

PLANTS IN OUR LIVES

This topic helps you to explore the essential role that plants play in our lives. In parts 1, 2, 3, 4 and 5 you will find activities that will help you collect the information you need to fill in your Exchange Form. Then, you can contact students in other parts of the world and exchange information to investigate how human use of plants varies globally.

The activities are numbered to match the numbering of the Exchange Form. The meaning of **words*** is explained in the glossary.

PART 1 EVERYTHING DEPENDS ON PLANTS

Wherever you are and whatever you are doing, you will be in contact with plants or their products. It is easy to think of plants when you are eating a banana or writing a letter, but perhaps less obvious when thinking about what your clothes are made of or where medicines and cosmetics come from. It is harder still to imagine how plants affect the health of our planet – how they help clean the air by removing carbon dioxide and putting oxygen back into it through **photosynthesis***, or how they affect temperature, climate and soil, helping to prevent floods and holding back deserts.

Quite literally without plants there would be no life on Earth. Even carnivorous animals and people depend ultimately on plants for food. The meat and fish they eat may have eaten smaller animals which fed on plants, either on land or aquatic plants in rivers or the sea. Plants are usually at the start of **food chains***; they are the **producers of energy*** and we, together with other animals are the **consumers***.

1a Think back to yesterday. Try to remember the pattern of your day and everything that you did from waking up until going to bed, including the time that you spent moving from one activity to another (e.g. walking to school, catching the bus to the shops). You will find a copy of this table on your Exchange Form. Fill in columns 1 and 2 to give a timetable of activity in your day.

Time of day	Activity	Plants in my day	Local or global?

1b Think about how you interacted with, or used plants through your day. In addition to activities such as eating and drinking, consider the tools and products you used such as for hygiene and health, buildings, and energy. Also, think about how plants affect your day in other ways, improving the quality or aesthetics of your environment or your quality of life. Look at Figure 1 to give you some ideas. Complete the 3rd column of your table.

What have plants got to do with you?

You eat them, drink them, sleep with them, walk on them, write on them, breathe them, celebrate with them, shelter under them, play with them, drive with them, wear them, get cured by them... Not much then?

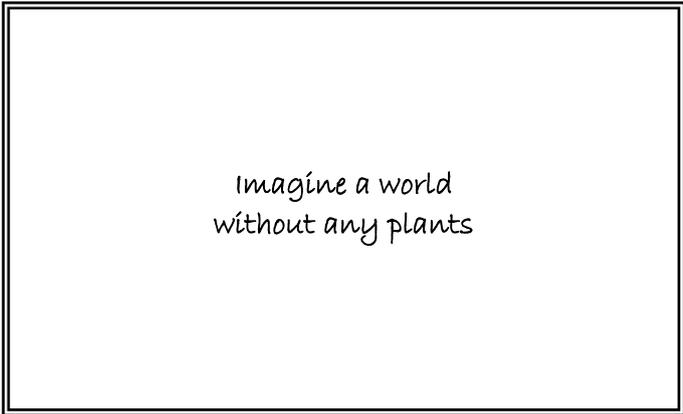


Picture 1: *The wide range of plant uses across the world*

1c For column 4, it may be that you know exactly where some of the plants you use come from, for example local food produce. For other items, check labels and packaging to see if they indicate the origins of products, or the plants in the products. You could also try going back to the shops where you bought items to ask the shopkeepers, or contact factories where the products were made. Table 1 in the Information Section may also help you.

You could plot this information on a map, to show your links to people and places.

2 In groups, discuss your results and how you depend on plants every day. Take a blank sheet of paper. In the middle write *"imagine a world without any plants"* and create a colourful poster to show your thoughts on this title. As well as the human uses of plants, try to represent how quality of life and the environment would be affected.



