

Sustainable Future Tour

This tour helps pupils to explore the idea of 'sustainable development' and its implications for different peoples, places and environments using examples from tropical rainforest regions. It will encourage them to think about whether it is in our long-term interests to destroy the world's major ecosystems at the present rate. It will also help them to realise the various ways in which their lives are connected to the distant rainforests.

For this tour the children should have done some background work on rainforest ecosystems and have some knowledge of the climate, vegetation and rich biodiversity of the forests.

Curriculum links

Key stage 2

Science – Life Processes and Living Things (Sc2)

5a) ways in which living things and the environment need protection

Geography – Knowledge and understanding of places

3e) to identify how and why places change and how they may change in the future

– Knowledge and understanding of patterns and processes

4b) recognise some physical and human processes and explain how these can cause changes in places and environments

– Knowledge and understanding of environmental change and sustainable development

5b) recognise how and why people may seek to manage environments sustainably, and to identify opportunities for their own involvement

PHSE & Citizenship – Preparing to play an active role as a citizen

2e) to reflect on spiritual, moral, social and cultural issues, using imagination to understand other people's experiences

2j) that resources can be allocated in different ways and that these economic choices affect individuals, communities and the sustainability of the environment

– Developing good relationships and respecting the differences between people

4b) to think about the lives of people in other places and times, and people with different values and customs

5a) take responsibility

5d) make real choices and decisions

5g) consider social and moral dilemmas that they come across in life

Key stage 3

Science

5a) about ways in which living things and the environment can be protected, and the importance of sustainable development

Citizenship

- 1i) the world as a global community, and the political, economic, environmental and social implications of this
- 2a) think about topical political, spiritual, moral, social and cultural issues, problems and events by analysing information
- 2b) justify orally and in writing a personal opinion about such issues, problems or events
- 3a) use their imagination to consider other people's experiences and be able to think about, express and explain views that are not their own

Geography

- 1e) appreciate how people's values and attitudes, including their own, affect contemporary social, environmental, economic and political issues, and to clarify and develop their own values and attitudes about such issues
- 3e) to explain how places are interdependent, and to explore the idea of global citizenship
- 5a) describe and explain environmental change and recognise different ways of managing it
- 5b) explore the idea of sustainable development and recognise its implications for people, places and environments and for their own lives
- 6j) environmental issues, including:
 - how conflicting demands on an environment arise
 - how and why attempts are made to plan and manage environments
 - effects of environmental planning and management on people, places and environments
- 6k) resource issues, including:
 - the sources and supply of a resource
 - the effects on the environment of the use of the resource
 - resource planning and management

Key stage 4

For pupils studying Science and Geography at G.C.S.E. level, this tour can fit in to a programme of study in several ways. It can be used as a catalyst for discussions on sustainable activity in this country and elsewhere and to introduce topics such as pollution, renewable resources, trade, agriculture and environmental change. We welcome pupils in this age group, but it would be helpful to us if you could give us an idea of your requirements when booking your tour, for example subject area (Science, Geography, etc.). We are also very willing to focus on a particular aspect of sustainability within the rainforest context to fit a project or topic that the pupils are studying.

Background information

Sustainability is about living in harmony with our environment. It involves attempting to satisfy our needs both now and in the future, without destroying the vital life-support systems of the earth. At the moment, rainforests are being destroyed at an alarming rate – about 14 million hectares per year – in order to satisfy some of our needs and wants. Too often, these provide a short-term gain, rather than long-term development. This deforestation and forest fragmentation are leading to many problems including soil erosion, loss of fertility, flash floods, mudslides, loss of habitat and consequent reduction in biodiversity, and loss of livelihood and way of life for forest dwellers.

The pressures on the forests are mainly economic. They are a valuable resource and occur mainly in poorer countries where they present a potential for immediate economic gain, both for local people and for profit-seeking companies. Unfortunately, the gains are often short-lived, as once the forest is destroyed the land can rapidly become infertile and unsuitable for economic activity.

