groups undertake different investigations and as part of the process prepare something to feedback to the whole class. The proposal to use a DME format resulted from discussion about the need for learners to become familiar with the approach well before their GCSE work.

The investigation focussing on climate change is used in the same way as the other DMEs, but it could be used as a synthesis activity bringing together all the issues relating to rainforest in the context of the climate change debate.

- ❑ **Teacher led enquiry: Biodiversity, Plantations**
- ❑ **DMEs: Eco-tourism, Timber Trade, Bushmeat, Climate change**



# Teacher led enquiry ... Biodiversity

Photos: 1, 5, 2, 8, 16 ...& in many ways to all

“You can’t look at rainforests without looking at biodiversity  
... seeing it as an ecosystem.  
That is the context for learning about rainforests.”

## Amazing plants and animals in African rainforests ...

This introductory enquiry sets the scene for work on tropical rainforests.

New plant and animal species are being discovered in African rainforests every year. Biodiversity describes the number of different species. Rainforests have high levels of biodiversity and the greatest variety of plants and animals are found in virgin or primary forest.

All the living species are linked together with each other and their environment in a complex ecosystem. Information cards on a range of rainforest species and 3 physical factors are offered on page 18.

Learner activities could include:

- ❑ researching rainforest species, finding a photo ... this could also include a discussion about the importance of Latin names. It is proposed that it is useful to ‘search’ using those names.
- ❑ identifying the links between the species by creating a ‘string ecosystem’. See p 17
- ❑ discussing plant and animal adaptations. Pupils could invent an undiscovered animal and describe how it is adapted to live in the rainforest. See page 22.

The photo page 19 could be used on screen to introduce the theme or as a focus to bring together what has been learnt.

As part of the introductory work it may also be useful to do some work on why trees are important [page 20] and where forests are to be found [page 21]



Photo: Edward Parker

## Creating a string ecosystem ~

Pupils are each allocated a rainforest species or an important physical factor

- Pupils stand in a circle and in turn, read out information about their species.
- Other pupils listen carefully.
- Introduce a large ball of string to one pupil. They have to identify and explain another part of the ecosystem that they link to.

Eg. *"I am a forest elephant and I use the ebony tree as a scratching post."*

- That pupil holds firmly to the end of the string and throws the whole ball to the person that they have linked to.
- The person now holding the ball of string has to identify and explain a different link. They then hold on to their section of the string and throw the ball to the new link person.
- The process continues until a web is formed.

### It is then interesting to ...

Ask the pupils to suggest a change to the forest. Eg. a lack of rain.

They can then consider an effect of this change. What happens if there is a lack of rain and the swamps dry up and raphia palm trees dying out. The person who is the raphia palm then pulls on the string they are holding. Anyone who feels the string pulling is linked to the raphia palm. They then pull on their string and people feeling this then pull and so on. This demonstrates how changing one part of the ecosystem will have significant effects across the whole system.

### Other changes that could be suggested include:

- ☐ deadwood being collected for fuel
- ☐ trees being selectively logged
- ☐ bushmeat being hunted

### Other African rainforest species that pupils could research:

- ☐ Spiny lizard (*Holaspis guentheri*) – can flatten its body to glide from one trunk to the next
- ☐ African linsang (*Poina richardsoni*) – cat-like mammal which hunts in the uppermost branches of rainforest canopy.
- ☐ Tree hyrax (*Dendrohyrax arboreus*) – tree-dwelling relative of the elephant which make a succession of penetrating screams starting shortly after twilight.
- ☐ Rock python (*Python sebae*) – largest snake species in Africa. One specimen from Bingerville rainforests in Cote d'Ivoire measured 9.96 metres in length.

Source for 'cards' on page xx:  
Martin, Claude (1991) *The Rainforests of West Africa*. Birkhauser

<p><b>I am the rain</b></p> <p>Most African rainforests receive between 1600 and 2000 mm of rain. I provide water for the plants and animals but I can also wash the goodness out of the soil. I also make the air very humid.</p>	<p><b>I am a sea bean plant</b> (<i>Entada pursaetha</i>)</p> <p>I am one type of liana or vine. Lianas grow up trees to reach the sunlight. My tangled shoots provide space for monkeys, squirrels and other animals.</p>	<p><b>I am an ebony tree</b> (<i>Diospyros sanza-minika</i>)</p> <p>My timber is valuable. My black bark has lengthwise cracks that elephants use as a scratching post. This is why I am also called 'elephant comb' by the local people.</p>	<p><b>I am a termite</b> (<i>Cubitermes</i>)</p> <p>I live in a huge termite colony. We build mounds that look like little pagodas to protect us from the rain. We are very important in breaking down dead plant material and many other animals feed on us.</p>
<p><b>I am the soil</b></p> <p>I am often a reddish brown colour. I am not very fertile because the heavy rain washes out my nutrients. I am not very deep so plant roots can not go down very far.</p>	<p><b>I am a dragon lily</b></p> <p>I only grow to about 2 metres high but I can survive even when the soil is very poor and in very dim light so I can survive under the tall trees (and as a house plant).</p>	<p><b>I am dead wood ...</b></p> <p>lying on the ground. In the hot, humid conditions I rot down quickly. I provide an important habitat for termites, beetles, millipedes and fungi.</p>	<p><b>I am a yellow-casqued hornbill</b> (<i>Ceratogymna elata</i>)</p> <p>I collect fruit with my pincer-like beak from the canopy. The seeds pass out in my droppings so that they are distributed across the forest.</p>
<p><b>I am a strangler fig</b></p> <p>I grow up trees and don't have any roots in the soil. This makes me an epiphyte. Epiphytes get water from the moisture in the air. Nutrients come from the decaying leaves trapped in the branches and soil brought up the tree by ants and termites.</p>	<p><b>I am an umbrella tree</b> (<i>Musanga cecropioides</i>)</p> <p>I grow very fast - 10 metres in 2 years. I fill in gaps and am the most common tree in West Africa. My umbrella of leaves is very important as they allow larger trees' seedlings to grow and provide a home to many ants.</p>	<p><b>I am a kapok tree</b> (<i>Ceiba pentandra</i>)</p> <p>I am an emergent, one of the tallest trees in the forest. I need to be supported by buttress roots reaching up to 10 metres above the ground. Many lianas and epiphytes grow on my huge trunk and forest birds use my branches for nesting.</p>	<p><b>I am a makore tree</b> (<i>Tieghemella heckelii</i>)</p> <p>I am one of the many trees that make up the rainforest canopy. This is where most of the rainforest animals live. I am lucky to have found a space to grow. My reddish wood is very beautiful and hard wearing.</p>
<p><b>I am a Pel's flying squirrel</b> (<i>Anomalurus pelii</i>)</p> <p>I eat the fruit and nuts of the oil palm. I have flaps of skin from my wrist to my ankle to glide between trees. Tough scales at the base of my tail help me grip onto tree trunks.</p>	<p><b>I am a raffia palm</b> (<i>Raphia hookeri</i>)</p> <p>I can survive in very swampy ground as I have special stilt roots to get extra oxygen. My leaves are used to make mats, hats, textiles and even ladders and bridges.</p>	<p><b>I am a forest elephant</b> (<i>Loxodonta cyclotis</i>)</p> <p>I eat the leaves and bark from many different trees and bushes. I enjoy fruit, especially the greenish-yellow fruit of the makore tree. I am very important in spreading tree seeds.</p>	<p><b>I am a red colobus monkey</b> (<i>Procolobus badius</i>)</p> <p>We feed on the leaves, flowers and fruits of trees and lianas in the highest part of the forest. We move in large groups through the canopy, often jumping amazing distances.</p>
<p><b>I am fungi</b></p> <p>I coat the tree roots and help the trees absorb the limited nutrients from the soil.</p>	<p><b>I am a dwarf crocodile</b> (<i>Osteolaemus tetraspis</i>)</p> <p>I live in the raffia palm swamps and build nests of dead leaves to lay my eggs in.</p>	<p><b>I am a crowned hawk-eagle</b> (<i>Stephanoaetus coronatus</i>)</p> <p>I patrol the skies of the rainforest swooping down to catch red colobus monkeys. I nest in the tallest trees.</p>	<p><b>I am an oil palm tree</b> (<i>Elaeis guineensis</i>)</p> <p>I am native to West Africa. Valuable palm oil can be extracted from my fruit's seeds and pulp. Many animals eat my fruit and leaves.</p>