Imagine a world
without any plants



Picture 2: *The multiple uses of some plants, using the banana as an example*

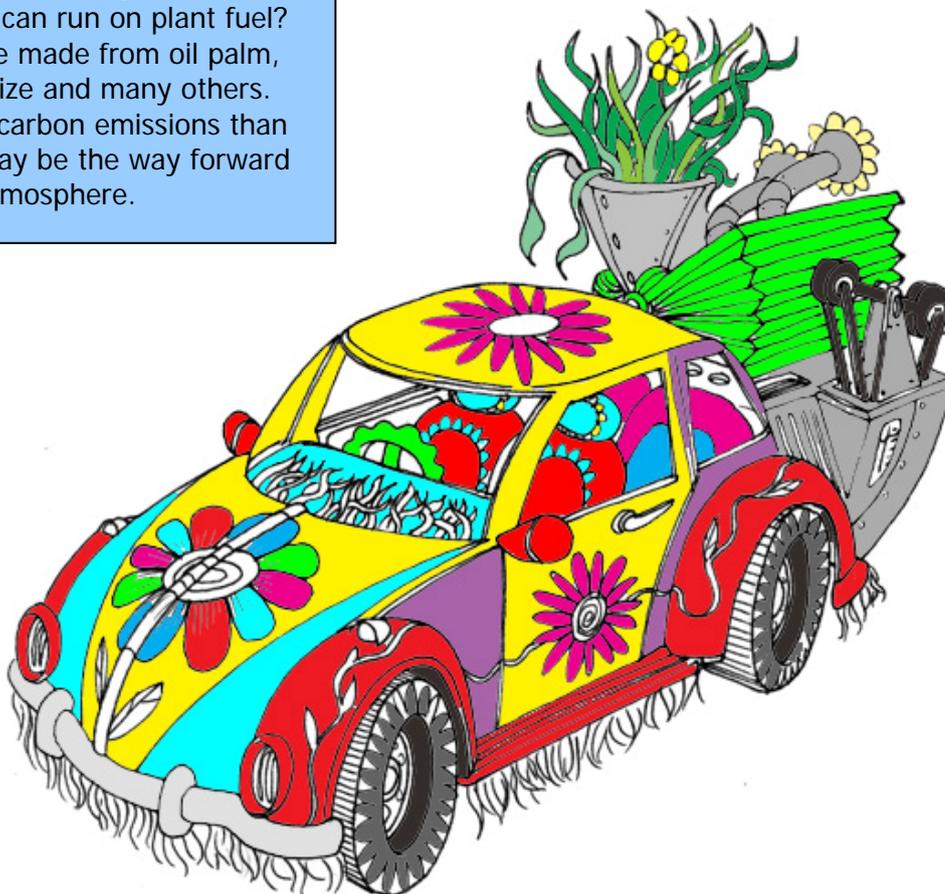
3 Some plants, like bananas or maize have 'multiple uses' and are used to create an enormous variety of different foods, medicines and products. Here is a 'multiple use challenge'. Experiment with one of your local plants to create at least four of the following uses:

- a meal
- a drink
- a shelter
- a tool
- a container
- first aid or medicine
- an ornament or decoration
- a fashion item

Draw or take photos of your plant and the 'multiple uses' you found for it.

Driving plants

From the fryer to the engine... did you know that cars can run on plant fuel? Bio-fuels can be made from oil palm, sunflowers, maize and many others. Producing less carbon emissions than diesel, these may be the way forward for a cleaner atmosphere.



4 As technology advances and people move to live and work in different places, the ways of using plants locally can change and older, often valuable methods can be forgotten. Interview the older members of your community to find out how people used plants in the past and how this compares with today. Discuss the reasons for any differences.

Plant Inventors

Plants have been around for 400 million years. In that time, they have developed some amazing designs. As well as using plants to make things, humans have used some of these designs as inspiration for new inventions. For example, the idea for Velcro came from seeds! Some seeds have tiny hooks on their surface that stick to the fur of passing animals – an excellent way of traveling for seed dispersal*.

PART 2 FROM COFFEE BEANS TO BLUE JEANS... PLANTS AND TRADE

All human activities can have an affect on other people, living things or environments. Sometimes the effects on people and places are positive and sometimes negative, some are local and some are felt at a distance. For example, with an every day activity like washing-up, we can consider who made the soap, what ingredients are in it (natural or man made) and where they came from, where the water comes from, where the dirty water and soap suds go to and whether these have an affect on the environment.

In the modern world, trade* links communities and places across the world, for example coffee growers in Kenya are linked to coffee drinkers in Europe. It is sometimes difficult to see how a farmer growing cotton in the USA may be linked to a businessman in London, or how a rainforest community may be linked to a pharmacy in the USA. Yet these links exist and are growing more and more complicated.

In the past few years, people have been looking for ways to make these relationships and links more positive and fair for everyone.

