THINKING TREES!

Development, trees and our interdependent world

An educational resource for Primary School teachers

Acknowledgements

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Thinking Trees! was drafted based on National Council for Curriculum Assessment (NCCA) guidelines as a teacher-led project with a primary curriculum focus.

This resource is also a Green-Schools friendly publication that compliments *Litter and Waste, Biodiversity, Global Citizenship and Climate Change* themes.

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About this resource

Thinking Trees! is published by Just Forests, an Irish non-profit organisation working solely on global poverty-related tropical forest and timber issues from a local perspective. It has been developed in partnership with ten teachers and their classes across six schools.

The paper used in this publication comes from forests that have been certified as well-managed by the Forest Stewardship Council (FSC). By using FSC certified paper in this publication Just Forests are providing incentives for responsible forestry, and we can be confident that our print projects are not contributing to the destruction of the world's forests. The use of FSC certified paper demonstrates our commitment to sustainability. FSC certified paper tells you that the recycled and/or virgin fibre content of the paper comes from sources that meet FSC international standards.

Not only does the use of FSC paper in this publication take due regard and consideration for people, wildlife and the environment, it is also printed by Ireland's first carbon neutral printing company – GPS Colour, Belfast. This means that the carbon emissions produced during the manufacturing, transportation and delivery processes are calculated to the smallest carbon footprint possible and offset by GPS Colour Graphics on behalf of Just Forests.

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Contents

Where to begin – a resource made for teachers!

Thinking Trees! has been divided into three sections and will take 10 weeks to complete.

Section 1 can be done by teachers of 3rd & 4th classes and 5th & 6th classes, with tips and suggestions on more advanced activities depending on your class level.

Sections 2 & 3 have been prepared for senior primary level, which junior primary classes can move on to when they are ready.

As this resource is focussed on human development, it complements the 'natural environment' focus of the primary curriculum and extends the 'science' side of the natural world (for example, the 'Living Things' strand in Science) into its uses by people in Ireland and beyond.

Thinking Trees! is divided into 3 sections:

Section 1: The wood of life and why trees are important

This section explores the many very basic ways in which trees, forests and timber affect our daily lives – food, shelter, ecology, medicine, products, music, animals, buildings, art etc. It explores the importance of wood in the school, in our homes and in our communities and relates this to the importance of wood worldwide.

It also explores, through the use of case studies, the consequences of misusing trees and forests, here in Ireland and Europe, as well as internationally.

Section 2: Sustainable development and managing our planet's natural resources

This section briefly explores how human development worldwide is now inextricably linked to sustainability – it explores how we depend on trees and other aspects of nature and environment for our own human development. It also links trees and forests to other key issues – water, food and poverty.

Section 3: Where do we fit in?

This section introduces and briefly explores how each of us relates to these issues and what we can/need to think about in terms of the future. This section also seeks to achieve three things – establish how the issue of trees and sustainability is relevant to children; how they can make a positive (or negative) impact and what things they could do.

We suggest that you read and consult the teacher sheets before beginning activities relating to particular sections. The sheets provide basic background information to the activities' subject areas with fun facts, figures and reference points.

As this resource complements rainforests, wildlife and biodiversity aspects of the curriculum we encourage you to explore the natural environment aspects of this resource or refresh pupils to these themes as you progress through Thinking Trees!

Activities have been prepared to include as much information as possible for teachers. They include the aim, curriculum links, preparation info, method and teacher tips!

Curriculum Links

The curriculum focus for Thinking Trees! is based on the NCCA curriculum planning tool used by teachers in the following areas: 1) Social, Environmental, Scientific Education and 2) Social, Personal and Health Education.

This pack was designed to complement and extend the natural environment strands of the science curriculum about 'nature' with a focus on humans, sustainability and the role of people. This section can be used in addition to natural science strands. It serves as a reference for preparing lesson plans and supplies additional curriculum information and objectives to the curriculum links on each activity page.

Geography

Strand: Environmental awareness and care

STRAND UNITS	CONTENT OBJECTIVES
Environmental awareness (Activities 1, 2, 3, 4, 5, 6 & 7)	Identify, discuss and appreciate attractive and unattractive elements of natural and human environments Explore some examples of the interrelationship of climate, natural features, flora, fauna and human life in different environments in Ireland and in some of the main climatic regions of the world Recognise and investigate aspects of human activities which may have positive or adverse effects on environments Become aware of the importance of the Earth's renewable and non-renewable resources Foster an appreciation of the ways in which people use the Earth's resources Come to appreciate the need to conserve the Earth's resources
Content objectives	Examine a number of ways in which local and other environments could be improved or enhanced Identify and discuss a local, national or global environmental issue Come to appreciate individual, community and national responsibility for environmental care

Strand: Human environments

STRAND UNITS	CONTENT OBJECTIVES
People and other lands (Activities 2, 3, 4, 5 & 6)	Study some aspects of the environments and lives of people in one location in Europe and one location in another part of the world Develop an increasing awareness of the interdependence of people in these places and people in Ireland Learn to value and respect the diversity of peoples and their lifestyles in these areas and other parts of the world Become aware of various ethnic, religious and linguistic groups of peoples in Ireland, Europe and the wider world Develop a sense of belonging to local, county, national, European and international communities

Science

Strand: Living things

STRAND UNITS	CONTENT OBJECTIVES
Caring for the environment (Activities 5 & 7)	Participate in activities that contribute to the enhancement of the environment Identify and discuss a local, national or global environmental issue come to appreciate individual, community and national responsibility for environmental care
Environmental awareness (Activities 5, 6 & 7)	Identify positive aspects of natural and built environments through observation, discussion and recording Explore some examples of the interrelationship of living and non-living aspects of local and other environments Become aware of the importance of the Earth's renewable and non-renewable resources Foster an appreciation of the ways in which people use the earth's resources Come to appreciate the need to conserve resources

SPHE

Strand: Myself and the wider world

STRAND UNITS	CONTENT OBJECTIVES
Developing Citizenship (Activities 3, 4, 5, 6 & 7)	**Environmental care** Appreciate the environment and develop a sense of individual and community responsibility for caring for the environment and being custodians of the Earth for future generations
	Living in the local community Identify some local issues of concern and explore possible action that could be taken to address these issues Explore how inequality might exist in the local community and suggest ways in which this might be addressed Recognise and explore the positive contributions made to the local community by various organisations, ethnic, social or community groups and individuals Recognise and understand the role of the individual and various groups in the community Explore local traditions and folklore and develop a sense of pride in his/her local community Practice ways of working together and of developing a sense of belonging Explore the concept of the class or school as a community

Did you know?

An average tree can make:

- 200,000 sheets of A4 paper
- 40.9kgs of junk mail
- 54kgs of newspapers (that's 20 newspapers)
- 5,000 paper bags
- 1000 rolls of toilet paper
- 53,000 paper plates
- 7 - 100,000 pieces of furniture
- 28,750 napkins
- 61,370 envelopes
- 1,000 paper straws/wooden utensils
- 1,800 pairs of chopsticks
- 2,211,840 toothpicks
- 175,000 pencils
- 262,500 stickers
- 5,000 birthday cards
- 50,000 receipts
- 50 books

What about medicine?

Rainforest plants are important for our health and well-being. Many of the plants used in traditional as well as modern medicines are sourced from rainforests the world over. In fact, over 2,000 different types of trees are currently used for medicinal purposes!

Trees are particularly special for manufacturing medicines as we have been using most parts of the tree – the leaves, roots, bark, flowers, seeds and fruit – for thousands of years! Only in the last 100 years have we been able to chemically breakdown and harness the full healing properties of trees. Here are five trees used in medicine:

Cinchona tree: This tree is found in the Latin American and African rainforests and prominently figures in the list of rainforest plants used for medicine. An alkaloid, quinine, is extracted from the bark of the tree and is used to treat malaria.

Trumpet tree: A popular medicinal tree used extensively in traditional medicine in Central and South America. All parts of the tree – leaves, fruits, flowers, bark and roots – are used to treat respiratory illnesses and rheumatism.

Neem tree: Known as "the village pharmacy" in India, the neem tree has been used in medicine for over 4,000 years and can live for 150 to 200 years. Every part of the tree – the bark, branches, leaves, flowers, seeds and fruit – has some type of medicinal property, from use as an antiseptic to an anti-inflammatory. The Neem is also used to treat eczema, leprosy, coughs, asthma, fevers, nosebleeds and diabetes.

Cocoa tree: The cocoa tree is one of the few trees that is extremely high in medicinal value, thus making it one of the most important medicinal rainforest plants. This one tree alone produces over 150 chemicals that can be extracted from its leaves, seeds, fruit and bark. The extracts are used to treat anxiety, fatigue, fever, coughs, kidney stones, and external cuts and bruises.

Annatto tree: Oil extract from the Annatto tree contains carotenoids bixin, used for protection against UV rays. It also helps to lower blood pressure and serves as a powerful insect repellent.

Source: Rainforest plants used for medicine – www.buzzle.com

A few words from Tom Roche Coordinator, Just Forests

We rely on it constantly. Hardly a day goes by that we don't use it. For as long as humans have inhabited the Earth it has enhanced the quality of our life style beyond question. How it impacts on our social, economic, environmental, cultural and artistic lives is priceless. As a natural raw material, it provides the means of a livelihood for countless people around the globe, and for some, it is their only source of energy for cooking and heating. We value greatly the artistic items made from this awesome tactile material. However, we rarely ask where it comes from or how much is left. Yes, of course, I am talking about that great natural renewable resource: WOOD.

Can you imagine a world without wood? No. Neither can I. But with a rising global population (we passed the 7 billion people mark in 2011), demand for wood from the world's forests is going to increase - it is the 3rd most traded natural resource on the planet.

Here in Ireland we import large quantities of tropical timber from the rainforests of Africa, South and Central America and South-east Asia. People in these regions are often deprived of the life-enhancing benefits of the local forest because large quantities of wood are taken from their forests by other countries, including Ireland. So, how are we going to ensure that all people everywhere around the world continue to enjoy the life-enhancing qualities of wood that we have become so reliant on?