# Imagine ... you are in a tropical rainforest

- Δ what would it feel like?
- Δ what might you hear?
- Δ what would you most like to see?

*Group of young people visiting  
the tropical rainforest  
near their school  
Korup Forest, Cameroon*



Photo: Nicolet Gilles, Biosphoto, Specialist Stock

# Plant trees ...

- Δ Why are trees important?
- Δ What cycles are they part of?
- Δ Are these things important in Wales too?

**Community discussion  
about the value  
of planting trees**



Photo: Size of Wales

## Where are the rainforests ... how do they compare?

Comparing the Amazon Basin, Congo Basin and SE Asia.

Within these 3 areas forests cover 57 % of the total land area.

10 countries account for 83% of forest areas in rainforest basins >

Where are they?

From the statistics below what differences might there be between the three main forest areas.

Brazil	39%
Democratic Republic of Congo	11%
Indonesia	7%
Peru	5%
Columbia	5%
Angola	4%
Bolivia	4%
Venezuela	3%
Myanmar	2%
Papua New Guinea	2%
Other	17%

### Investigation Suggestions

The main areas of tropical rainforest are in the Amazon Basin, Congo Basin and SE Asia. The table lists countries within that area that have the highest forest area.

- ☐ Find the counties listed in the Atlas.
- ☐ From the Atlas find examples of countries that have tropical rainforest outside the main basins.
- ☐ Think about interesting ways to present this data.
- ☐ What questions do you have, based on this data, that would help you find out more about tropical rainforests?

	Population density per km <sup>2</sup>	Primary forest as % of total forest area	Wood-fuel as % of total wood removals	Net % of change in forest area 1990-2000	Net % of change in forest area 2000-2010
Amazon basin	24	80	56	- 0.45	- 0.44
Congo basin	24	35	86	- 0.23	- 0.23
SE Asia	121	37	68	- 0.96	- 0.41

Source: 'The State of the Forests in the Amazon Basin, Congo Basin and SE Asia, June 2011' published by FAOSTAT [Food and Agriculture Organisation of the UN].



Think about these questions before you start to do a labelled drawing of your perfectly adapted rainforest animal ...

<b>Where does your animal live?</b>	Forest Floor and shrubs Under canopy Main canopy (most animals live here) Above the canopy in emergent trees Rivers	How is your animal adapted to move around in this environment?
<b>What does your animal eat?</b>	<b>Found in the same place as your animal ...</b> Dead wood and leaves Living plant material – leaves, mushrooms, bark, sap, fruit, nuts ... Insects and similar eg spiders Fish, shrimps, crabs Amphibians or reptiles eg frogs Birds and mammals	How is your animal adapted to find and eat its food?
<b>How does your animal communicate with others of its species?</b>	<b>What would work best in the environment you have chosen.</b> Touch - Smell - Sound - Sight - Taste	What features does your animal have to help it to communicate?
<b>How does your animal protect itself from predators?</b>	Armour, spikes Poison, stings, bites Blending in – camouflaged shape and colour Speed Size Mimic another animal Hiding - underground, caves, etc	What features does your animal have to avoid being eaten?
<b>When is your animal active?</b>	Day Night (nocturnal)	How is your animal adapted to daytime or night time living? How does it sleep?
<b>What name best describes your animal?</b>	Think about all of the above when choosing its name?	Its name is ...

# Invent an animal ...

# Teacher led enquiry ... Plantations

Photos: 14 & 16

*We are learning about palm oil plantations ... but we are also exploring what is involved in forming opinions.*

## Are plantations good for the economy or a danger to the environment? Are there different views? Why?

Warm up firstly using 'What am I' [Resource 1] You could cut up words. Secondly by getting pupils to set their own success criteria about what makes a valid opinion ...

**To form my own opinion I must remember to .....**

Task 1. Use the information on the cards [Resource 2] to help you develop and support your own opinion. Give them time to discuss the information. Each pupil may also be given a set of traffic light cards to monitor their opinion of plantations throughout the lesson. Whatever colour is uppermost indicates their opinion at that stage in the lesson. Whether they agree that plantations are good (green)/ bad (red) or not sure yet (amber) is shown at all times. The fact that they can change their mind builds confidence.

Task 2. The help sheet [Resource 3] provides sentence starters for use in their extended write up. You may like to include some literacy ladders or level instructions. The focus here is on social, economic and environmental effects. Give time for the pupils to categorise the cards.

Task 3. The peer assessment based on the success criteria they themselves devised at the start. 'Two stars and a wish' work well but you could also focus on the literacy by asking pupils to identify the best sentence that their peer wrote and explain why it is a good sentence.



Photo: Edward Parker

# What am I?

I come from the pulp of fruit

I am almost solid at room temperature

I can be used for cooking

I can be used as an industrial lubricant

I am in many soaps and cosmetics

The demand for me is growing

Demand will probably triple by 2050

My oil can be used in biofuels



Photo: Edward Parker



## Palm Oil - teacher background to ideas featured on the cards ... [page 26]

Palm oil is a substance that is extracted from the oil palm tree. Oil is produced from the fruit and kernel of the plant. It has many uses. It is used in West Africa as cooking oil; industrial uses include biodiesel or biofuel and machine oil; in the cosmetics industry it is used to make soap, e.g. Palmolive; in the food industry it is used to produce margarine, chocolate, cream cheese and even oven chips!



The cultivation of palm oil is controversial. There are many social and environmental impacts some of which are positive and some negative.

Oil palm is a valuable economic crop and provides a major source of employment. It allows many small landholders to trade and also often results in the upgrade of the infrastructure (schools, roads, telecommunications) within that area. However, there are cases where native land has in effect been stolen by oil palm plantations without any form of consultation or compensation, leading to social conflict between the plantations and local residents.

