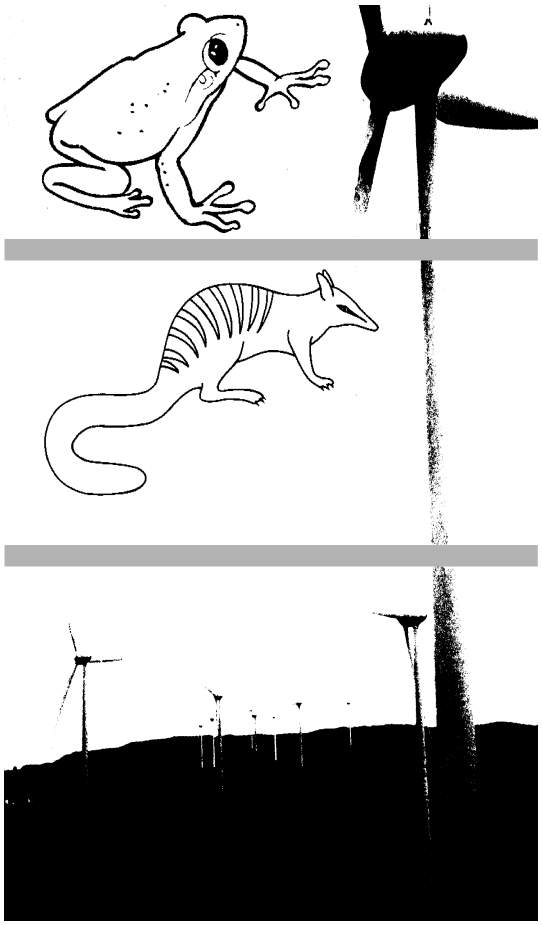
Top Tips for Teachers

connecting people with ideas

Sustainability



Sustainability is about meeting our current needs, but also making sure we can meet the needs of future generations. Many Western Australians are making significant and innovative efforts to provide for a sustainable future.

Issues such as climate change, salinity, biodiversity, population and quality of life are concerns that affect us all and need to be addressed to achieve a sustainable future. Together, Western Australians and others are working to link environmental and community goals with economic development. To achieve this we need to share our understanding of what sustainabilitymeans, and how each of us plays a part in shaping a secure and sustainable future for all.

MuseumLink **Top Tips for Teachers** is a series of resource sheets designed to support learning associated with school visits to *MuseumLink* travelling exhibitions. Each resource sheet contains a number of integrated activities and investigations for students based on concepts presented in the exhibition. The aim of the activities is to promote active inquiry learning linked to the Curriculum Framework and inspired by visiting the exhibition. The activities are linked to specific Learning Areas, but may also relate to other disciplines and should be explored with this in mind.

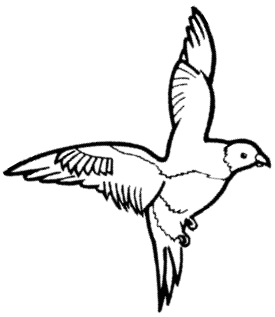
Investigate! **Discover!** **Enjoy!**

BEFORE VISITING THE EXHIBITION

What is Sustainability?

The word 'sustainability' has come to have a range of meanings for different groups of people.

In groups brainstorm a 'sustainability' definition. Develop different points of view in each group, for example, have one group make up a definition from a farming perspective, another from a family or shopping point of view. For some ideas visit this website; www.phm.gov.au/ecologic/games.htm



Pictures and Words

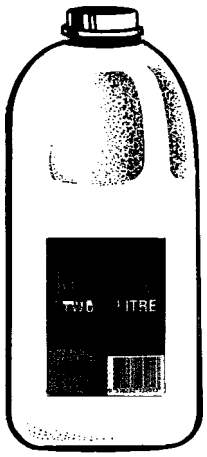
Sustainability is about meeting our needs now, but also making sure we can meet the needs of future generations.

Brainstorm words you associate with 'sustainable'. Develop a collage based on these key words. Use newspaper and magazine cuttings, objects such as leaves, wrappers or fibres.