5 How are you linked to people, plants and places? Choose a plant product that you use in your life: **for example, a coloured cotton shirt, or a packaged food item such as breakfast cereal, or a chocolate bar**. Find out about the plants in this product and how it is made:

- What plants are used in creating this product?
- What is the process that transforms these plants into the finished product?
- Who grows the plants and where?
- Who manufactures the products and where does this take place?
- Where is the product sold?
- What other businesses or groups of people are involved in the chain between the grower and the consumer.

You could present your findings as a cartoon strip to demonstrate the process and supply chain of your product.

Catwalk plants

Where would the fashion industry be without cotton? And where would blue jeans be without indigo, or running shoes without rubber? Cotton is made from the natural fibres that cover and protect cotton seeds. It is the world's most important non-food crop. The cotton crop uses 25% of all agro-chemicals used in the world today. Up and coming plants like hemp are now finding their way into the world of fashion.

You can research this using **primary sources*** of information. For example, you might contact a local business directly (by letter, telephone or in person) asking for information or an interview. **Secondary sources*** of information, such as the internet or library books, could also be very useful.

What is Sustainable Development?

Sustainable Development means finding a way for people to live and go about their business without harming the environment or wasting natural resources, for example water or soil. There is only one earth and we need to be able to pass it on to future people in a healthy state, so that they can also get the things that they need to survive and live.

Sustainability is made of two words
Sustain + ability = the ability to sustain or keep things as they are.

Sustainability looks for a way for communities to stay healthy, feed and clothe themselves (social issues), make money (economic issues), and develop in a way that does not harm the natural environment (environmental issues). In reality it's hard to make sure that these three areas – social, economic and environmental – are all perfect. It's a balancing act, trying to find the best possible way forward for an environment and community.

The Development Compass (see question 6) is a tool that helps to make sustainable decisions.

6 Use the compass overleaf to think about the issues connected to the plants in your product. For each of the compass directions, either write down facts that you already know and questions that you want to ask.

If your product is made up of many plants, choose the main plant ingredient and focus on this. A copy of the compass is included with your Exchange Form.

Fair Trade* tries to make positive relationships between farmers and workers (often in developing countries), and the businesses and people who buy their products in other parts of the world.

This makes sure that farmers and workers get a decent rate of pay and working conditions, when they produce crops and goods.