In some cases oil palm plantations are dependent on imported labour or illegal immigrants, and there are concerns about the employment conditions and social impacts of these practices.

Biodiversity loss (including the potential extinction of species) is one of the most serious negative effects of oil palm cultivation. Large areas of already threatened tropical rainforest are cleared to make way for plantations. This is a concern particularly in South-East Asia but the demand for palm oil is significant in Africa too.








Demand for palm oil has increased in recent years due to its use as a biofuel but it has been recognised that this increases the environmental impact of cultivation as well as causing a food versus fuel debate. Using palm oil as biofuel encourages the conversion of natural habitats such as forests releasing large quantities of greenhouse gases.

## Resource 2 >

Palm oil is a substance extracted from the Oil Palm. The oil comes from the fruit and kernel of the plant.	Palm oil can be used for cooking, biodiesel, biofuel for cars and for machine oil in industry.	Sometimes land is stolen by large palm oil companies without asking the local people. This leads to social conflict (arguments and fighting).
Palm oil provides many jobs in Africa. It allows small farmers and locals to trade and often results in improvements in roads, schools and telecommunications in the area.	When grown and processed sustainably, palm is an excellent and environmentally beneficial crop because it is so high-yielding, requiring less land than other vegetable oils.	Climate change is greatly affecting the poorer countries and their development plans. People may need to move to seek employment and security.
Some plantations employ illegal immigrants or import workers from outside the area and don't give the jobs to the local people.	Biodiversity loss (including potential extinction of species) is one of the most serious negative effects of large plantations	Large areas of forest are cleared. The good trees are taken for furniture and construction. The rest are burned releasing CO <sub>2</sub> .
If palm oil is used for biofuels then it can't be used as food to feed the local people.	The Ghanaian government intend to develop 300,000 hectares of land into palm oil plantations.	In less than 50 years, Ghana's primary rainforest has been reduced by 90%.
Europe wants to decrease its CO <sub>2</sub> by 20% by 2020 by getting 10% of all cars to run on biofuels.	Building new roads into the plantation often causes problems. With better access to the forest, settlers, loggers and farmers move in.	Ghana has a \$22 million deal with China to export palm oil from small and medium plantations. This provides wealth for the economy.
The tropical rainforest is important for regulating our climate and absorbing CO <sub>2</sub> . Deforestation causes 18% of CO <sub>2</sub> emissions according to the UK government. That's more than all the vehicles in the world put together.	The UK is Europe's second largest importer of palm oil after the Netherlands. We use it in bread, chocolate, margarine, soap, cosmetics, cereals, crisps and even toothpaste.	Ghana is building storage facilities for palm oil at their ports to make shipment easier. This is improving the facilities at the port, roads and buildings and providing jobs for more people.
The demand for palm oil is set to triple by 2050. the irony is that the attempts to use biofuels instead of oil could actually make climate change worse – clearing forest and draining peatlands to grow palm oil will release more carbon emissions than burning fossil fuels!	For some years, an organisation called the Roundtable on Sustainable Palm Oil (RSPO), has been working on a solution. In 2008 the first certified sustainable palm oil arrived in the UK. Sainsbury's immediately started using it in fish fingers, before rolling it out to the rest of the frozen fish range.	The palm oil industry supports some of the world's poorest communities. There is a need to make it sustainable as quickly as possible. Improving growing practices could improve production, while at the same time protect rainforests.

## Write up ~ Palm Oil Plantations

Use the following sentence starters to help you structure your response in your book:-

-  A Palm Oil plantation is .....
-  One way in which the local population may gain from a plantation is .....
-  One way in which the local population may lose is .....
-  One social issue about plantations is .....
-  One economic issue about plantations is .....
-  One environmental issue about plantations is .....
-  I think that palm oil plantations are good/bad because .....

**Social** - things that concern people e.g. living conditions  
**Economic** - things that concern money and finance  
**Environmental** - things that concern nature and the land.

### Extension Activity

This could be followed up with a role play.

- ❑ Suggested groups could be :

Against Proposal	For Proposal
Local Community	Plantation workers
Environmental groups	Oil Palm Corporation
Government	

- ❑ The cards could be reviewed in role by each group highlighting the ones that represent their view of plantations and their implications for tropical rainforests.
- ❑ What arguments can be used to back up their viewpoint?



# Decision Making Exercises ...

There are four parallel DMEs:

1. Eco-tourism
2. Timber Trade
3. Bushmeat
4. Climate change [Pay as you grow]

You will be allocated one of them.

Use the background information, consider the 'Resources' and further information from the Atlas, web searches and the work you have already done on rainforests.

You will also be asked to share headliner points with the class group.

## Research Phase

You will each have a folder to keep your research in. This stays in school! You will have the opportunity to undertake individual research at home and bring it in. Any graphs, maps or diagrams can be stuck into your write up.

## Report Phase

This will be carried out under exam conditions. You may use the resources throughout. Try to include diagrams, maps and graphs where you think appropriate, acknowledge sources when you quote as all this will improve your grade.

**This grid highlights what is expected >>>**

	Knowledge + Understanding	Application of knowledge	Skills
Excellent	<p>You communicate <b>detailed</b> knowledge + understanding of the question and location</p> <p>Geographical terminology is used accurately</p>	<p>You use knowledge + understanding to independently make a detailed decision based on your own research</p> <p>You show that you understand how decisions made affect the sustainability of the future</p>	<p>You select + use a wide range of techniques to research + record your ideas</p> <p>You analyse and reflect on <b>limitations/ bias</b> of evidence (evaluate)</p> <p>You present a very logical argument</p>
Good	<p>You <b>show</b> knowledge + understanding of the issue <b>and</b> location</p> <p>Geographical terminology is used appropriately</p>	<p>You show <b>understanding</b> to independently make a decision based on your own research</p> <p>You show understanding of how <b>sustainable</b> your decision is</p>	<p>You select + use a range of techniques</p> <p>You recognise <b>some</b> limitations to the information you use</p> <p>You present ideas logically</p>
Satisfactory	<p>You show some knowledge + understanding of the issue and location</p> <p>You use <b>some</b> geographical terminology</p>	<p>You use some knowledge to make a decision</p> <p>You describe the issue in basic terms</p>	<p>You use some techniques</p> <p>You interpret some evidence to reach a decision</p> <p>You have competent communication skills</p>
Basic	<p>You give <b>some</b> facts about the issue / location</p>	<p>You show <b>limited</b> knowledge + understanding</p> <p>You make a very basic decision</p>	<p>You use one or no techniques</p> <p>You make a very basic decision</p> <p>You have weak communication skills</p>

## **DME-1** Can eco-tourism protect the rainforest and help the local community?

Tourism is a big industry. Tourists visit Africa for the warm weather, rich culture and amazing wildlife. Tourism offers local people a way of making money and improving their lives. However some tourist developments have had a negative environmental impact and most of the profits have gone to the tourist company rather than the local community.