Forests are being destroyed for several different reasons. The main ones include:

- Land clearance for agriculture, from 'slash and burn' subsistence farming to commercial plantations and ranching
- Harvesting of valuable hardwoods and fuel wood
- Land clearance for mineral extraction, oil drilling, roads and settlements
- Removal of plants and animals for food, cosmetics, medicines, private collections and the pet trade

On the tour we will encourage the children to think about how some of these activities are affecting the forests and the wider global climate, and how that has the potential to impact on their own lives. We will also help them to understand how they can help to contribute towards sustaining rainforests for the benefit of the people who rely directly on them for their homes and livelihoods, and for the rest of the world.

Tour notes

The tour will focus on sustainability relating to rainforest environments. It is not designed to be a detailed tour of our collection of rainforest species, but rather to use the plants and animals as a springboard to encourage the children to debate complex viewpoints on sustainability.

The following are some of the ideas that will be discussed with the pupils, but each tour will vary depending on their age and interest.

Logging

The trade in tropical hardwoods is one of the main reasons for the destruction of rainforests. The most valuable timber species do not grow close together, so large tracts of forest are destroyed to obtain the wood from a few trees. Forest access can be difficult, but is made easier with new logging roads. Settlers often follow loggers into new areas, which has added to forest destruction.

Forestry industry practices are generally still unsustainable, although many tropical countries are now attempting to produce timber in a more sustainable way. However, profits are so high and local populations often so poor, there is huge scope for illegal logging and trade in hardwoods.

What can we do?

It is now possible to buy tropical hardwood that has been grown sustainably, often in special plantations. Wooden furniture made from sustainable materials is stamped with a certificate of 'sustainable forest management' from the Forest Stewardship Council. Buying this furniture should guarantee that virgin forest areas are not being destroyed, while helping the economies of some of the poorest countries in the world. However, even this system is open to corruption, with false labelling being too easy. One way to help is to buy tropical hardwoods from reputable sources and to push for better regulation. Another is to buy local, sustainably grown wood.

The pet trade

As with the trade in hardwoods, the capture and sale of animals from rainforests has become a lucrative business. After habitat loss, the pet trade is thought to be the second biggest cause of species loss the world over. Unfortunately, many animals die before they even reach a pet shop. Some estimates put the losses as high as 90%. The desire to keep unusual species fuels this trade, and with increased affluence in the West, capturing animals for the pet trade is ever more attractive to those trying to make a living from the forests. By its very nature, the wild animal trade is an unsustainable activity, particularly in species-diverse ecosystems such as rainforests, where numbers of individuals of each species are often quite low.

The threat to the world's endangered species has been recognised in the 'Convention on the International Trade in Endangered Species' (CITES), which makes it illegal to export or import protected species of both plants and animals. Unfortunately the rules governing the pet trade are frequently flouted and smuggling has become ever more prevalent as rewards increase.

What can we do?

Keeping unusual animals may seem like an attractive and novel idea but we need to be aware of the consequences of the international pet trade. It is possible to buy exotic pets from reputable dealers, which aim to sell only legally traded or captive-bred animals. Even then, as in the case of hardwoods, it is possible that this could still lead to a reduction in wild populations.

In some tropical countries, animals are being farmed for the pet trade, providing a sustainable income for local people. For example, some of the butterflies at The Living Rainforest are bought from a butterfly farm at the edge of the forest in Costa Rica.

Agriculture

Agriculture is the main cause of tropical deforestation. Traditionally, rainforests supported large populations which farmed in a low-density and sustainable way (subsistence farming). With the growth in population in many tropical countries, farming has become more intensive and, in the 'global economy', more land is also needed to grow valuable crops for export. Large areas of the Amazon basin have been cleared to make way for cattle ranches and, more recently, for soybean plantations which are being grown to provide animal feed for European and other markets.

In other areas forest has been cleared for 'plantation crops', eg coffee, bananas and cocoa. As a result of the huge rise in worldwide demand, large areas of forest have been cleared in recent years to plant coffee trees. In Vietnam in particular, vast tracts have been cut down and low-grade coffee has flooded the market, reducing the price that can be obtained by the growers and bankrupting smaller farmers in Latin America. The plantations are often controlled by foreign multinational companies with few of the profits going to the growers. Producer countries are also adversely affected by trade barriers, set up to protect the industries of wealthier countries. Compounding this problem is the fact that rainforest soil is relatively infertile and will often only produce a good harvest for a few years. After this time, either heavy doses of fertilisers need to be used, which are detrimental to the environment, or new land has to be cleared and the old fields abandoned.