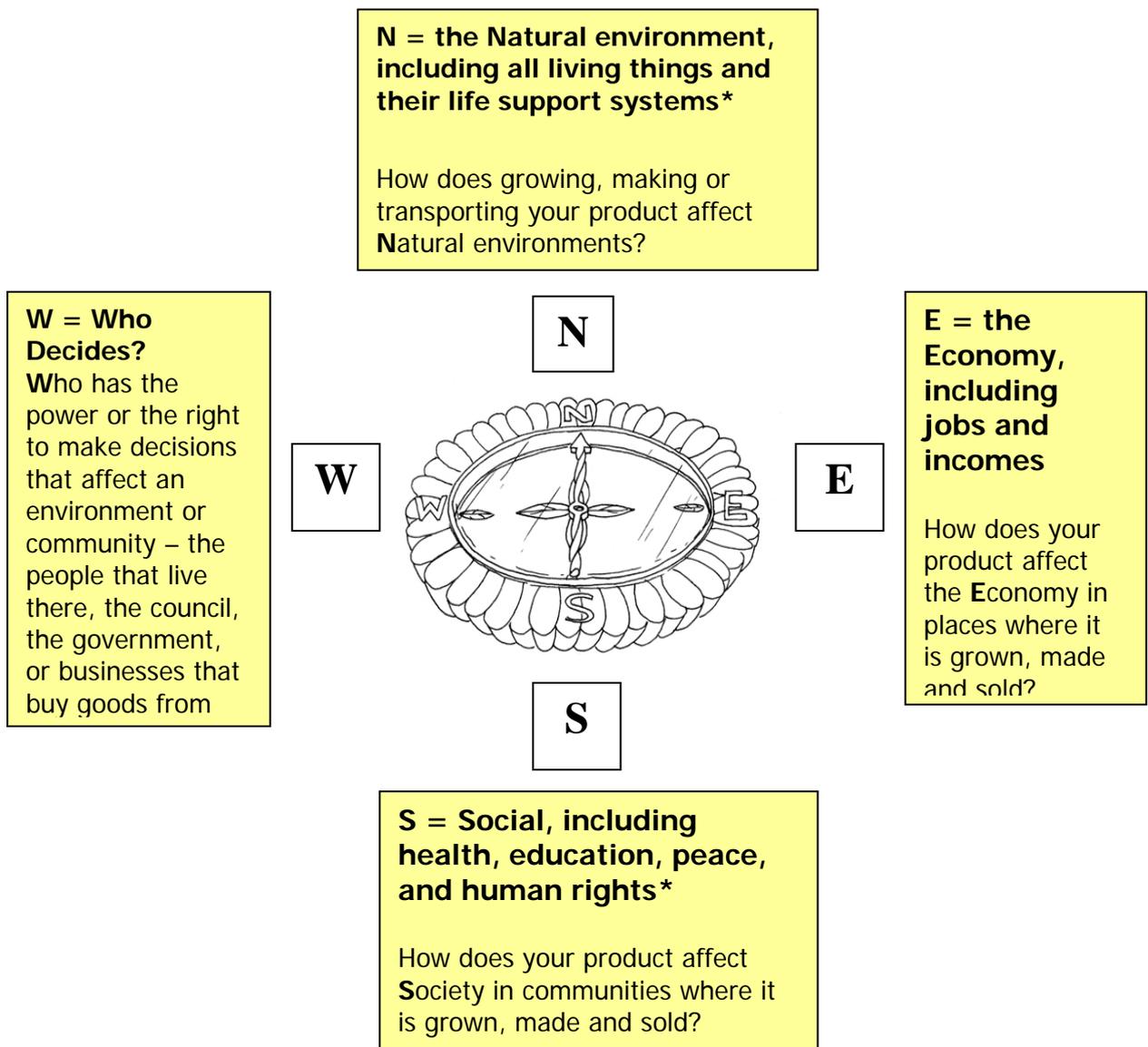


Figure 3. *The Development Compass - a compass to help navigate your way around issues.*

Now you have the full picture, discuss how you would make your product more sustainable for people and the environment?

PART 3 LOCAL PLANTS

There are an estimated 300,000 to 500,000 plant **species*** in the world. About 30,000 can be eaten and approximately 7000 of these have been used for food by humans at some point in time. In Java, Indonesia, farmers may plant more than 600 crop species in a single home garden. Farming communities in the Andes, S. America, may use up to 3000 different varieties of potatoes!

For many thousands of years plants have traveled around the world, transported by wind and waves, caught in animal fur or carried by people. Tomatoes first grew in S. America. Explorers brought them to Europe in the 1500s. Bananas originally came from SE Asia. They were probably the first fruit to be farmed. Carrots grew in the area of Afghanistan around 3000 years ago and slowly spread to the Mediterranean. The Greeks and Romans used carrot juice to cure stomach problems. The first carrots were white, purple and yellow.

From Geneflow Junior, by IPGRI (International Plant Genetic Resources Institute) 2001. ISBN 92 90 43-498-8

7 Identify the main useful plants that are grown in your area. Describe their main uses and why these plants are important to your community.

Are they native to your country or do they originate from elsewhere? If so, can you identify their origins? Do these plants grow naturally or are they planted as a crop? Are they sold and used inside your country, or exported? You may find answers to these questions by looking around you as you travel to school or elsewhere in your local area, visits to local markets and shops would also be helpful.

Plant tastes

When bananas first came to Europe, people thought they tasted disgusting. They didn't realise the bananas should be peeled before eating and ate them with their skins on!

You will find this table on your Exchange Form.

Name of Plant	Main Uses	Native or from where?	Grows naturally, or planted as a crop

Depending on where they live, different plants will need different conditions to grow. For every plant, the right temperature, light, water and soil with minerals are important factors for **germinating*** seeds and healthy growth.

8 Find out about and describe the general good growing conditions for your local plants. Write down the time of the year, as months and seasons, when the main crops are harvested in your region.

9 Find some stories, myths and folklore about plants in your country. Older people in your community might be able to help with your research. Try to explain any scientific meaning behind these stories and explain their original purpose.