Ecotourism aims to be more sustainable by reducing the negative impacts of tourism and enhancing the social, economic and environmental benefits. How could ecotourism help to protect the rainforest and help the local people in Akyem Abwakwa?

Your role as a Geographer is to prepare a report describing the issue and to make recommendations. Your report should include the following sections:

### **Background**

- Briefly describe how ecotourism is different from tourism.

### **The issue**

- Where is Akyem Abwakwa?
- Why is the rainforest threatened in Akyem Abwakwa?
- What factors in Akyem Abwakwa would attract tourists?
- What are the barriers to developing tourism in Akyem Abwakwa?

### **The Options**

1. A large company develops a luxury hotel built to the highest environmental standards. Some of the hotel's profits fund a wildlife preserve.
2. A community project which develops tourist attractions and facilities, such as a boardwalk and improving local people's homes to offer visitor accommodation.

### **The decision**

- What do you recommend should be done?
- Why do you make these recommendations?
- To what extent are these recommendations acceptable and sustainable?

Evaluate and identify the limitations of the evidence available to you.

### **Sharing your recommendation**

Draft key words for poster to communicate to other groups

## **DME-2** How could the tropical timber trade become more sustainable globally ... and locally?

The rainforest trees can make a lot of money. Tropical timber is beautiful and hard-wearing and can be used for flooring, furniture and veneers. Tropical timber is an important export for African rainforest countries. Cutting down the trees for timber is called logging. Some logging is unsustainable and can lead to the loss of rainforest but some timber companies are careful about which trees they take.

A sustainable timber trade would bring environmental, social and economic benefits locally and globally. How could this be achieved?

Your role as a Geographer is to prepare a report describing the issue and to make recommendations. Your report should include the following sections:

### **Background**

- Briefly outline the tropical timber trade.

### **The issue**

- How much damage does logging cause?
- Why is it important to make the timber trade sustainable?
- What measures are being taken to make the timber trade more sustainable?
- What are the alternatives?

### **The Options**

1. Expand the FSC scheme through education and enforcement.
2. Ban all international trade in tropical timber to encourage people to look for alternative materials.

### **The decision**

- What do you recommend should be done?
- Why do you make these recommendations?
- To what extent are these recommendations acceptable and sustainable?

Evaluate and identify the limitations of the evidence available to you.

### **Sharing your recommendation**

Draft key words for poster to communicate to other groups

## **DME-3** Why is bushmeat important for the local people? Why are some people against it?

Bushmeat is the term for the meat of wild animals. Bushmeat is an important source of protein for people living in the rainforest and hunting is an important tradition. There are campaigns to ban bushmeat hunting because of fears about the impact on wildlife and in particular rare species. Some argue that it is impossible to stop all bushmeat hunting and would be better to allow some hunting of common species. Others suggest that commercial hunting should be banned. What is the most sustainable solution for the wildlife and the people?

Your role as a Geographer is to prepare a report describing the issue and to make recommendations. Your report should include the following sections:

### **Background**

- Briefly describe what bushmeat is.

### **The issue**

- Locate some of the countries where bushmeat is important
- What happens to bushmeat in different countries?
- What are the impacts of bushmeat hunting?
- What are the problems of a bushmeat ban?

### **The Options**

1. Ban all trade in bushmeat
2. Allow some hunting of common species

### **The decision**

- What do you recommend should be done?
- Why do you make these recommendations?
- To what extent are these recommendations acceptable and sustainable?

Evaluate and identify the limitations of the evidence available to you.

### **Sharing your recommendation**

Draft key words for poster to communicate to other groups

## **DME-4** Should we pay the Democratic Republic of Congo to protect the rainforest? Would this help tackle climate change?

The tropical rainforests play a vital role. They store huge amounts of carbon. If the rainforests are cut down, scientists agree that it would lead to an increase in the greenhouse effect and significant climate change. There is now a scheme where rich countries pay the rainforest countries to protect their rainforest. This scheme is called REDD and some people believe that it will help solve the problem of deforestation and climate change. However critics of REDD say that it does not help local people in Africa and the rich countries should reduce their own carbon emissions. Is REDD a sustainable solution?

Your role as a Geographer is to prepare a report describing the issue and to make recommendations. Your report should include the following sections:

### **Background**

- Briefly outline what REDD is.

### **The issue**

- Why are tropical rainforests an important part of reducing climate change?
- How much carbon does deforestation produce? How does it compare with other sources of carbon from people's activities?
- Why do rainforest countries need help to protect their rainforests?
- Which two countries have entered into a REDD agreement?
- What are the disadvantages of paying countries to protect their forest?

### **The Options**

1. Expand the REDD scheme.
2. Support local community projects to manage their rainforest.

### **The decision**

- What do you recommend should be done?
- Why do you make these recommendations?
- To what extent are these recommendations acceptable and sustainable?

Evaluate and identify the limitations of the evidence available to you.

### **Sharing your recommendation**

Draft key words for poster to communicate to other groups



# DME 4 - Eco-tourism

Photos: 5, 1, 2, 4, 15 & 16

*“Eco-tourism is responsible tourism to natural areas  
that conserves the environment and improves  
the welfare of the local people”*

Ecotourism Society

## Can eco-tourism protect the rainforest and help the local community?

### DME 1- Resource 1 >

This extract shows the success of a scheme which has been developed in Rwanda to attempt to save the gorillas from extinction.

The gorilla was threatened both by poachers and by farmers whose land-clearing practices were destroying the gorillas' natural habitat. Rwanda's Parc des Volcans, created by Dian Fossey as a wildlife preserve, has become an international attraction and the third largest source of foreign exchange for Rwanda.

Revenues from the \$170-a-day fee that visitors pay to enter the park have allowed the government to create anti poaching patrols and employ local farmers as park guides and guards.

Source: UNESCO



Photo: Biosphoto,  
Ruoso Cyril, Specialist Stock

*Who is looking at who?*

## DME 1- Resource 2 >

The area of Akyem Abuakwa in Ghana is being destroyed through illegal logging and surface gold mining. Recent floods in the area have shown the danger of destroying the local ecosystem.

Could eco-tourism help to solve the region's problems?

Illegal mining and logging have been blamed for floods that killed five people in the Eastern area of Ghana, and for making thousands more homeless.

Regional Minister Kwesi Appea-Kubi said illegal mining, known as "galamsey" locally, had caused the problems. He blamed the destruction of vegetation by miners, lumbermen and wood-cutters looking for fuel, and the blocking of river paths as a result.

A Government spokesperson said ....

***"If you go to the Akyem Abuakwa area that has been extensively mined, the rain just hits the soil, it removes the soil, and where does it go? Together with the rain water, it goes straight into the nearest stream,"***

Source: The Global Times

### Some back ground facts and figures ....

Akyem Abuakwa is in the Eastern region of Ghana.

There are 3 main economic activities in the region:

- ❑ Agriculture including Hunting, Forestry (54.9%),
- ❑ Wholesale and Retail trade (13.5%)
- ❑ Manufacturing (9.1%).

Most of the people living in the forestry area are self employed in agriculture or hunting.