When we admire a beautiful wooden musical instrument, buy a piece of furniture or other timber-based product we must think of the forest from which the wood is taken. We must ask the supplier: is this wood from a forest that is managed to the highest standards? We need to ask: Can our oak, ash, sycamore, beech, pine - just to mention a few Irish grown species of timber – be used to off-set over-exploited and endangered tropical species of wood such as mahogany, rosewood and iroko? Sometimes our use of a particular wood product or wood species can be very good for securing much needed local employment, but sometimes it can be devastating to people, animals and plants in certain countries.

Just Forests promotes the responsible use of trees - they are a wonderful renewable resource, so let's make sure we get our wood from responsibly managed forests, whether here in Ireland or elsewhere.

Through the lens of wood and forests, Just Forests' mission is to create enlightened and 'values-centred' wood consumers. We work to educate children on these issues by linking our resources to clear and specific strands in the school curriculum. We hope pupils will bring our ideas home to their parents and families. Today's children will be the architects, teachers, carpenters, joiners, timber importers and foresters of tomorrow.

Thinking Trees! is a unique resource and is the first of its kind in Ireland to look at trees from the wood-users perspective. It has been designed to help all who use it to come to a greater realisation of the importance of this wonderful resource. It starts with a very simple activity - look around your 'space' in school and at home and come to realise just how dependent you are on wood! Count the many wood-based objects you take for granted which impact on your lives every day-musical instruments, sports equipment, paper, desks, floors, tables and chairs and so on.

We must learn to nurture, value and look after our natural resources in increasingly sustainable ways. After all, they are the backbone of so much of our economic, social, cultural and environmental self. If our children appreciate and understand the importance and value of trees, then the future of the world's forests will be in good hands, and not a moment too soon!

Tom Roche, September 2012

Teacher's Introduction

Within the context of the UN Decade of Education for Sustainable Development (2005 – 2014), **Thinking Trees! – Development, trees and our interdependent world** is designed for primary school pupils in Ranganna 3, 4, 5 and 6 and seeks to encourage students to explore the importance of trees and of forests in our daily lives. It also stimulates them to think about some of the consequences of the loss of forests and trees and how each of us can contribute positively to sustainable development.

While the focus is on trees, the underlying approach is to build up an appreciation of sustainable development and how this issue is now central to all discussions of development itself. In addition to exploring biodiversity and our relationship with the natural environment, it will relate trees to basic needs, to human development and to Ireland's role in this regard.

Thinking Trees! is divided into 4 key themes across the three sections, each with its own set of stimulus materials and activities appropriate for the different class levels and capacities. The 4 key themes are:

- Why are trees important to us?
- What are some of the consequences of using trees/ forests/timber irresponsibly and without care?
- The links between human development and sustainability
- Where we fit in

Thinking Trees! is not prescriptive but rather seeks to encourage thinking, and discussion and action around the issues.

For pupils, each school year has the potential to be a 'year of action'. Some of these ideas for action projects are presented in the Teacher Notes at the end along with fun facts sheets.

By thinking about trees and our connections with the environment - and impact we have on each other – this resource aims to engage pupils on the central role that they have as powerful actors and in cherishing, protecting and promoting the planet's natural resources for future generations to come.

HOW DOES THINKING TREES! WORK FOR ME?

- 7 Activities have been designed to fit within the primary school curriculum, which are easily identified at the top of each activity page.
- The subjects covered in this resource are: SPHE (Social, Political and Health Education) and SESE (Social, Environmental and Scientific Education); Geography, with detailed links to the primary curriculum.
- This resource has teacher notes accompanying every section, so you can adapt activities and class work based on your own class size, pupil progress and any other resources available to you (especially natural resources).
- Teacher notes highlight key ideas or suggest activities for using the information and adapting it further.
- It has been designed with the guidelines from the National Council for Curriculum Assessment (NCCA) in mind.

ONLINE SUPPORT

Visit our dedicated teacher site for support documents, downloads, the Scoilnet fun facts quiz and educational videos in planning your use of Thinking Trees at:
www.justforests.org/thinking-trees

ON COMPLETION OF THE UNITS, SIGN THE PLEDGE!

Once your class has completed Thinking Trees you can award them with the Just Forests Gang Pledge in recognition of their commitment to cherish, protect, conserve and be responsible in their use of natural resources. It can be photocopied from page 37 or downloaded from the Thinking Trees teacher pages online

Do a book report – thinking and reading about trees

We recommend that everyone start with The Lorax or The Wump World and then move on to at least another book of their choosing, depending on class level and reading time. Rather than buying books, check your local library or encourage book swapping, where possible.

Ages 5+

- The Lorax (1971) by Dr Seuss | 72 pages
- The Wump World (1970) by Bill Peet | 48 pages
- The Fight for Plover Hill (2001) by Eilís Dillon | 96 pages
- The Great Kapok Tree: A Tale of the Amazon Rain Forest (2000) by Lynn Cherryl | 40 pages
- My Grandpa and the Sea (1991) by Katherine Orr | 32 pages
- The Giving Tree (2010) by Shel Silverstein | 64 pages
- Stanley Saves the Rainforest (2008) by Tony Frais | 84 pages
- Just a Dream (2004) Chris Van Allsburg | 48 pages
- Where Once There Was a Wood (1996) by Denise Fleming | 34 pages

Ages 8+

- Who Really Killed Cock Robin? (1971) By Jean Craighead George | 176 pages
- The Forever Forest: Kids save a tropical treasure by Kristin Joy Pratt-Serafini and Rachel Crandell | 32 pages

Ages 10+

- Hoot (2004) by Carl Hiassen | 288 pages
- Trash: On Ragpicker Children and Recycling (2003) by Gita Wolf & Anushka Ravishankar | 112 pages
- Floodland (2010) by Marcus Sedgwick | 128 pages
- The Man Who Planted Trees (2008) by Jean Giono and Michael McCurdy | 80 pages

Short annotations for these books and more can be found at www.justforests.org/thinking-trees

Have a book to recommend? Let us know and we'll include it online!

SECTION 1

The wood of life and why trees are important

Theme objective: This section introduces pupils to the varied uses that wood has in their lives and encourages them to think about the misuses of wood and how this impacts on forests, people and trees as a natural resource.

WOOD is one of the earth's most versatile and probably the most familiar natural raw material. Most of us simply take wood for granted - the important role it plays in our daily lives often goes unnoticed. Each day millions of people around the world derive their livelihoods from working with wood. The quality of our lives has been greatly enhanced because of this wonderful resource.

WOOD is a **renewable** source of energy. This means that it renews naturally and will not run out, as long as it is not wasted or overused by humans. Trees are important for the life and well-being of the natural environment (for animals and plants, as well as for people) and the communities of organisms (creatures and plants) that live there. This whole environment, with non-living elements like air, water, soil and sunlight is known as an ecosystem.

For the natural environment, trees are a never ending resource provided they are taken care of in a manner that sustains them. All life on earth relies on trees.

In Ireland, we have the lowest forest cover in all of the European Union at 10.15% (the EU average is over 30%!). This means that as consumers we require more wood to be imported, on average, than anyone else in the EU. County Wicklow has the highest forest cover while county Meath has the fewest trees. These forests are mostly maintained through human intervention, where people work on replacing trees that are cut down. The Government is trying to bring the national forest cover to 17% by 2030. Ireland's forest cover has fallen very far since the Ice Age, when nearly 80% of Ireland was covered in trees!

In many developing countries, wood for fuel is the major source of energy, accounting for as much as 97% of total consumption. Already millions of people in Africa experience considerable hardship on a daily basis in their search for fuelwood just to boil water to render it suitable for drinking. Over the coming years 3, billion people worldwide will face acute fuelwood shortages as this dwindling resource disappears from traditional fuelwood sources.

After gas and oil, timber is the most traded natural resource in the world, and as human populations increase in the coming years, the demands on forests for timber is also going to increase.

Did you know?

- **Three-quarters of the world's population rely on wood as their main source of energy**
- **More than 1 billion people living in extreme poverty around the world depend on forests for their livelihoods**
- **Rainforests once covered 14% of the earth's land surface – now they cover less than 6%. The last remaining rainforests could be gone in less than 40 years**
- **Rainforests are home to more than half of the world's plants and animal species**
- **Destruction of the forests creates numerous environmental problems, including changing local rain rainfall patterns, speeding up soil erosion, the flooding of rivers, mud slides and threatening millions of species of plants, animals and insects with extinction**

I'm a tree: look what I can do!

Let's start with the bits of a tree that we don't use – is there anything wasted?

In making things, producers have found uses for nearly every part of a tree, so virtually nothing is wasted!

The leaves, needles, small branches, and roots are generally left in the forest to replenish the soil. This valuable organic matter prevents excessive runoff after rain and snow, and adds important nutrients to the soil to help nurture the next generation of trees.

Cellulose and other natural wood chemicals are extracted and used to make everything from plastics and food flavourings to photographic film and chewing gum. Bark is useful for producing dyes, adhesives and medicines. It can also be ground or chipped to make garden mulch, or burned to generate energy.