PART 4 PROTECTING PLANTS

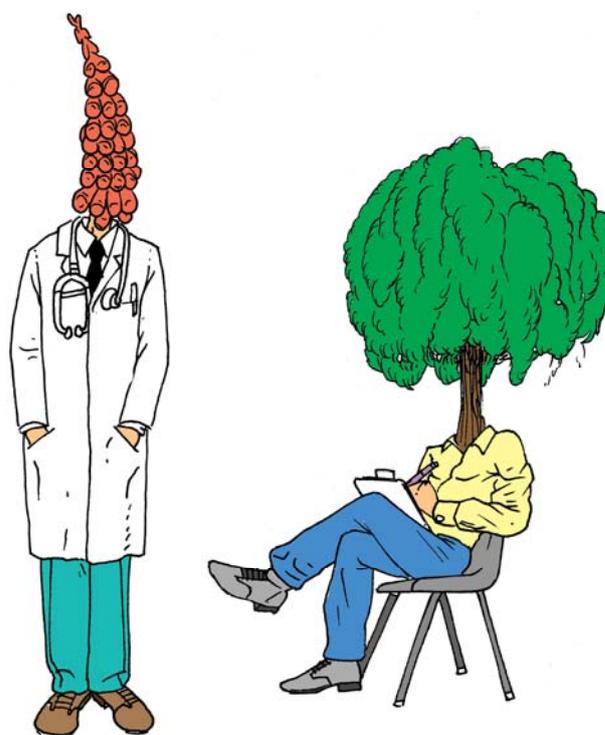
Plants are essential to life, as we know it. As well as providing us with everyday things we need to survive, they help regulate our climate and atmosphere, our soils and our water. All living things depend on the huge diversity of plants for their food and other requirements, directly or indirectly. Plant **biodiversity** * is increasingly threatened by human activities resulting in **habitat loss*** and **extinction of species***. This is causing widespread concern. Faced with the needs and increased expectations of a growing human population, we have to make moral and social judgements about how we are going to use our natural resources today and in the future - in a sustainable manner.

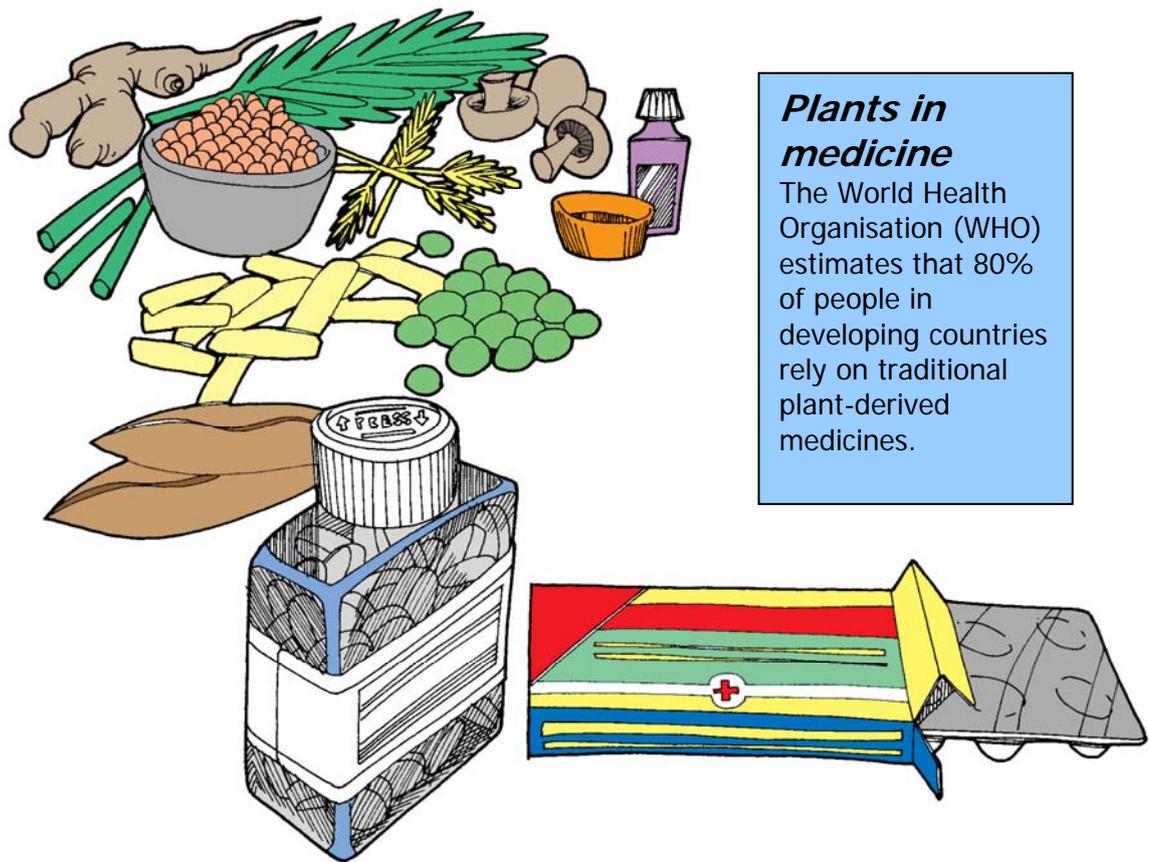
Action on biodiversity is now being taken seriously at regional and national levels. In 1992, over 170 countries gathered together in Rio de Janeiro for the United Nations Earth Summit. At this summit, global actions for biodiversity and sustainability were discussed and the United Nations Convention on Biological Diversity (CBD) was signed. Additional agreements have been made at other international conventions.