Almost a quarter (23.6%) of households in the region use the river, stream, pond or lake as their main source of drinking water. This is one of the reasons why the pollution of the rivers caused by the mining industries is so serious.

The region is rich in minerals such as gold, diamond, bauxite, tantalite, limestone, kaolin and clay.

The region's population is very young, with 41.7 per cent aged less than 15 years ... and only 5.8 per cent older than 64 years.

Source: About Ghana.com

## Akyem Abuakwa - Could Eco-tourism help?

# Eco-tourism for community development ...

Four examples in different countries ...

< DME 1- Resource 3

## Kenya:

### Mangrove in Gazi

The women of Gazi have established a community Ecotourism venture with WWF supported by Size of Wales to help protect and restore some of the Mangrove forest.

The Gazi Women Mangrove Boardwalk is a true community-based conservation effort. 100% of the profit generated through the boardwalk goes into the that community. Funds generated are used to:

- ❑ provide scholarships to children from the village;
- ❑ improve health care;
- ❑ improve the facilities of Gazi Primary school;
- ❑ support the 'clean water for all' community project.

Source: Mangrove Action Project website

## Congo:

### Noubale Ndoki National Park

In Congo's Noubale Ndoki National Park every visitor pays a \$10 daily fee to visit the area. In 2007 this gave the area an income of \$6,500 which is being used to provide the village with a school and electricity supply.

## Cameroon:

### Lobeke National Park

Around Cameroon's Lobeke National Park, trophy hunting in a community hunting area is now generating some US\$ 50,000 each year.

This money is managed by local wildlife management committees. It is invested in things such as the construction of schools and the improvement of water sources.

***"The upshot is greater involvement of local communities in wildlife protection,"***

Thanks to efforts of key conservation partners in the region - including national governments, the environmental groups WWF and the German development agency GTZ - the local communities have been organised and are involved in ecotourism and other income generating activities.

Source: WWF

## Central African Republic: Bayanga, Dzanga-Sangha

**In Bayanga, Dzanga-Sangha, Central African Republic**, a gorilla eco-tourism package created new opportunities.

Huge numbers of tourists come to the area each year, where they are offered extraordinary opportunities to accompany the BaAka "Pygmies" on guided tours to observe western lowland gorillas and see the elusive forest elephants.

Traditional hunting by the BaAka, using bows and arrows and nets is also an attraction.

These activities have contributed to the local economy and improved living conditions of local people, according to WWF:

***"Proceeds from the project have been spent on health services and education, training in agricultural techniques, and helped legalise village traditional hunting by BaAka Pygmies in the area."***

***"The economic position of BaAka Pygmies has been strengthened by assisting them to maintain their habits and exploit the forest according to their traditions."***



# Does eco-tourism help protect the forest?

< DME 1- Resource 4

Photo to come >>>

*The canopy walk in Kakum National Park, Ghana offers visitors the opportunity to see the forest from the treetops*

*The walkway ... over 40 metres high is suspended between the tree platforms without using nails or bolts to damage the trees*



Photo: McPHOTO, Blickwinkel, Still Pictures

# Eco-tourism possible problems ...

< DME 1- Resource 5

Visitor Overcapacity - The number of tourists visiting Costa Rica has increased by at least 6% annually for the past several years. (State Department, 2001). While those invested in the ecotourism sector may celebrate such rapid growth, environmentalists worry that the nation's delicate ecosystem may not be able to withstand an unlimited flow of tourists. (Hicks, 2001).

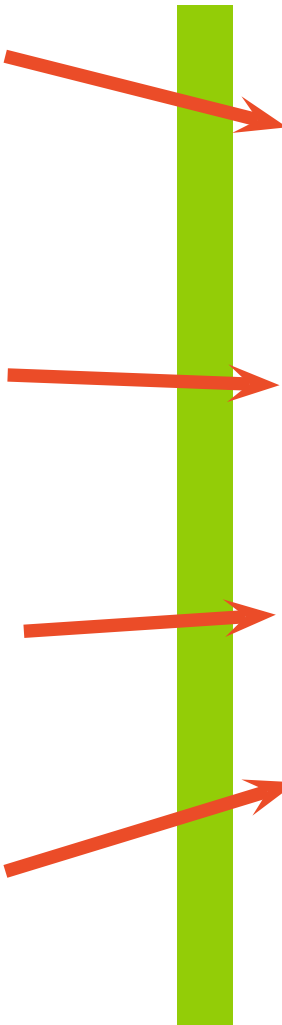
For instance, one of Costa Rica's most popular parks, Manuel Antonio, takes in an average of 1,000 visitors a day during the high season. The unregulated flow of tourists through the park has taken a toll on its plant and animal life, and as the wildlife has grown accustomed to humans local monkeys have been turned into garbage feeders. (Weaver, 1998, 95).

Many developing nations do not have the resources to construct the infrastructure necessary for tourism development, which leads them to turn to foreign corporations and international donors. The widespread involvement of foreign investors can lead to a leakage problem in which the profits earned by the tourism sector do not stay in the country. (Hicks, 2001). Sourced lycos.com/costa rica

Ecotourism can provide local people with economic assistance by offering them employment opportunities as wildlife guides and rangers for parks, and as workers in the service force of hotels and lodges.

This employment provides a relatively even flow of income often higher than they would receive from selling their marginal, small-scale agricultural crops at market. With eco-tourism, income is earned from preserving the ecosystem, and forest clearing is discouraged because it is detrimental to income.

Similarly, ecotourism can reduce the need for poaching and hunting of forest animals for income. For example, in West Africa, former poachers are hired as park rangers since they have intimate knowledge of local animal wildlife. Sourced Monga bay



1. Too many people might visit the area and damage the ecosystem, Animals might become used to human contact and unable to fend for themselves.

2. The tourist lodges might be set up by international companies and as a result the profits will not be used to help the forest communities.

3. The local people may be asked to work for low wages.

4. People might not respect local customs and they could die out as western tourists bring their culture to the area.

Learning from experience in other parts of the world what could planners in Africa do?

# DME 2 - Timber Trade

Photos: 13, 9, 10 & 16

The biggest falls in illegal timber production have been in Brazil, Cameroon and Indonesia, three of the world's most heavily forested countries.

## How could the tropical timber trade become more sustainable globally ... and locally?

### DME 2- Resource 1 >

#### Major decline seen in illegal logging

Illegal logging in the world's forests has fallen by nearly a quarter since 2002. A report by the London-based thinktank Chatham House says consumer pressure, legal restrictions by importing countries and media attention have all helped.

Globally, the figure is 22% since 2002. Indonesia has seen a drop of 75% in a decade. Cameroon's figure is 50%, and Brazil is between the two.

Sam Lawson, the report's lead author, made plain that illegal logging remains a major problem despite these impressive gains.

***"That sounds like a lot; but bear in mind that illegal logging was such a bad problem in those countries that even though it's reduced substantially, it still is a bad problem."***

Richard Black 15/7/2010.  
<http://www.bbc.co.uk/news/science+environment-10642880>



Photo: Edward Parker



## Forest Certification

Forest certification is a system of inspecting and tracking timber, paper pulp and other forest products to make sure they've been harvested according to a strict set of guidelines. It's also about the well-being of workers and local communities.