How people use wood/timber products

LEAVES AND NEEDLES: Pine oil, cedar oil

SAPS, GUMS AND RESINS: Maple syrup, adhesives, chewing gum, varnish, medicine, printing ink, paints and stains, shoe polish, fireworks, candles, crayons

PULPWOOD: Paper, paper board, rayon, cellophane, plastics, photographic film, imitation leather, imitation sponges, sausage casings, celluloid, shatterproof glass, artificial hair and bristles, milk cartons

STUMPS: Veneer, charcoal, pitch, wood tar

ROOTS: Beauty products and tea

BARK: Tannins, dyes, adhesives, flavourings, medicines, mulch, fuel, perfume

SAWDUST: Artificial wood, composition board (chip board and plywood), filler for linoleum, ice storage, livestock bedding, plastics, soil conditioner, fuel briquettes, pulp

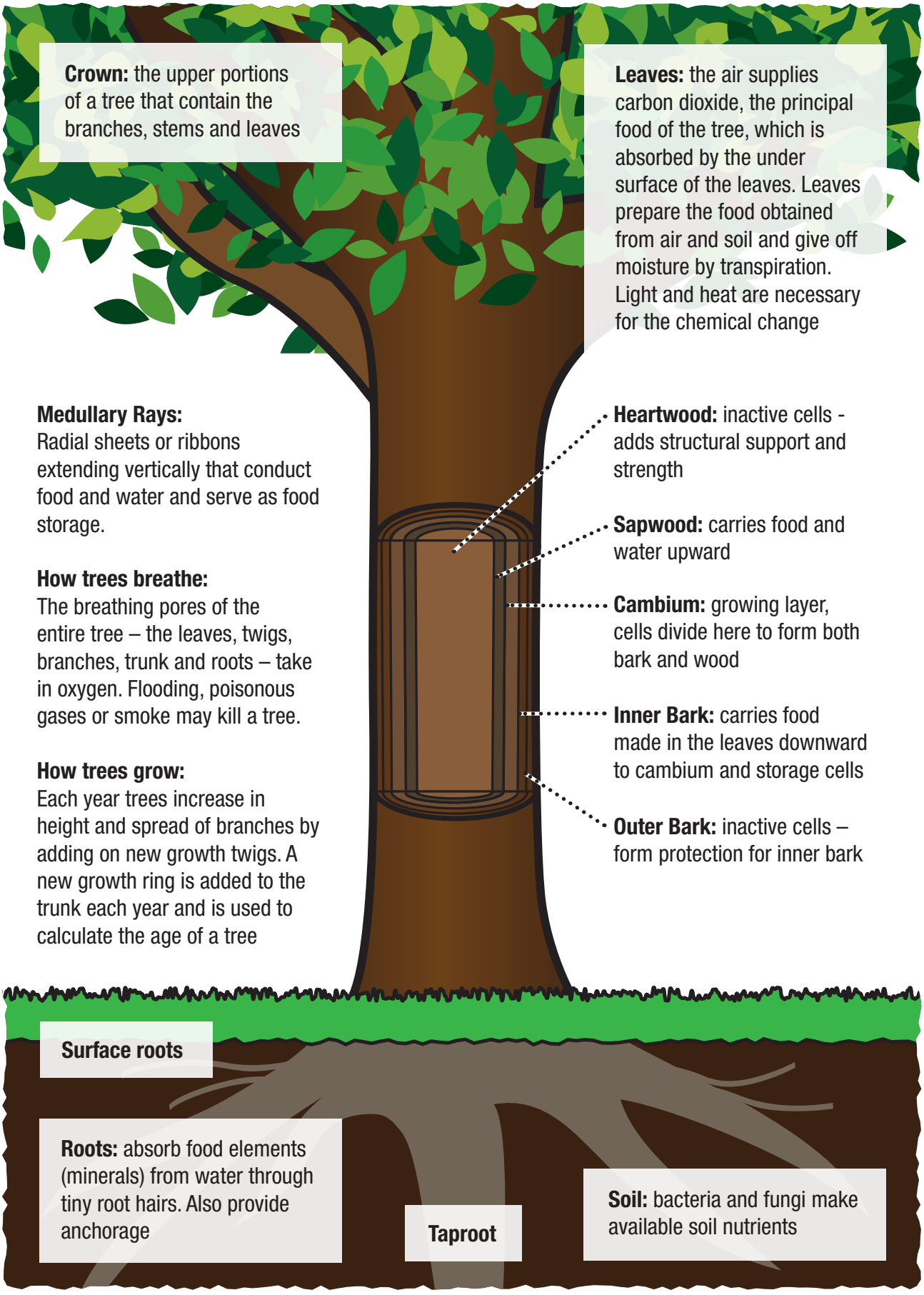
TRUNK: Flooring, toothpicks, buttons, furniture, plywood, veneer, baseball caps, tool handles, shingles, moulds, pencils, ship timbers, fence posts, railroad sleepers (ties), telephone poles, butchers' blocks, clothespegs, musical instruments, shoe heels, ice cream sticks, tree houses

Source: www.tappi.org

All living things must eat. Trees "manufacture" their own food through something called **photosynthesis**. The sun provides energy used to combine carbon dioxide gas (from air) with water (from the soil).

What's so special about cellulose and lignin?

Think of the structure of a tree. Trees are made up of cellulose fibres that are held together with a glue-like substance called lignin. The lignin helps to determine how hard the wood will be. This makes the tree strong enough to use for building houses and furniture. The more lignin present, the harder the wood and vice versa, the less present, the softer the wood. When wood is cooked, the cellulose separates from the lignin to make pulp wood.



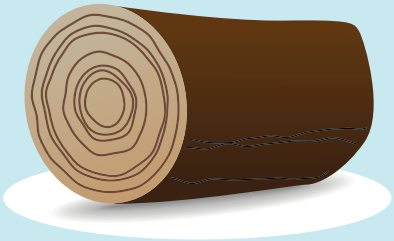
This graphic is available as a blank worksheet online at: www.justforests.org/thinking-trees

Adapted from Diagram Showing Functions of Different Parts of a Tree in 'New Tree Experts Manual' (1954) by Richard R. Fensk

THE JOURNEY OF WOOD

Wood Products

Trees larger than 20 centimetres in diameter, if they are of suitable quality, are normally used in the production of solid wood products like lumber and veneer



Building Products

People have used wood to build shelter since ancient times.

Using nature's strength

What makes wood so strong? It is the combination of wood fibre and the lignin, or glue, that binds wood fibres together. Wood fibres grow vertically and it is in this direction that wood is strongest. Imagine micro bamboo shoots being held together tightly! People use the strength of wood products to build schools, office buildings and even tree houses

Non-wood Products

Large trees unsuitable for solid wood products along with smaller trees between 10-20 centimetres in diameter, sawmill trimmings and sawdust are used to make paper, particle board and other products

Chemicals

Trees are a natural source of valuable chemicals. Chemicals such as turpentine and rosin come from the sticky sap of trees. Lignin is another chemical we get from trees. Cellulose, the wood fibre used for making pulp and paper is also used in many other products

How the chemicals are used

When chemicals are removed from the tree and mixed with other chemicals, a chemical reaction occurs. The energy from this reaction can create a completely different chemical. This is how chemicals from trees can be used to make products as different as artificial vanilla flavouring and frames for your eyeglasses

Paper

Trees are used to make pulp and paper products – notebooks, books, magazines, nappies for babies, toilet roll, envelopes, napkins for wiping tomato sauce from your mouth

Making paper

Logs are chipped into small pieces of wood. These chips are cooked with chemicals that dissolve the glue-like lignin holding the wood fibres together. This leaves a pulp made of cellulose fibres and lots of water. The pulp is put on a screen to let the water drain away. The fibres remain to form a sheet of paper that is dried and put on a roll

Go with the grain!

Building products made of trees take advantage of the strength of the wood grain (or direction of wood fibres). Plywood is made by stacking layers of veneer – thin sheets of wood – with the wood grain at right angles to each other. This makes a plywood panel strong both up and down and from side to side. Other engineered building products are made of wood chips or shavings mixed with a special glue, such as particleboard which is cheaper but not as strong as plywood.

Building materials, musical instruments (guitars, violins, cellos, drums, pianos) sports equipment (hurley, skateboards, table tennis bats, hockey sticks, snooker cues)

Using Cellulose in many products

Cellulose fibres are converted and used in many products. Cellulose gum is what makes toothpaste "paste" and helps it stay on the toothbrush. In parmesan cheese, cellulose powder keeps the grated cheese from getting lumpy. Shampoo would be just watery soap without cellulose to make it thick. Cellulose is used as a "filler" for many processed food products in order to add texture

Chocolate drinks, toothpaste, bicycle & car tyres, grated cheese, breakfast cereals, biscuits, brownies, white bread, ice cream, vegetarian burgers

Wood Resins

In nature, resin is the goo that forms a protective coating around a plant wound. It creates a hard coating that microorganisms and insects can't penetrate. People gather the resin of pine trees and use it in many ways:

Rosin is the most important of the hard resins. It is used in paint, varnishes, and in soap making. It also makes the bows of stringed instruments sticky so they produce more beautiful music. Rosin is also used by ballplayers to give them a better grip

Turpentine is the most widely used oleoresin (a mixture of oil and resin). It is a solvent – meaning that it dissolves other substances – that is used in paint, varnish, waterproofing and shoe polish

Gum Resins are used to make other chemical products

Worksheets, books, posters, paper towels, tissues, toilet paper, lunch wrap, lunch bags, packaging

Source: The Forest: The products we get from trees (2008) Educational in Nature (USA) and Idaho Forest Products Commission www.idahoforests.org

Extra support information for activities 2 and 3

Activity 2 - Who needs forests anyway?

The astonishing variety of life on earth – whether it is animals, plants, people, insects or mushrooms – is known as biodiversity. Loss of bio-diversity results in serious reductions in the goods and services provided by the Earth's ecosystems, which make human survival and economic prosperity possible. The Earth's biodiversity is the result of millions of years of evolution of life on this planet. Human activities are causing losses in biodiversity 50 to 100 times faster than would be expected in the absence of human activities.

People use forests for shelter, fuel, food and water. Animals use forests for these reasons too but in very different ways!

In Ireland trees are a home grown resource for heat and electricity as well as recreation (such as walks) and as a home for animals, birds and wildlife.

Forests are also home to about 300 million people worldwide and are a source of work and jobs for many more.

Activity 3 - What are some of the consequences of using trees/forests/timber irresponsibly and without care?

The loss of biodiversity often leads to poverty, hunger and loss of livelihoods for people who live near or work on trees and forests.

Since trees can be used for so many purposes it is often at the expense of local people, local wildlife and for lots of profit that forests are cut down without any thought of the impact that this will have. Illegal logging involves people cutting down, transporting, buying or selling timber without permission and outside of the law. The illegal logs cut each year, if laid end-to-end, would stretch ten times around the Earth according to a report from Chatham House (research body), July 2010.