What can we do?

In recent years, several initiatives have been introduced to improve the income of coffee, banana and cocoa growers and to reduce further loss of forests by encouraging more sustainable methods of farming. One of these is the 'Fair Trade' movement that allows a fairer return to the growers for their work, and enables them to farm in a more environmentally friendly way. Buying fairly traded products helps to give people living near the rainforests a better livelihood, thus reducing the need to cut down trees to earn a living. 'Bird friendly coffee', which has been grown under the canopy, is now also available in the shops. The Living Rainforest sells shade-grown, Rainforest-Alliance-certified coffee from El Salvador in its shop and cafe. It may be slightly more expensive, but is arguably one of the best-flavoured coffees. So while you drink an excellent cup of coffee, you can help conserve the rainforest at the same time. Acting in a sustainable way need not necessarily lead to a loss in living standards!

If countries with intact rainforest did not have to rely so heavily on the export of raw materials, including food, then they would be able to reduce their reliance on large foreign multinationals which control much of the recent high-intensity farming. We need to continue to lobby for fairer, greener trade agreements between the richer and poorer countries.

Energy

The global increase in the demand for energy, especially in the form of oil, has led to the growth of exploration and drilling in many forest areas, eg. the rainforests of the upper Amazon basin. New roads built to reach remote forest areas cause destruction and give forest access to other groups such as loggers and farmers. Oil is a very valuable resource and an important export earner for several countries. However, it is a short-lived and unsustainable economic activity. Once oil at one site has been exploited the teams move on, often leaving a trail of degraded and polluted forest behind them.

The demand for energy in the form of wood for cooking and heating is also increasing, as populations grow. The use of wood now outweighs the speed at which new forest growth occurs, although villagers and other rural settlers can become a major force for tree planting and sustainable forest management, for example, in community forests in Africa and Southeast Asia.

What can we do?

We all use fossil fuels daily, some of which will have come from the rainforest. The burning of oil, gas and coal not only causes pollution, and degradation of many undisturbed ecosystems, it may also contribute to 'global warming'. Our reliance on fossil fuels can be reduced in several ways. The easiest is to reduce energy consumption, e.g. by using cars and aeroplanes less. We can also support other types of energy, particularly renewable energy sources such as wind power, solar and bio fuels. At The Living Rainforest we currently use oil to heat the greenhouses, but this will be replaced with renewable 'biomass' energy in the very near future.

Loss of biodiversity

Rainforests are the most diverse ecosystems in the world, with many areas (such as the rainforest canopy) still largely unexplored. In the last decade, 70% of new anticancer drugs have been developed from rainforest species. One of these, the Rosy Periwinkle, found in Madagascar, contains two very important chemicals used to cure Childhood Leukaemia (vincristine), and Hodgkins' Disease (vinblastine).

The discovery of the medicinal benefits of many rainforest species comes from knowledge of the indigenous uses of plants and animals. The destruction of the rainforest not only leads to a loss in biodiversity, and therefore potential new medicines, it is also leading to a serious reduction in cultural diversity. As rainforest peoples become westernised, their traditional cultures and languages die away. Without this body of knowledge, we not only reduce our chances of finding new drugs, but we make humanity poorer by losing different ways of seeing and interacting with the world around us.

What can we do?

All of the preceding issues have an effect on biodiversity. As individuals we sometimes feel we have little power, but we can help to influence governments into taking action before it is too late. We can also modify our own lifestyles, as described in the other sections. There are also several environmental groups which lobby both the UK government, and countries with remaining rainforests, to try to encourage them to take a more sustainable approach to development.

After the tour

After the formal tour the pupils can go back into the glasshouses in small, supervised groups to take a closer look at some of the plants and animals, complete worksheets, or simply soak up the atmosphere.



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