Certification begins in the forest and continues to the sales outlet. The aim is to give you, as a consumer, the confidence that you're buying a responsibly-harvested forest product.

We're all consumers of wood and paper, and the products we choose can make a real difference.



The FSC (Forest Stewardship Council) logo on wood and paper products tells you it has been sourced from well-managed forests according to high environmental and social standards.

You can find the logo on all sorts of products: furniture, decking, sheds, conservatories, flooring, doors, shelves, wallpaper, writing paper, pencils, toilet tissue... in fact most things made from wood! It can also be found on less obvious items like charcoal.

Source:

[http://www.wwf.org.uk/what\\_we\\_do/campaigning/what\\_wood\\_you\\_choose](http://www.wwf.org.uk/what_we_do/campaigning/what_wood_you_choose)

## Diary Extract ~

### Nicola Round, WWF visiting Cameroon rainforests

Day 2 – About 300km and six hours after we left Yaoundé, we arrive in Mindorou, a logging town where Pallisco, a French logging company, is based. The company has been in Cameroon since 1972 and has been 100% FSC certified for two years now. Loic, Pallisco's deputy manager, tells me that achieving FSC certification is a difficult process.

One of the biggest challenges has been to change the way of thinking among employees. FSC demands thorough monitoring and cataloguing of the timber felled. The workers have become used to following these processes now, but it took time.

I want to know more about Pallisco's sustainable approach. I learn there are 3 areas in their concession, with 30 sections in each area. They harvest one section a year. It's then left for 30 years before being harvested again ... meantime new trees are planted.

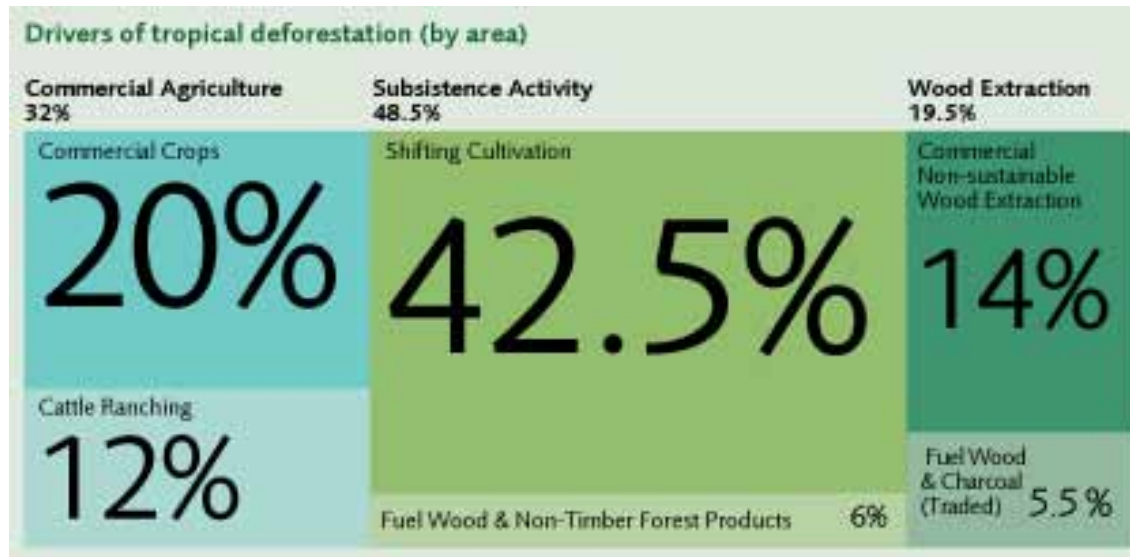
It used to be common practice for logging companies to clear an area completely and then abandon it to move on to the next one. So the 30-year approach is clearly an improvement. They also set aside some areas as 'protected', where they will never cut trees.

From here the logs are taken to the sawmill. It's a huge place, with terrifying spinning saws. Logs go in and emerge as smooth planks ready for export. Outside workers check and mark them to show the concession number, area and date of harvesting.

This is an essential part of certification: a piece of wood can be traced back to source from anywhere. These logs might end up as your kitchen floor or my bedroom furniture – lots of it goes to Europe.

What are the problems? Well, all the wood is exported, because local people can't afford to buy it. That's why some people log illegally, and it's why there is a need to do more to provide alternative income-generating activities.

## How big a problem is logging?



Source: <http://www.rainforestsos.org/about-rainforests/whats-happening-to-them/drivers-of-deforestation>

### Recommended weblink:

[http://www.fsc.org/fileadmin/web-data/public/document\\_center/publications/Fact\\_Sheets/Forest-Stewardship-Council-Fact-Sheet-EN.pdf](http://www.fsc.org/fileadmin/web-data/public/document_center/publications/Fact_Sheets/Forest-Stewardship-Council-Fact-Sheet-EN.pdf)

## What timber do we use?

Britain currently imports around two thirds of all the timber used in this country.

The great majority of imported timber, 82%, is softwood from forests located mainly in Scandinavia, Russia and the Baltic nations. A further 15% comes from deciduous forests in Europe and North America. The remainder, about 3%, is imported from tropical regions, but this figure is declining.

Source: [http://www.ttf.co.uk/Environment/Responsible\\_Sourcing.aspx](http://www.ttf.co.uk/Environment/Responsible_Sourcing.aspx)



# DME 3 - Bushmeat

Photos: 8 ... & 7, 5, 2

< DME 3- Resource 1

## Why is bushmeat important for the local people? Why are some people against it?

Bushmeat is an African term for the meat of wild animals.

Duikers (small antelopes), rats, porcupines and monkeys are most commonly eaten, but bushmeat can include any land animal from snails to elephants.

People have been hunting wildlife in the forests of West and Central Africa for 100,000 years or more. Hunting is linked closely with their social and cultural way of life. Bushmeat provides forest families with fats and proteins which are essential for a healthy diet.

When bushmeat is sold, it provides hunters and traders with an income.

People are campaigning for a ban on bushmeat because they are concerned that many wildlife species are becoming rarer. especially the 'flagship' species such as the Great Apes [gorillas, bonobos and chimpanzees].

Adapted from The Bushmeat Trade (2005) Postnote Number 236,  
Parliamentary Office of Science and Technology.



Photo: Edward Parker



## What happens to the hunted bushmeat?

Here are some examples ...

Country	Lost (unaccounted for)	Locally used (consumed by family or traded within community)	Externally used (sold in urban areas or exported)
Cameroon	26%	34%	40%
Congo	4%	28%	68%
Central African Republic	20%	45%	35%
Equatorial Guinea	9%	57%	34%

Conservation and Use of Wildlife-based Resources: The Bushmeat Crisis (2008)  
Secretariat of the Convention on Biological Diversity.

What about farming bushmeat?