Illegal logging can lead to:

- Poorly paid workers
- Deforestation
- Loss of wildlife and their homes
- Environmental problems, such as landslides, rivers flooding and climate change [need to explain diagram on carbon and greenhouse gases]
- Conflict between communities

Irresponsible care in the use of trees/wood can lead to:

- People throwing out wood instead of recycling or reusing it = waste!
- Not enough trees being planted
- Illegal logging
- Loos soil near river banks, leading to erosion and greater risk of flooding

Deforestation – how bad is it?

Tropical forest destruction is responsible for about one-fifth of current global greenhouse gas (GHG) emissions. Keeping the global temperature increase below 2ºC (compared to pre-industrial revolution) means GHG emissions must peak by 2015 and by this time the world must be on track for drastic reductions in overall emissions. Ending deforestation in tropical forests is critical for protecting the world's climate, biodiversity and forest dependent communities. Eliminating deforestation in just eight tropical countries – Bolivia, Brazil, Cameroon, the Democratic Republic of the Congo, Ghana, Indonesia, Malaysia and Papua New Guinea – would nearly halve the annual rate of global forest loss.

Source: Greenpeace, The Climate Bomb is Ticking

ACTIVITY 1 The Wood Audit

Aim: **To raise pupils' awareness of how much wood is used in everyday life and how important it is to us.**

Curriculum Link: **SESE – Geography (investigation skills, human environment, natural environment).**

Materials: **Paper and pencil.**

Method:

Preparation – Prepare an activity sheet for pupils to fill in for the class and home wood audits that have suggestions of where to look. Divide page into 4 areas: Recreation, Food, Shelter, Natural Resources for pupils to fill out. Suggest that these may not be the only areas where pupils can look for tree-based products.

Step 1 – Ask all of the pupils to stand up and close their eyes. Instruct them to pretend that they are all trees in a forest in Brazil, surrounded by many other trees with all kinds of animals and wildlife and living things around them. Now, telling them to think like trees, ask pupils individually to describe themselves *('what are you?'); what is your purpose (for people, the forest plants and animals, and the environment)?; 'how do you eat and sleep?'; 'and what makes you happy?'*

Explain to them that a tree is a tree (and not a plant) when:

- It lives for more than two years, so it is called a perennial plant
- It has a persistent woody stem
- It exhibits secondary thickening – in other words it grows in diameter as well as height
- You can climb trees – you can't climb plants!

Step 2 – Ask the pupils some stimulus questions about wood used in daily life, in school and at home. For example: Name two pieces of furniture that are made from wood? Musical instruments? What sports depend on wood?

Step 3 – As a group, make a list on the blackboard/whiteboard of all objects made of wood in the classroom.

Step 4 – Ask the pupils to repeat the same exercise at home that evening and to bring back a list of everything in their home that is made of wood.

Step 5 – Ask the pupils to give feedback as a group in class the next day of everything they found at home. Discuss with the pupils how important wood is using these everyday examples. Ask them to imagine their homes and classroom without all of the objects on the list.

One step further – Following the wood audit introduce pupils to "cellulose" and explain where it comes from. Now ask the pupils to seek out cellulose-based products in the home by looking at the ingredients labels on food and beauty products. Make a class list of what they find. Ask what they think about this? How do they feel about trees being used for so many things in their lives?

Teacher's note: This highlights to the pupils that we don't realise how much we use wood in our lives until we imagine what life would be like without it.

Refer to the *I'm a tree! Look what I can do!* diagram (page 12) for information relating to what parts of a tree products are made from and some of the properties of trees. The next section will look at the journey trees go on to end up in our homes but feel free to use some of this information at this stage if needed.

Note: to brush up on the aspects and parts of a tree feel free to get the pupils to copy the I'm a tree diagram (withholding the names of the tree parts) and supply them with the names of the tree parts separately, leaving them time to draw lines linking where they think the parts go on the diagram. A blank version of the diagram is also available on the Thinking Trees! mini-site at www.justforests.org/thinking-trees.

Timeframe: 2 classes

ACTIVITY 2 Who needs forests anyway?

Aim: **To further the pupils' awareness of the value of forests and trees through a mapping exercise.**

Curriculum Link: **SESE - Geography (investigation skills, human environments, natural environments, environmental awareness and care).**

Materials: **Large sheets of paper, colouring pencils/crayons, whiteboard and markers**

Method:

Preparation – You may wish to draw your own map before beginning the class, which can then be drawn on the board to lead the exercise.

Step 1 – Ask the pupils to draw a picture of a tree on a big sheet of paper. You should also do so on the board along with the pupils to lead the exercise. Bear in mind that the pupils will be drawing a map, so maybe suggest starting the drawing on one side of the page, so there is enough room to fit the rest of the picture/map. Following on from The Wood Audit (Activity 1), ask the pupils to write a list beside the tree of all the objects in their family home which came from trees (their paper, desks, glue, rubbers etc).

Step 2 – Ask the pupils to now draw their home on the page too – again, keeping in mind the rest of the objects that need to fit on the page. They should then draw a map of how one of the objects on the list got from the forest to their home. This may be a timber factory, a truck or a furniture shop, for example. The fact that a large amount of wood used in Ireland is imported from other countries is very important, so the map may include ships etc.

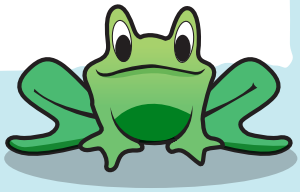
Step 3 – Discuss with the pupils how many different people they think are affected by the journey of the wood. For example:

- Ddo they think people such as forestry workers, timber factory workers or carpenters are affected?
- If so, how? Are they affected in a good way or a bad way?
- What about the people and animals who live in the forest and may depend on them?
- Are people in other countries affected more by the cutting down of trees?

Teacher's note: You may wish to display all of the pupils' drawings on the classroom wall, creating a large colourful mosaic of the many journeys that wood has made to reach them in their home. This could evolve into a project wall for Thinking Trees, where drawings and other work from the other activities could be displayed also.

Visit www.justforests.org/thinking-trees/ for links to videos showing how pencils, toothpick and paper are made.

Timeframe: 1-2 classes



ACTIVITY 3 Consequences

Aim: **This activity explores some of the consequences of using trees/ forests/timber irresponsibly and without care through role play.**

Curriculum Link: **SESE - Geography (human environment, natural environment, environmental care), SPHE (development of respect for human and cultural diversity).**

Materials: **Whiteboard, 5 x sheets of A3 paper, markers.**

Method:

Preparation – Photocopy and cut out the role play cards in advance of the lesson (page 21).

Step 1: Role Play – Ask for four volunteers before the lesson begins, gather them together in front of the class and explain to them discreetly that they will each play a person that uses forests/wood/timber in different ways. Each student reads their character description so as to familiarise themselves with it, waiting on you to instruct them to read it aloud in front of the class. Inform them that once everyone has read out their cards aloud they will each pretend to be that character and you will ask them some questions and they should think about their answers, pretending to be their characters and that it is OK to change their answers during the role play.

Explain to the class that you are a radio reporter who will be checking the situation between four different groups of people that rely on forests, but in different ways. These uses can sometimes have both good and bad outcomes, and this lesson will now explore some of those ideas.

Introduce some background information to the group:

> *Good morning listeners! This is Katie [or Donal] Walsh reporting live from the Amazonas area in north western Brazil, where communities, land and industry are changing fast. I am here today with a panel of 4 speakers, Bob, Tonga, Su and Thomas and each of them affects the rainforest in different ways.*
>
> *While Bob's employers provide work, it can negatively affect Tonga's community in a number of ways – food is not replenished, and the protective shelter of the trees is lost.*
>
> *In working for the government, Su is in a position to listen to good and bad advice from everyone involved. The country needs to grow, jobs are needed and tree logging is a profitable industry if done right. But is it being done right? Who should the government listen to most – indigenous people? tree logging companies? foreign consumers like Thomas who in the end buys products from the forests? Let's find out.*

Pupils read out their role play cards, in the order of Bob, Tonga, Thomas then Su.

Step 2: Question Time! – You can now facilitate a class discussion (using the information provided on the role play cards). Pin four large sheets of paper to the wall (or use the whiteboard) in order to collect pupil answers under each role play character.

Use some of the following questions to prompt the drama, in getting the characters to reflect on their roles and the changing rainforest.

Bob: How can you still have a job without harming the homes or livelihoods of others? Did you know about Tonga and indigenous people that depend on the land and the forests before you heard Tonga's story?

Tonga: How would you feel about Bob's company working near your home? Should you have been asked about this? Why is that important?

Then ask Thomas these questions, as he is the character representing all other Irish pupils: Why should you care about trees?

Does any of what you have heard today make you happy, sad or do you have any other feelings about what you have heard? Does knowing these stories change the way you feel about your use of tree based products? Are you responsible for the use of products, as someone in Ireland where there are Irish trees here too?

Address Su's responses last. What does Su think of everyone involved in the forest and who she should listen to more or less? Is there anything that Bob, Tonga or Thomas wish to say to Su, addressing these points (either good or bad? short term or long term?). How do each of the characters feel that they are connected to one another?

Once they have finished exploring these questions, the pupils involved in the role play may return to their place in the class.

Step 4: Evaluation and feedback – Question for all characters: *whose responsibility is it to take care of trees and forests, and what can you do about it?* This should be addressed by the teacher in summing up the activity. *Thomas, you have just heard these stories about how other people are affected by trees for the first time. How does this make you feel? What do you think about this?*

At the end of the dialogue the radio format gives you an opportunity to recap the facts. Feel free to let pupils explore their own feelings in their various roles (such as: *what is the problem…? How would you feel if..? Can you defend…? If you had…? Why not…?*)

Ask the pupils what they thought of the exercise and the characters. Were they surprised? Would they have chosen any other kinds of characters?

The next section will explore these issues, the solutions to these unfortunate consequences and what pupils can do about challenging the bad uses of timber and wood at home and in their own schools.