Further information on factors affecting biodiversity and the main environmental agreements can be found in the Information Section.

Plant doctors

Plants make their own chemicals for many reasons, such as poisons and weapons for defence. Humans have borrowed these chemicals to make medicines and cures for many years. Most modern medicines started their life as plant cures – Aspirin (a pain killer) came from Willow trees, and Digitonin (used for heart attacks) came from the Foxglove flower. In the USA, 118 of the top 150 prescribed medicines originally came from living organisms (74% from plants). At least 35,000 species of plants are estimated to have medicinal value, but only 5000 have been studied in detail. How many new cures are waiting to be discovered?





Plants in medicine
 The World Health Organisation (WHO) estimates that 80% of people in developing countries rely on traditional plant-derived medicines.

Picture 4. *The importance of plants in medicine*

10 As a group, discuss these questions:

- Why do plants need protecting?
- What are the main pressures in your area that might affect plants and biodiversity?
 You could choose to write a poem or rap to present this information.

11 Investigate laws in your country that protect plants. Give one example.

- Who made this law?
- Was it made through international agreement, through your own national government, or through a national or local environmental group?

12 Who is responsible for enforcing this law? Is the law effective?

13 What does your local community think of this law? How does it affect the community?

PART 6 EXCHANGING INFORMATION

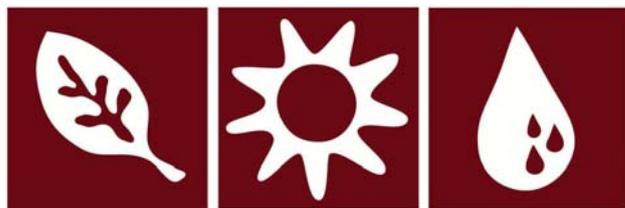
It is time to send your work and ideas to students in another area. You will need to have completed an Exchange Form which you can download as a Word document.

You can complete this Exchange Form as a paper copy or on-screen, and then send it to other schools as an e-mail attachment, by fax or by post. You can also include other pieces of work, photographs or pictures that you would like to share as additional sheets.

The Exchange Form has been designed so that you can complete each activity on the form as you work through the topic. You could work on this as an individual or in small groups.

PART 7 COMPARING INFORMATION FROM OTHER COUNTRIES

- Are there any old, forgotten ways of using plants that could be useful to us today? Which ones could be most appropriately adapted for your own country?
- Are there any common themes to the plant stories, myths and folklore? Why do you think these themes originated? Does the scientific meaning have the same emphasis and impact in different parts of the world?
- Are the most useful plants generally grown locally or are they imported from elsewhere?
- What, if any, are the ideal growing conditions for the majority of plants?
- Is there any pattern between countries and when they harvest their crops? How does this relate to climate and weather patterns?
- Are there any striking differences in the way that habitats or plant species are being protected in different countries?
- Would you recommend that any of these laws be adapted for your own situation?
- Are there any striking differences in attitudes to laws in different countries?
- If it was your responsibility to protect and enhance the plant biodiversity in your area, do the Action Plans that you have received suggest any simple solutions?
- Which Action Plan 'garden' designs are most successful at incorporating plants to meet our survival needs? Why are these most successful – do they have an ideal climate for growing particularly useful plants or are there other factors involved?
- What is the most interesting or unexpected piece of information that you have found in the Exchange Forms?
- How has your work on Plants in Our Lives changed your knowledge, understanding and appreciation of the importance of plants?



Gardens for Life

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