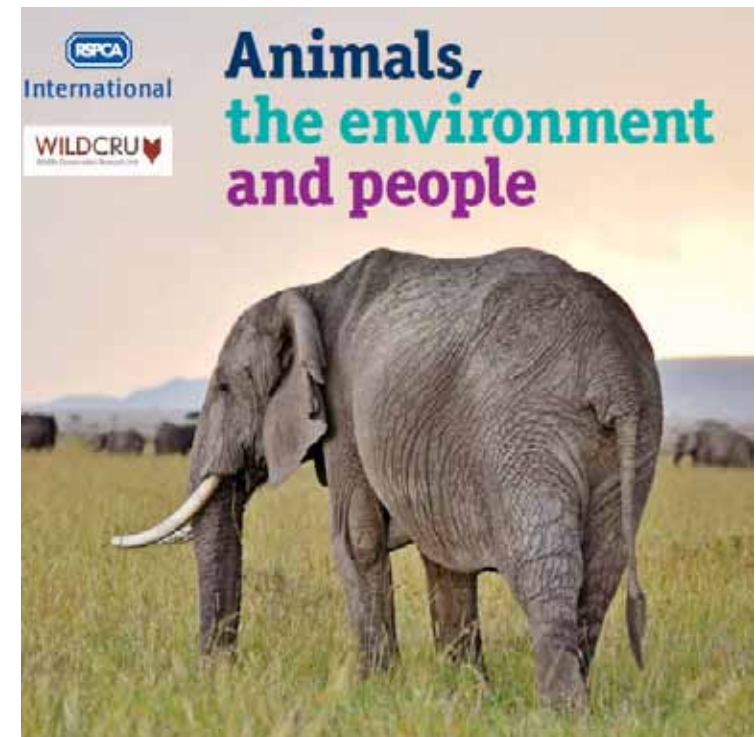
See video clip:

[http://news.bbc.co.uk/1/hi/programmes/cooking\\_in\\_the\\_danger\\_zone/7282187.stm](http://news.bbc.co.uk/1/hi/programmes/cooking_in_the_danger_zone/7282187.stm)

### Recommended weblink:

Wild meat trade section in RSPCA pdf: Animals, the environment and people -  
<http://www.rspca.org.uk/ImageLocator/LocateAsset?asset=document&assetId=1232725664202&mode=prd>

[www.parliament.uk/documents/post/postpn236](http://www.parliament.uk/documents/post/postpn236)



## Calls for bushmeat ban ... Rejected

A ban on bushmeat hunting in Central Africa would endanger both humans and animals, says a new report.

Bushmeat provides up to 80% of protein and fat needed in local people's diets.

Sustainable hunting would protect people's livelihoods and save forest mammals from extinction, claims CIFOR (the Centre for International Forestry Research).

*"The bushmeat crisis is not only a crisis of extinction, it is also a crisis of livelihoods and food security," said Frances Seymour, director general of CIFOR, speaking to the BBC.*

*"Criminalising the whole issue of bushmeat simply drives it underground."*

*"We need to give local communities the rights and incentives to manage these resources sustainably for their own benefit."*

Source: Calls for bushmeat ban rejected by James Morgan, BBC News Website 16 September 2008.

## Petition to ban bushmeat killing

Gorillas and chimpanzees are being hunted, killed and sold for meat. No one really knows the scale of the killing but, in just one district of Cameroon in the western part of Africa, an estimated 800 gorillas are shot for meat every year. To add to the horror, when the adults are killed their young are taken and sold as pets, but they often die of starvation or disease in a few days.

Bristol Zoo Gardens is working with the Cameroon Wildlife Aid Fund (CWAF) to try to stop the killing, and to care for the orphans of the trade.

As a member of the European Association of Zoos and Aquaria (EAZA), Bristol Zoo Gardens participated in the EAZA Bushmeat Campaign, along with over 100 other European zoos. The campaign collected 1.9 petition signatures by September 2001. The petition was presented to the EU in autumn 2001 to bring this crisis to their attention and call for concerted action.

If we don't do anything then bushmeat hunting at the present levels will lead to the extinction of most large animal species in the hunting areas within the next few decades. It will also lead to a humanitarian crisis as the impact of over-hunting affects people too. The sources of food, medicine and livelihood that indigenous communities depend upon are being severely depleted.

Source: Bristol Zoo Gardens' primate projects in Cameroon  
Bristol Zoo Website accessed 16.8.11

# DME 4 - Pay as you grow

Photos: 1, 16, 14, 15, 11 [and in some senses all]

< DME 4 - Resource 1

## Should we pay the Democratic Republic of Congo to protect the rainforest? Would this help tackle climate change?

A survey by the International Tropical Timber Organisation (ITTO) says that the world's tropical forests are better managed now than five years ago. However about 90% of tropical forest lacks protection.

The big hope of many environmentalists is that rich countries may soon start funding poorer ones to protect forests so that more carbon dioxide is absorbed. This would be done through a project called Reducing Emissions from Deforestation and forest Degradation (REDD+) which was agreed at the UN Climate Convention in Cancun, Mexico in 2011.

Dr Duncan Poore is one of the report's authors and a former head of the International Union for the Conservation of Nature (IUCN). He thinks that a REDD scheme is very important for the long-term health of tropical forests.

Adapted from Richard Black's article  
Tropical Forests "better managed", BBC News, 7th June 2011



Photo: Edward Parker

## How are forests linked to climate change?

Forests cover 30% of the total land area.

Trees remove CO<sub>2</sub> from the atmosphere as they grow. Trees store carbon in their trunks, branches, leaves and roots and forest soils contain lots of organic carbon. Forests store nearly 1200 billion tonnes of carbon – that's more than all the carbon in the form of carbon dioxide in the atmosphere (750 billion tonnes of carbon).

When the forests are cut down, much of the stored carbon is released. Globally 13 million hectares of forest are lost every year. South America and Africa have the highest rates of deforestation.

Deforestation accounts for 18% of all the carbon produced by people's actions (anthropogenic carbon emissions). The other main sources of anthropogenic carbon emissions are Buildings (8%), Transport (14%), Power (24%), Industry (14%), Agriculture (14%). Other human activities account for the remaining 8%.

Source:  
**Forests and climate change:  
A convenient truth,**  
Forestry Commission Wales 2007

## Differences between UK and Democratic Republic of Congo

Human development Index	UK	DRC
Life expectancy at birth	79.8	48
GDP per capita	34,342	327
Carbon dioxide emissions per capita [tonnes]	9.4	0

Source: <http://hdr.undp.org/en/data/profiles>

## Recommended web links:

<http://www.edenproject.com/rainforest/>  
<http://www.telegraph.co.uk/earth/earthnews/3394939/Prince-Charles-Rich-countries-should-pay-annual-bills-to-stop-rainforest-destruction.html>  
<http://www.guardian.co.uk/environment/2011/apr/01/historic-move-rainforests>  
<http://ecotoad.org/2011/02/02/will-redd-help-save-our-forests/>



## Example of using REDD

The Democratic Republic of Congo (DRC) is using a Canadian company to look after a large section of its forest land.