One Step Further: Letter writing activity and exploring the Amazon! – Ask pupils to find out 3 interesting facts about each of the characters they explored in the role play. Further information can be found on websites such as **www.amazon-rainforest.org**, **www.worldwildlife.org**, **kids.mongabay.com/lesson_plans/handout.html**, **www.celebratebrazil.com**, **www.ethicalconsumer.org**.

Next, ask the pupils to pick a character that they disagreed with what they were saying (based on the role play cards and the improvised drama). Each pupil must write a letter to this person explaining 2 points why they disagree with them and 2 points for what this character should be doing instead to change the situation. The World Wildlife Fund (WWF) website has excellent pupil friendly resources on forests, deforestation and life in the forest (**wwf.panda.org/about_our_earth/about_forests**) for extending this activity into tropical timber logging campaigns in action and zero deforestation.

Teacher's note: Use a microphone prop – this keeps the debates very disciplined. If pupils do not take up roles immediately feel free to outsource answers to the rest of the class and collect them as part of the exchange.

Explain to Bob and Su that they may encounter unpopular opinions about their roles as industrial workers and the government from Thomas and Tonga. Bob and Su's roles might be better supported by an adult or support teacher as the role of Bob as they might have to take some aggression from the other characters. Being able to defend the role of "the logger" is proof that we in Ireland need wood based products but the solutions for how we can manage our uses of forests is not always obvious.

Timeframe: 1-2 classes

Role Play cards

(to be photocopied, cut out and one given to each role play actor)

My name is Bob and I have been living in the Amazon in Brazil for 5 months. My job is to cut down trees. This is the third forest that I have cut down in five years. I work 14 hours a day and have not signed a contract, so I could be out of a job at any time. It is hard work but the money is good. We do not have time to plant new trees. This is something that the government or someone else should do.

My name is Thomas and I live in Cork, Ireland. I love to play hurling and my mum buys all of my copy books for school so I don't really pay attention to what kind of copy books she buys. It doesn't bother me, as long as I have somewhere to write my homework in.

My name is Su and I work for the Chinese Government. My job is to try and help all people in society. Forests and wood are a great source of money and jobs in my country. Lots of foreign companies are very interested in our forests, so we have a lot to gain by cutting them down. This gives local people many jobs and helps lots of families.

My name is Tonga and I have always lived in the Montane Forest in Nigeria with my family and friends. Many people use the woodland – not only humans, but animals, birds and plants have used it as a home for hundreds and thousands of years.

Just like us, everybody needs wood to make fire for cooking and for warming their homes, but nothing is being done to replace the trees that are being taken away. My people have always used the forest. Soon there won't be any trees left. What will we do then?

SECTION 2

Sustainable Development and managing our planet's natural resources

Theme objective: This section aims to introduce pupils to the idea of sustainable development. It encourages them to think about the significance of their actions and how they can impact on future generations.

"Sustainable development is a vision of development that encompasses populations, animals and plant species, ecosystems and natural resources and that integrates concerns such as the fight against poverty… we have to learn our way out of current social and environmental problems and learn to live sustainably. We need to place real economic value on the benefits to biodiversity, indigenous people and to minimise forest plunder, greenhouse gas emissions and increase strategic rainforest sinks, to reduce the consequences of climate change."

Dr John Feehan, UCD School of Biology and Environmental Science. Author and Patron of Just Forests.

Wood impacts on so many aspects of our lives, which we often fail to realise. Trees are an invaluable resource and play a key role in development worldwide.

Sustainable development is defined as 'development that meets the needs of the present without limiting the ability of future generations' (United Nations World Commission on Environment and Development).

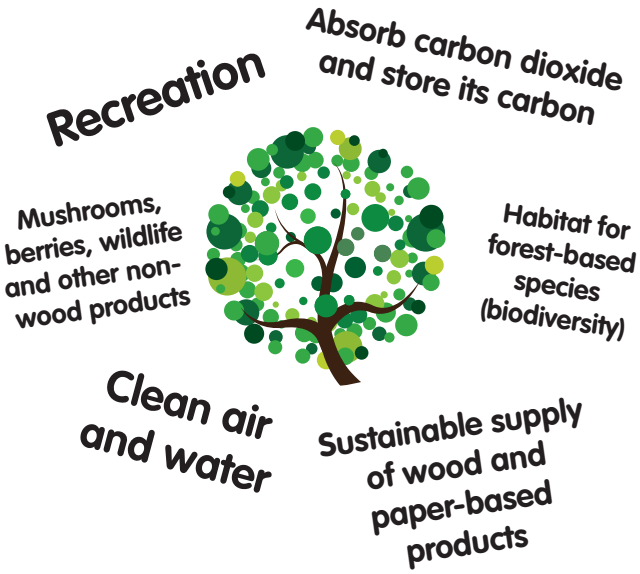
Trees are a part of a wider ecosystem that helps stabilise the climate and provide the right conditions for human life. The careful and sustainable management of tree planting, protection and felling can help ensure that future generations inherit an earth that will continue to provide fundamental resources. True sustainable development involves a balance between using the Earth for the benefit of the human race and respecting the environment. Sustainable solutions set out to achieve this by:

- Continuing to meet the basic needs for human life, society and communities – that is food, water, shelter, transport, communication etc.
- Inflicting no lasting harm on the environment, its ecosystems, animals, water, air etc.

How are trees sustainable?

- Trees absorb Carbon dioxide and produce oxygen – and therefore maintain the composition of the atmosphere.
- Although carbon dioxide is released when wood is burned, this is balanced out by the carbon dioxide absorbed during its own growth.
- Plants growing in forests are a source of food.
- Rainfall and water flow is regulated by forests
- Bogs purify water.
- Mangrove forests absorb waves from the sea preventing erosion and flooding.

Ecosystems, goods and services of sustainably managed forests



Based on Figure 1. from 'Sustainable Procurement of Wood and Paper-based Products' (2011) by World Resources Institute

Extra support information for activities 4 and 5

Activity 4 - Our Sustainability Tree

What is development?

The word 'development' can mean many things – the development of things, ideas, people etc. In Thinking Trees, we are using the term to refer to two key ideas – the development of the natural world in a balanced and appropriate manner ('sustainable development') and the development of people ('human development').

- **www.developmenteducation.ie** – sustainable development section
- **www.globalissues.org**
- **www.peopleandplanet.net**

What is sustainable development?

Sustainable development is defined as 'development that meets the needs of the present without limiting the ability of future generations'. Sustainable development links the idea of progress with the environment, so that for livelihoods to get better, we must think responsibly about natural resources and how we manage them. More information on this on page 22.

What is human development?

Human Development is the improvement of people's quality of life in terms of their life expectancy, education (literacy levels and years of schooling) and being able to afford things like food, shelter, healthcare, education etc. It means that people have better access to what they need and want in order to live and survive.

Activity 5 - Spot the difference!

Many people, animals and wildlife rely on trees and forests. In sharing the resources that trees provide, we have a responsibility to make sure that they are managed in a thoughtful way.

By studying the impact that people have on the environment (good or bad) we can see how our actions and the actions of others can affect local people, are respectful of everyone that relies on its use and whether it is being spoiled for future generations. Who needs trees? Everyone does!

In linking back to 'sustainable development' this activity explores how a forest can become more or less capable of renewing itself based on how it is used. What causes deforestation and what is needed to reverse it?

Here are some basic examples:

Cause of scene 1

- Deforestation – the cutting down of too many trees without replenishing them or planting new ones
- Loss of habitat/home for birds, animals and plants. They have nowhere else to go!
- Big companies doing what they want to do and not caring about the law

Change needed to bring about scene 2

- Plant trees
- Talk to local people and find out who used the forest and how we can restore it
- Protect what is there – record progress, monitor who uses the forest and watch out for any tree thieves

A note on eco-responsibility

We all depend on ecosystems – on the care and preservation of the community of plants, animals, insects and environments that allow them to exist and flourish. Trees are an important part of ecosystems and for our way of life. Whether we like it or not, trees, forests, the organisms that live in them, animals and all of US depend on and are part of the planet's environment. Our focus on trees, in this resource, introduces one of the ways that we can think about managing the planet's renewable resources that are essential for the all kinds of life on earth to exist.

ACTIVITY 4 Our Sustainability Tree!

Aim: **To help pupils understand the importance of their actions and how they may impact on future generations. This activity should also establish a basic understanding of the importance of the rights of future generations also.**

Curriculum Link: **SPHE (care and respect for themselves and others, myself and the wider world), SESE - Geography (human environments, environmental awareness and care).**

Materials: **Whiteboard, markers, large piece of cardboard to cut into the shape of a tree trunk with some branches, green paper, scissors, pencils.**

Method:

Preparation – You may want to make the trunk for the sustainability tree beforehand, so as the class can begin sticking their leaves straight away – or you may want to make the trunk together with the class so they can decide what it looks like.

Step 1 – Write the word 'development' on the whiteboard and ask the pupils to discuss what they think it means. Explain that development is supposed to improve people's lives. Divide the class into 4 or 5 groups and write the list below on the board. Ask each group to rank the lists from 1 – 10 (one being the most important, 10 being the least) in terms of which they think are the most important items on the list relative to how important they are in terms of people's development.

Clean water	Fancy shoes	DVD players	Clear air	Education
Proper shelter	Computer games	Fuel	Food	Trees

Step 2 – Request that the groups give feedback about their ranking of the list and explain why they think certain items on the list deserve to be higher than others. Ask the groups to consider if they think people in Ireland all have the same needs, for example an unemployed person or a homeless person.

Step 3 – Write the word 'sustainable' on the board and, again, ask the pupils what they think this means and make a list of their suggestions on the board - for example, to assist or support for a long period of time. Initiate a discussion with the class about how important sustainability is in terms of development by reading to them the definition of sustainable development – *Sustainable development is development that meets the needs of the present without limiting the ability of future generations.* To simplify it further, you could use the phrase 'enough and as good' – so the pupil's need to leave 'enough' for future generations, and it needs to be 'as good' as they had it.

Step 4 – Once the class has a firm idea of what Sustainable Development is, they can draw individual leaves on some green paper (the bigger the leaves, the better!), cut them out and then write on them what they believe sustainable development to mean. They can then be stuck to the cardboard tree trunk and put on the wall to be displayed as 'our sustainability tree'.

Teacher's note: All extra information for this activity is provided in the information page 23. You can either make the trunk for the tree with the class or else have it prepared beforehand. This activity is also linked to activity 7 on page 30 where the pupils can add more to their sustainability tree.

Timeframe: 2 classes

ACTIVITY 5 Spot the Difference!

Aim: **This activity explores our relationship with biodiversity and where people fit in. It also invites pupils to explore the negative impact of deforestation.**

Curriculum Link: **SESE - Geography (a sense of place and space, geographical investigational skills, human environments, natural environments).**

Materials: **Whiteboard, large sheets of paper (for the teacher and for the class groups).**

Method:

Preparation – Decide how you are going to display the two scenes – using a visualiser or accessing the poster PDF of the scenes online or by sketching the two scenes out onto poster paper.

Step 1: Stimulus – Project Scenes 1 & 2 onto a whiteboard for the pupils to see using a visualizer, or draw the scenes onto posters using markers. Additionally the PDF of this image is available from the Thinking Trees! mini-site for displaying from the Internet.

Divide the class into even sized groups. Introduce the sketches as belonging to a fictional forest area in northern Brazil. Ask pupils to make a list of as many different things as they can between the two sketches.

Step 2: Discussion

Scene 1: Ask pupils, in groups, to jot down what they think has happened to cause the situation in Scene 1. The teacher should make a list of the answers on a large sheet of paper – this is a list of causes.

Scene 2: Ask pupils what things need to happen – at the community/local level or by the government – to create the picture as shown. Write these on a large sheet of paper – this is a list of actions.

Step 3: Exercise – Explain that the two sketches presented are meant to show what happens if companies misused or overused the forest or land. Discuss how it could be better used.

Now ask the class to draw a sketch of their own sustainable village. How would it look? Who would use it? Using the notes from Scene 2, what would it take to go from Scene 1 to a new Scene where everybody could share and respect the land and environment responsibly without causing long term harm to the forests, animals and local ecosystem? Feel free to supply some points of advice from the Cloughjordan ecovillage website (see teacher's note), or ask pupils to investigate their website for ideas and anything interesting.

Step 4: Feedback and evaluation – Ask pupils to take turns, in pairs, to write down answers to the following questions:

- Explain what is going on in your village. What are its features?
- What do you like most about your village?
- Do you think your village is realistic? Why?
- What is needed to make your village real/realistic?

In their groups, pupils can present their 'sustainable villages' to the class. These can be displayed on the classroom wall beside the 'cause' and 'action' sheets from Step 2. You may cut out individual words/phrases and paste them on either side of the villages. If there is time, consider taking the best ideas from the pupils villages (voted for by them) to make a class sustainable development village.

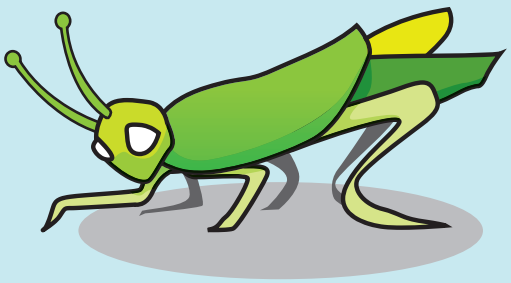
One step further – Download the first 6 *Our Members* case studies from the Cloughjordan website and distribute for class reading. Once finished, discuss what each group liked about them. What are the benefits of an ecovillage? Explain why it is important. These answers can then be gathered as a class, and everyone can evaluate how feasible this kind of village would be in their area.

Teacher's note: Ideally, this activity would follow the discussion of the meanings of 'sustainable development' in the 'Our Sustainability tree' activity on page 24.

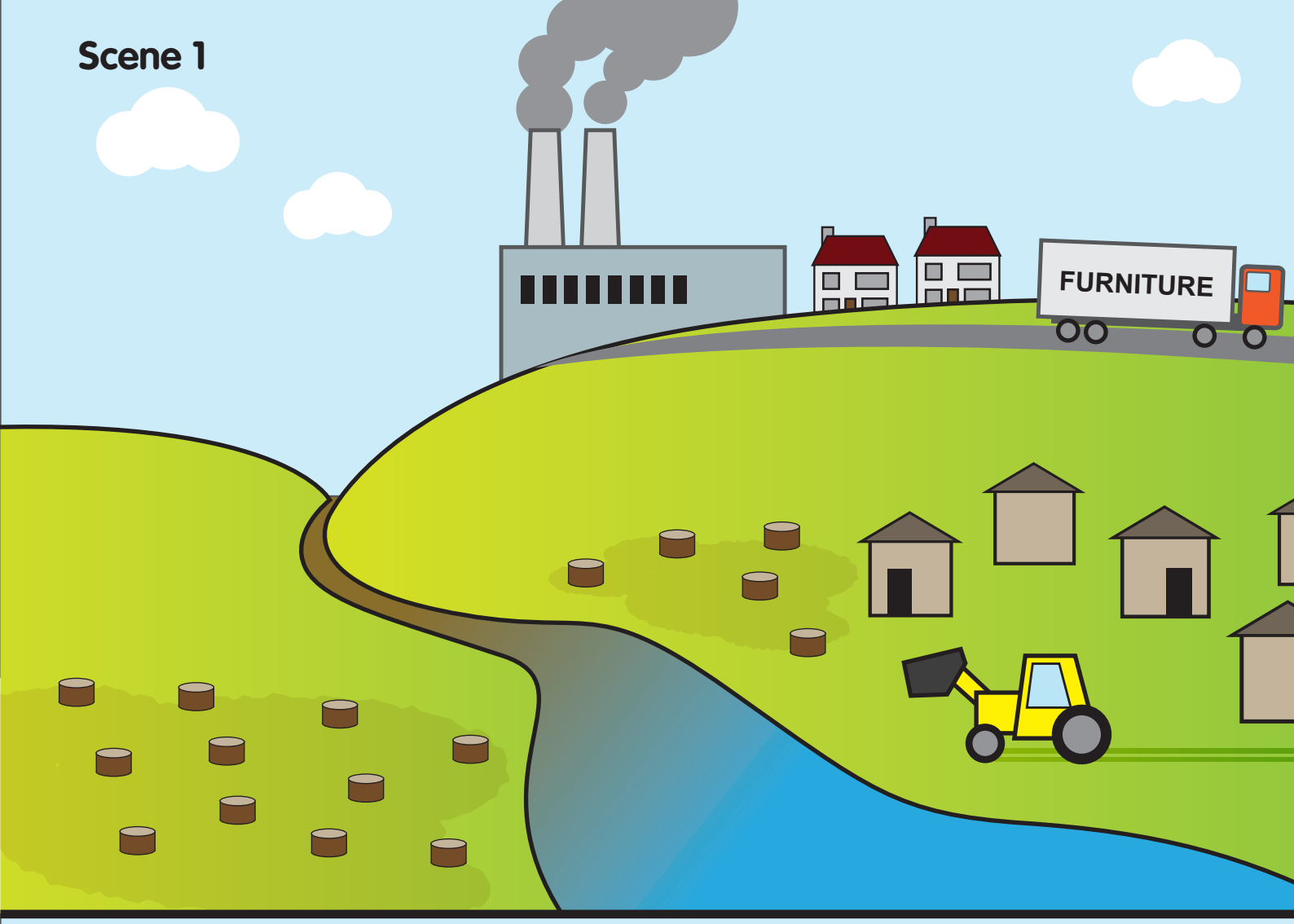
You may also invite the pupils to change/add to their village sketches later in the term once all other modules have been completed.

Resources for reference: Ask pupils to investigate Ireland's most well-known ecovillage in Cloughjordan, Co. Tipperary at www.thevillage.ie for ideas for their sustainable development villages. The following pages from the website should be read: *'What are ecovillages?'*, *'Community Farm'* and *'Our Members'*. Class visits to Cloughjordan can be arranged via their website.

Timeframe: 2 classes



Scene 1



Scene 2

SECTION 3

Where do we fit in? (Activities 6 and 7)

"We cannot live for ourselves alone. Our lives are connected by a thousand invisible threads, and along these sympathetic fibres, our actions run as causes and return to us as results."

Herman Melville, Author.

GOOD WOOD is certified!

Good wood is certified by a credible scheme such as the Forest Stewardship Council (FSC). FSC sets the standard worldwide for credible forest management and remains the most widely recognised and best regarded in the world. FSC guidelines are strict and are closely monitored. They ensure natural forests are conserved, that endangered species and their habitats are protected and that forest workers and forest dependent communities are protected.

As consumers, we have the power to support the responsible and just production of wood products. By buying FSC certified products, we are guaranteed that the product has been sourced from forests managed to the highest environmental and social standards.

Look for the FSC logo on products at home and in school. If you stop buying wood products that come from forests that are badly managed, or have perhaps that been illegally felled or logged, then the suppliers of these products will have no choice but to change as well. Buying good wood shows companies that there is no market for timber that has been obtained through illegal and destructive practices. This forces them to act responsibly. Some examples of this include:

- Milk cartons
- Magazines, books and copybooks
- Toilet paper
- Kitchen roll
- Musical instruments
- Furniture
- Birthday cards

Suggestions for Activity 7:

Things we can STOP doing:

⊗ Buying products that do not have the FSC logo, or another form of forest certification.

⊗ Wasting paper: use both sides of the page while writing and reuse envelopes when possible.

⊗ Stop ignoring your nearest forest. What is its name? Who lives there?

⊗ Don't buy when you can borrow. Swap books, CDs and movies. This saves on money, ink and paper that goes into printing new books

Things we can START doing:

✓ Recycle old furniture by giving it to local charity shops.

✓ Support local tree planting projects. Are there any near you?

✓ Think before you buy. Look for the FSC logo! In school, at home, in the supermarket…

✓ Write to your local supermarket and ask them about the FSC products they sell. Do their own branded products have FSC certification?