The Canadian company is called Ecosystem Restoration Associates (ERA) and will manage and protect a 300,000-hectare site in the Mai-Ndombe forest, in western Bandundu province. This will help the Democratic Republic of Congo prevent deforestation under the Reducing Emissions from Deforestation (REDD+) program.

DRC government's Environment Minister, Jose Endundo, said, "For us, it's about containing deforestation, restoring the forests and making this country a green country in the interest of the international community."

Congo is of vital importance to the REDD+ efforts as it is home to 50 per cent of Africa's forested land. The ERA is planning to try to teach local people about the sustainable management approaches that can help them to make a living from the forests while maintaining them for future generations and for their carbon capture capabilities.

Adapted from: <http://www.forestcarbonasia.org/in-the-media/fra-welcomes-dr-congo-forestry-protection-decision/> (accessed 9.8.11)

## Concern about REDD

### Do Trees Grow on Money?

"We do not agree that paying people to keep the trees alive will stop them cutting them down. There are several reasons.

First, it assumes that the primary driver behind deforestation is an economic one - the pursuit of income or profit. In fact, many factors contribute to deforestation, including importantly, politics, regulation, and governance of forest resources.

Second, it pays the polluter, rather than making the polluter pay. It rewards those who are destroying the forest, and thereby provides people with a reason to destroy the forest (or to threaten to do so) in order to receive money not to carry out the destructive activities.

Finally if rich countries pay to keep carbon locked up in forests but continue to pollute, we will not avoid climate catastrophe.

To forest peoples, trees are already worth more alive than dead; they provide them with multiple benefits, many of which cannot be replaced with any payment. The Rainforest Foundation UK believes the best way to keep forests standing is to keep them in the hands of the people who live in and depend on them, and have protected them for years."

Rainforest Foundation UK

Based on:  
[http://www.rainforestfoundationuk.org/Rainforests\\_and\\_Climate\\_Change](http://www.rainforestfoundationuk.org/Rainforests_and_Climate_Change)

## DRC Congo - Forestry Protection



### 3. Synthesis

The synthesis activities we propose provide the opportunity for groups to share ideas from their particular investigation work, to consider the overall context and speculate about the future.

The photo-set could be used in a variety of ways to focus class discussion about what has been learnt ...

For example ask individual pupils to choose one photo that raises [for them] a key issue about tropical rainforests. This could be marked with a sticker. Groups could be formed based on those choices for example grouping those that have chosen the same photo. They could discuss in groups why they have chosen their photo and prepare something to share back to the whole class.

The Development Compass Rose activity could take this further.

‘Looking to the future’ is suggested as a theme to bring together what has been learnt but also to recognise a range of other issues that could have been considered. It also provides an opportunity for discussing ideas about future priorities and ways people in Wales are involved in support initiatives.

☐ What have we learnt?

☐ Looking to the future

# Development Compass Rose

The Development Compass Rose offers a framework for raising questions and for introducing different aspects that affect any issue.

The tropical rainforest is, in the first instance, about a natural environment, about an eco-system that is important locally in the tropics ... as well as globally. These forests have a vital role in global natural systems and are therefore important part of understanding climate change issues.

However, to understand the significance of this global inter-relationship we need to see the natural systems in the context of understanding human interaction with them ... in terms of economic activity, social organisation and demand for resources, as well as the decisions that are made at all scales politically and individually. Decisions, for example, made by the UN, by countries, by companies and by us as individuals, deciding what to buy or whether to recycle. The Development Compass Rose is designed to introduce some of that complexity in a way that makes it accessible.

There are a range of activities using this Compass Rose, for example taking one photograph and forming questions relating to each of the domains.

Working in groups ... it is proposed that you ask pupils to place the photographs where they think they are most significant in terms of natural, economic, social or political ... and to then to discuss which photographs are difficult to place. [It may be useful to download a miniature photo-set.]

Finally, we suggest this will lead to discussion about the fact that all the photographs have an element of of each domain even if at first a photo may, for example, be seen to feature an economic issue

Such a discussion offers a focus as for a synthesis of what the class has learnt. It also provides an opportunity for learners to express their own views.

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# Looking to the future

A ~

Set up a sustainable business  
using forest products

Go to University ...

Move to the city

Be a Ranger in the National Park ....



Photo: Rhett A Butler/, Mongabay.Com

Play football for ....

Work for an export industry ....

A lone football fan

What thoughts does he have about his future?



# Looking to the future

B ~

What do local people need or want from their forest?

My vision for the future is ...

What needs to be taken into account?

**We are left with questions such as:**

- Δ what influence do local communities have?
- Δ do women get to play a fair role in the process?
- Δ how do people locally see the international interest in their forests?



Photo: Cath Long, Well Grounded

Who will decide? ....

**What questions would you raise?**

Community discussion

**Who gets a say in the community's future?**

# Looking to the future

C ~

What could be done to support protection of rainforests?

What will it be like when I am 50? ...

What development is needed?

The **Size of Wales** is a national scheme to sustain an area of tropical forest the size of Wales as a response to climate change.

An area the size of Wales is frequently used to measure the rate of forest destruction. The scheme uses that measure to encourage people in Wales to take action and help protect tropical forests. See website:

[www.sizeofwales.org.uk](http://www.sizeofwales.org.uk)



Photo: Edward Parker

How do people in Wales see their role in this development? ...

Which projects would you give priority to? Why?

Supporting protection

Does this matter to us here in Wales?

# Looking to the future

D ~

*What could be the impact of:*

- Δ *discovering oil?*
- Δ *mining natural resources?*
- Δ *growing industry?*
- Δ *further conflict?*
- Δ *a growth in tourism?*
- Δ *a growing population?*
- Δ *Congo winning the football World Cup?*
- Δ *discovery of new medicine?*

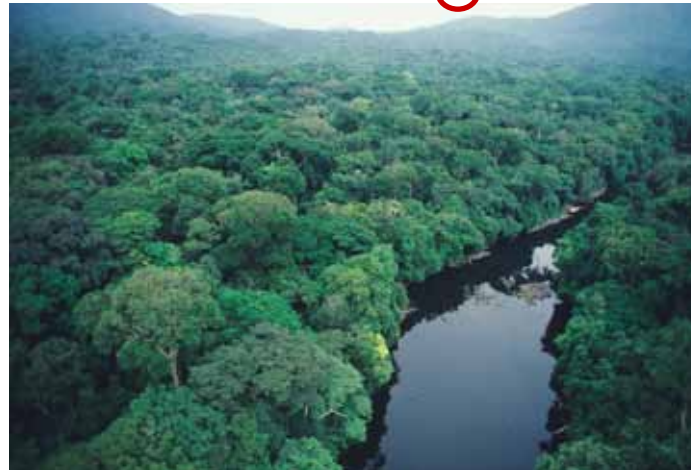


Photo: Edward Parker

What will it be like  
when I am 50? ...

How can the forest be  
protected?

How will this fit with  
other ideas about  
development?

**What questions would you like to raise?**

Development priorities  
**What else would it be useful to know?**