✓ Find out if your school has a Green-Schools committee. Get involved!

Can your class come up with any more start/stop ideas?

ACTIVITY 6 The FSC Race!

Aim: **To make the pupils more aware of FSC products and the importance of choosing and using them, where possible.**

Curriculum Link: **SPHE (developing a sense of social responsibility, to help the pupil make informed decisions in life), SESE - Geography (environmental awareness and care).**

Materials: **Pencils, colouring pencils, paper, drawing pins or Blu-Tack.**

Method:

Preparation – You may need to draw out the sample chart before this class begins, so it is ready to be filled in once the class decides on their team mascots.

Step 1 – Begin by introducing the idea of FSC certified products to the class (information for this is provided in the teacher's note page 28), ensuring everyone in the class has built a good understanding of what they are. Pupils should also be familiar with the FSC logo.

Step 2 – Divide the class into 4 or 5 groups (perhaps designate these by desk, depending on the layout of the classroom). Designate mascots from the Just Forests Gang to each of the teams. – for example Fergal the Frog, Lutanda the Lion, Manjula the Monkey, Thierry the Toucan, Gary the Grasshopper, Beatriz the Butterfly and Casper the Elder. Images of the Just Forest Gang are dotted throughout this resource. Copying the sample chart (right), draw up one for each team and pin to a noticeboard in the classroom. Encourage the pupils to draw their group's mascot together (or individually) to pin beside their chart.

Lutanda the Lion's Team

Name of item FSC Certified?
Milk Carton ✓
(next item - and the list continues...)

Step 3 – As the pupils begin their search to find as many FSC certified products as possible – at home, in school, in the supermarket. Ask them to think back to The Wood Audit from activity 1. They must write down each product that they find on their group's chat. Give examples of items they should look for – milk cartons, toilet paper etc. – and also encourage them to find new and more unusual ones. To encourage pupils to find more unusual products, the teacher could introduce a points system; for example a normal everyday product (like milk cartons, magazines or copy books) would get 1 point, whereas a more unusual one (such as something a bit more creative like a greeting card) could get anything up to 5 depending on what it is. The team with the most points on their list wins! A prize can be added to incentivise the pupils if the teacher feels this is appropriate.

Step 4 – Over the course of this race, reiterate to the class how important it is to use FSC certified products and why it is important to use FSC certified products, where available (see notes on page 28).

Teacher's note: Be sure to mention the Wood Audit activity from the Section 1 at the beginning of this activity. It will be a good place for the pupils to begin their search. See www.justforests.org/thinking-trees/ for a link to 'Who cares about the forest?' by Franke James

Timeframe: This activity should be carried out over a relatively long period of time. It could be anything from a month, to the entire school year. However, should you choose to run this activity over a longer period, it is important to keep reminding the class about it.

ACTIVITY 7 Our Sustainability Tree – Back to the Roots

Aim: **To inform the pupils how they can contribute to sustainable living in their daily lives, at school and at home (Note: this activity continues on from the activity 'Our Sustainability Tree' on page 24). To illustrate the 'where do we fit in?' section**

Curriculum Link: **SPHE (care and respect for themselves and others), SESE - Geography (human environments, environmental awareness and care)**

Materials: **Whiteboard, markers, red and green paper (if this is unavailable, red and green markers on white paper will also work), glue, scissors.**

Method:

Preparation – You may want to have the roots prepared before this class, to ensure each pupil has the same size root to attach to the tree.

Step 1 – After having an initial discussion on the idea of 'where do we fit in?' with the class (see teacher's note below), write on the board 'Things we need to STOP doing' and 'Things we need to START doing'.

Step 2 – Brainstorm with the class as to what these might be. For example, start bringing glass to the recycling centre, stop buying non-FSC products, start using a compost bin etc.

Step 3 – Once you think there is enough on the board, ask the pupils to pick which they think are the 5 most important things to STOP doing, and 5 most important things to START doing.

Step 4 – Draw the pupil's attention back to the sustainability tree on the wall (activity 4 on page 24). Each pupil should draw and cut out a root to go at the bottom of the tree – one from the green paper, and one from the red paper (or white paper, using red and green markers).

Step 5 – On their root, they should write which action from the two 'top 5' lists which they think is the most important that they can do – try to ensure each of the top 5 from the lists is included. Attach the roots to the bottom of their 'Sustainability Tree'.

Step 6 – Ask them to explain how the roots they have just 'planted' can 'nourish' the leaves at the top of the tree.

Teacher's note: The overall aim of this activity is to get pupils to realise that individual actions by thousands of people can achieve big results when put together. Actions have consequences – good and bad, we need to think about them. Nourishing the roots leads to better, more balanced growth for both trees and humans.

If you are starting this activity some time after previous activities, such as the FSC race on page 29, be sure to reiterate some of the main points and arguments from the previous activity to get the pupils thinking about the issues again.

Visit www.justforests.org/thinking-trees/ for a link to 'The secret life of paper' (a video about consumer power!)

Congratulations – you have reached the end of Thinking Trees! Why not check the teacher notes on the next page for further class projects and for your class to sign the Just Forests Gang Pledge.

Timeframe: 1-2 classes

TEACHER NOTES

Planning, planting and enjoying trees in your school

Just Forests – a hands on education

Just Forests is an Irish non-profit organisation working solely on global poverty-related tropical forest and timber issues from a local development perspective. Just Forest's mission is to increase public awareness and critical understanding of the link between sustainable forest management and poverty reduction in the third world.

There are many ways that Just Forests provides a hands-on experience to the wonder and value of trees, in order to stimulate, encourage and support schools in Ireland in the teaching of sustainable development through the lens of trees, forests and related issues. Some of the opportunities available for schools are:

The **Know-Wood Board** is a tactile approach to learning about local and global development issues. The board consists of 6 Irish-grown hardwoods; 6 Irish-grown softwoods; 3 Irish-made sheet materials and 3 FSC-certified tropical species. It is an attractive and easy way to further your knowledge on wood and is supported with an accompanying CD-Rom with information on over 1,650 tree species from all corners of the world and can be ordered through the Just Forests website.

The **Wood of Life Exhibition** – a travelling, hands-on, interactive exhibition on the social, economic and environmental importance of the world's forests. The exhibition is suitable for pupils from 5th and 6th class primary and students in the junior and senior cycle post-primary. Requests for the exhibition to visit your area can be made through the Just Forests website.

The **Carbon Footprint Project** seeks to assist you and your school through calculating your school's carbon footprint. Free tips and support resources are available to teachers and pupils at www.justforests.org/just-livelihoods/carbon-footpring/

www.justforests.org

www.justforests.org/just-shop

info@justforests.org

+353 (0) 86 8049389

Starting a tree nursery

A tree nursery is a place where you can grow lots of trees. Starting a tree nursery can be fun and is also a great way of growing your own trees to plant in and around your school. An easy way to set up a small nursery is to collect and germinate seeds in the classroom, the small trees can then be planted out onto a small patch of ground somewhere in your school (5-10 square metres should be enough). The trees need to be left in the ground for 2-3 years until they are ready to be planted in the forest or your school grounds. Maybe you could sell some to raise money for your school, or even set up a wildlife garden in your school grounds. This will attract lots of birds, animals and creepy crawlies for you to study!

Planting a tree for all occasions!

There are many ways that your class and school can (and should!) plant trees – whether it is to mark a special occasion, as a gift for a family member or to highlight the importance of taking action or in sharing the importance of trees to your community. Trees are good! Why should we plant trees? Because they:

- Manufacture 2.2 kg of pure oxygen per day
- Consume CO_2 to fight the Greenhouse Effect that threatens our survival
- Provide the cooling equivalent of 10 room-sized air conditioning units
- Reduce fossil fuels used for heating & cooling
- Collect pollutants and filter them from the air
- Reduce noise pollution
- Provide shelters and homes for birds and small animals
- Enrich surrounding soil
- Prevent soil erosion
- Are a source of food for animals and other wildlife

By planting a tree you will be helping to offset CO_2 emissions, provide wildlife habitats, help native Irish tree species, enhance the natural landscape, and provide firewood and construction timber.

Information on choosing the right tree for your area and planting and maintenance tips can be found on the Green Wiki page: http://green.wiki.com/wiki/Plant_a_tree.

Green-Schools Committees

The Green-Schools initiative is an international environmental education programme designed to promote and recognise whole school action for the environment. Green-Schools offer a well-defined, controlled way to take environmental issues from the curriculum and apply them to the day to day running of a school.

Is your school involved in the Green-Schools initiative? Have you set up a Green Committee or attained your first Green Flag for your school? What about drafting a Green Code for your school?

More information on the themes (*Litter & Waste*, *Energy*, *Water*, *Travel* and *Biodiversity*) and getting involved with Green Schools activities can be found at www.greenschoolsireland.org

National Tree Week – Get involved!

Organised by the Tree Council of Ireland, National Tree Week is an annual week-long festival celebrating all positive aspects of trees in our lives and environment. It is a great opportunity to get your pupils and school involved in a range of tree planting/demonstrations for one week of the year. Some activities that you can organise include:

- Celebrate National Tree Week at school by planting a tree, or in the classroom by drawing pictures or making leaf prints or bark rubbings of trees, read or write poems or stories about trees, learn how to measure the height and spread of a tree, produce a class drama about trees.
- Encourage local residents' associations, TidyTowns group, youth club, sports club or other local organisation to get their members involved in a tree planting or tree maintenance project in the area (e.g. clean up a local woodland).
- Volunteer in a local community tree planting event. Meet new people and make a difference in the community.
- Plan a walk or trail to showcase and tell the stories of any unusual or historic trees in the community.
- Commemorate an event of significance in the school by planting a tree. Plan a community celebration to mark the occasion.
- Celebrate the week by planting a tree in the garden.
- Read a book about trees or find out more about their characteristics, their uses, folklore etc.
- Enjoy the outdoors. Visit a local forest or park or take a nature walk and enjoy observing trees.
- Register your event or look at the event activities page that other schools and communities are organising for tips and ideas of what you can do.

www.treecouncil.ie/treeweek/treeweek.html

trees@treecouncil.ie

The Forestry Foundation - our Irish partners in forest education

The Forestry Foundation is a registered Discovery Primary Science and Maths Centre located at Manch Estate in Ballineen, Co. Cork.

Their exciting program offers the choice between a wide variety of activities. A permanent Just Forests Wood of Life exhibition will feature as part of the activities available at the Centre.

Each day can be tailored to suit individual class/school needs and teachers are encouraged to mix and match activities for maximum benefit to their pupils.

The Forestry Foundation has a broad range of courses available based on Primary, Junior Cert, Transition Year and Leaving Cert curricula. They provide field equipment and expert guidance to allow students to use a variety of fieldwwork techniques-a truly hands-on learning experience.

For more information on their program of education visit their website at http://www.inff.ie/

Sound and Fair - our African partners in forest education

African blackwood is one of the most valuable forest resources due to its use in the manufacture of woodwind musical instruments and is much sought after by craftspeople the world over. Forest-dependent people in Tanzania are amongst the poorest in the world with many families surviving on combined incomes of less than US$1 a day. Village communities are remote, isolated and jobs are hard to find-instead people earn a living primarily from the natural resources of the forest.

African blackwood is one of the most valuable wood species in the world. On the outside, the African blackwood tree looks very ordinary, often short and spindly-you certainly wouldn't stop to marvel at it! Strip away the bark however and something extraordinary is revealed: dark, lustrous heartwood, perfect for local wood carvers and for export to some of Ireland's famous musical instrument makers for clarinets, oboes and bagpipes. For more on the work of Sound & Fair please visit their website at: http://soundandfair.org/partners/strategic-partners

The Sound of Wood Project: What Do Trees Have To Do With Music?

Do you play a musical instrument? Have you ever wondered where the wood for your guitar comes from? Would you like to organise a 'Sound of Wood Concert' in your school and invite all your family and friends? Would you believe that the wood for acoustic guitars comes from 3 different continents-you can see where by visiting this link on our Just Music website: http://www.justmusic.ie/anatomy-of-an-instrument

World Wildlife Foundation (WWF) – One Planet Future resource pack

Free film 9 (made by children) and resource pack for primary teachers based on WWF's work for safeguarding the natural world has to be backed up by other environmental action – tackling the global threat of climate change and helping people to change the way they live to ease pressure on natural resources.www.wwf.org.uk/

Fun Facts!

3.8 million trees are chopped down in China to make the 57 billion chopsticks used globally each year

Trees continue to grow throughout their life span. In fact, some species can live hundreds or even thousands of years

Millions of trees are accidentally planted by squirrels who bury nuts and then forget where they hid them

Trees are tasty! Ice cream and salad dressings use a part of the tree called cellulose to make them thick, smooth and creamy

Paper history: in ancient times, people wrote on animal skins, bones and clay tablets. Around 3,500 BC, the Egyptians wrote on a woven mat of reeds called papyrus, which is where the word paper comes from! Around 2,000 years ago, the Chinese discovered that they could make a thin paste of mulberry bark, hemp and rags and let it dry into a sheet in the sun. Many types of paper are now made from wood

What's the number one use for wood in the world? Firewood or wood fuel!

A single tree may have as many as 1,200 species of beetles, of which 20% are specialist feeders that are found only on that species of tree

The Amazon Rainforest has been described as the "Lungs of our Planet" because it provides the essential environmental world service of continuously recycling carbon dioxide into oxygen. More than 20 percent of the world's oxygen is produced in the Amazon Rainforest

At least 3000 fruits are found in the Brazilian rainforests; of these only 200 are now in use in the Western World. The native tribes of the rainforest use over 2,000

At least 80% of the developed world's diet originated in the tropical rainforest. Its bountiful gifts to the world include fruits like avocados, coconuts, figs, oranges, lemons, grapefruit, bananas, guavas, pineapples, mangos and tomatoes; vegetables including corn, potatoes, rice, winter squash and yams; spices like black pepper, cayenne, chocolate, cinnamon, cloves, ginger, sugar cane, tumeric, coffee and vanilla and nuts including Brazil nuts and cashews

Deforestation contributes to climate change - overall, it accounts for one-fifth of all greenhouse gas emissions

Every two seconds, an area of forest the size of a football pitch is lost due to logging or destructive practices

A mature tree removes almost 70 times more pollution than a newly planted tree

An average-sized tree produces up to 180 kilograms of oxygen per year. That means two mature trees can supply enough oxygen annually to support a family of four!

One tree can absorb as much carbon in a year as a car produces while driving 41,843 kilometres

Over the course its life, a single tree can absorb one ton of carbon dioxide.

An average American uses about 340kgs of paper every year, and 95% of homes are built using wood. That means each person uses the equivalent of one 30.5 metres tall, 41cm diameter tree every year for their paper and wood product needs

The world's tallest living tree, a softwood Coast Redwood, named Hyperion, is in Redwood National Park located in California. Last measured in October 2006, it was approximately 115 metres (almost 38 floors of a building) tall, or almost 8 storeys higher than the Statue of Liberty

The world's shortest tree species is the Dwarf Willow. It is rare to find one more than 6.3 centimetres tall. They have been found growing on frozen tundra in sub-Arctic environments

The oldest living tree was discovered in Sweden in 2008 and took root at the end of the last Ice Age. The visible portion of the 13-foot-tall (4-meter-tall) "Christmas tree" conifer isn't ancient, but its root system has been growing for 9,550 years!

The tree with the widest trunk in the world is an African Baobab located in Modjadjiskloof, Limpopo, South Africa. Its trunk diameter is almost 15 metres, it has a circumference of 47 metres and is 22 metres tall. Oh, one other amazing fact, it is known as the Big Baobab Tree Pub. It is hollow inside, its trunk walls are 2 metres thick and it can comfortably seat approximately 15 people

In the year 2005, with the help of NASA satellite imagery, it was estimated that there were approximately 400 billion, 246 million trees in the world (which looks like this 400,246,000,000!) That is approximately 61 per person

What is the extent of deforestation? 120-150,000 square kilometres of forest are lost each year, the equivalent of 30 football fields per minute

The United States has only 5% of the world's population, yet it consumes 30% of all paper

Asia and Africa together account for 75 per cent of global use of fuel wood

Forests provide habitats to about two-thirds of all species on earth – World Bank report 2004

Globally, nearly 4 billion trees are cut down each year for paper use alone

The pulp and paper industry represent 10% of all global greenhouse gas emissions, and uses more water than any other industry

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The Fun Facts are also available as a Scoilnet quiz sheet that can be accessed, along with all other support materials for Thinking Trees! at www.justforests.org/thinking-trees/

Ireland's native trees

Our native trees are the trees that reached here before Ireland was separated from the rest of Europe. These trees are suited to our weather and will grow naturally from seeds in the forests. Our most common native trees include oak, ash, hazel, birch, rowan and willow. Even though some trees have been brought here from other countries and have been here for a long time, they are not native. Beech, sycamore and horse chestnut are some of these trees.

Source: Millennium Forests Ireland

These are recommended Irish native and naturalised hedge trees and shrubs for planting. Select species from the suitable list that are common to your area:

Suitable

Large:

Ash - shallow rooting

Oak - deep rooting

Medium:

Alder - damp sites

Willow

Small:

Wild Cherry - good timber

Bird Cherry

Birch

Whitethorn

Blackthorn

Spindle - chalky soils

Crab Apple

Whitebeam

Holly

Rowan

Unsuitable

Evergreens (except holly)

Yew - poisonous to livestock

Sycamore - casts heavy shade

Beech - casts heavy shade

Horse Chestnut - casts heavy shade

Lime - casts heavy shade

Aspen - tends to be parasitic

Elder - suppresses other species

Source: Crann

The Just Forests Gang Pledge

This is to certify that

.....

is a member of the (Pupil's name)

.....

Just Forests Gang (School name)

As a member of this Just Forests Gang, I will be an ambassador for natural resources.

I fully accept that natural resources are important to my survival.

*I will **cherish, protect, conserve** and **be responsible** in my use of natural resources throughout my life.*

I will carry the message of the importance of natural resources to my family and friends.

I will always treat natural resources such as water, wood and air with respect.

Signed:

.....
(Pupil)

.....
(Teacher)

Date: .....

Thinking Trees! is a 10 week module designed for primary school teachers that focusses on environmental awareness and care by using a 'human dimension' to focus on our uses, impact and dependence on trees and forests. With curriculum units links, it is to be used by third & fourth and fifth & sixth class teachers.

It seeks to build children's global awareness on issues such as poverty, inequality and managing our natural resources sustainably. Through 7 activity units children will use their own experiences to explore the impact they have on trees, the impact that trees have on their lives and the impact that their use of tree based products have on the lives of others.

It addresses four thematic questions:

- Why are trees important to us?
- What are some of the consequences of using trees without care?
- The links between human development and sustainability
- Where do we fit in?

Thinking Trees! has:

- ✓ Curriculum units links: Environmental awareness and Care strands in Geography and Science
- ✓ Teacher notes
- ✓ Class projects
- ✓ A Green-Schools focus on biodiversity, waste, global citizenship, energy and climate change
- ✓ Online support, videos and downloads

Thinking Trees! was developed using National Curriculum Council Assessment (NCCA) guidelines and is a teacher-led initiative, piloted in 6 schools across Ireland

Comments from the pupils that took part in the piloting of Thinking Trees:

"I liked Thinking Trees! because we did a lot of activities relating to trees and I learned a lot about the way trees are used in everyday life. My favourite part of the Thinking Trees! was the Wood Audit because I learned that a lot of things have wood in it that you wouldn't expect. I learned a lot from the Thinking Trees! project, but the most important thing I learned is that I can make a difference."

"What I liked about the Thinking Trees! is all the activities we did like the Wood Audit and the Sustainability Tree because I learned that lots of stuff is made from wood. The sustainable village was difficult because I realised everything can't be perfect. I learned that Ireland has only 10% of forests and that is the lowest in Europe."

www.justforests.org/thinking-trees/