Precycle

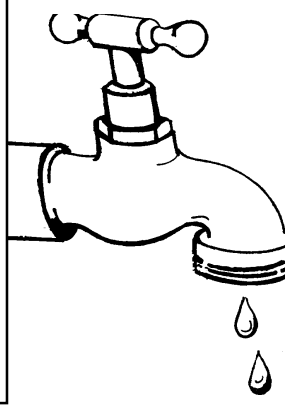
Next time you go shopping think of the potential waste before you buy. Which products utilise the minimum amount of packaging? Which packaging is recyclable?

At home make an inventory of the packaging in your pantry. Describe the product, whether or not the package is recyclable or biodegradable and if there are packaging alternatives. Check out what goes into a packet of chips at; www.phm.gov.au/ecologic/cycles.htm



Litter Bugs and Beasts!

Design a *Litter Bug* or *Beast* from reusable resources collected from home and school. Make the designs in class and make your own *Litter Bug* and *Beast zoo*!
Include labels for your animals with their names, eating habits, natural habitat and any unusual features.
Invite Captain Cleanup from the Keep Australia Beautiful Council to come and see your zoo, Tel: (08) 9371 8055.
What is biodiversity? Why is it important?



Natural Noises

Sit outside during a quiet time, a park would be best, and listen for sounds of the natural world. Make a list of the different sounds you can hear… birds, insects and leaves falling. Can you hear beetles crawling in the grass? Can you hear worms burrowing underground?

If you have a portable tape recorder work in groups to collect a range of natural noises. Play a selection of your recordings to the class and see if they can be identified.

Tangled Web

Plants provide food for small animals that then become food for larger animals. The links between the producers and consumers form a food chain. Find out about a habitat in your area and describe the food chains it supports and the food web. What happens if one living thing in the food web becomes extinct? How does this affect other living things?

Make a mobile with drawings or models of plants and animals in the habitat and show how all these living things live in balance with each other.

Earthwatch Diary

Develop your wonder of nature. Make a record of natural places and new plants and animals you've come across. Include thoughts, poems or quotes on nature. You can also include pictures, drawings, cutouts and things you find, such as leaves, wrappers or feathers. Try to make your diary from recycled paper or paper you've made yourself.

Resources

Every day we need things. These are our resources. Water is a particularly precious resource in Western Australia.

Make a list of the resources you utilise over an hour or even a day. Can you group the resources in different ways? Brainstorm suggestions on how to reduce the consumption on each of these groups of resources.

AT THE EXHIBITION

Energy

Energy, resources, consumption and waste are all connected. Draw diagrams to represent how they're linked. How many different diagrams can you come up with? Draw a cyclic diagram that shows how some waste can be recycled into resources. Compare diagrams. What real life situations can you fit to each?

Our Backyard

Each place in the world has different ecological issues – which are Western Australia's most urgent environmental issues?

Read through the panels and decide which are the three most urgent issues in Western Australia.

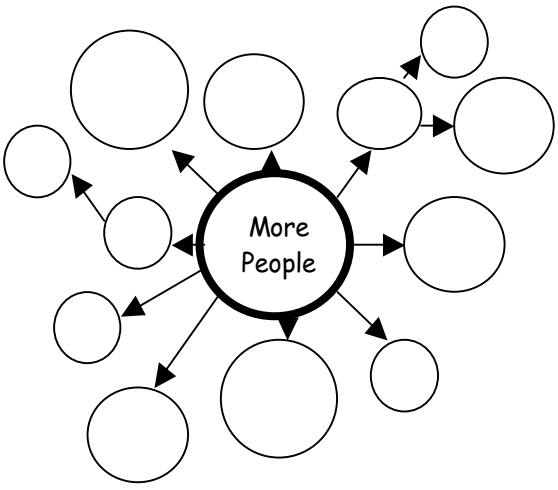
When you're back in class have a class discussion on these issues. Find out what is being done in your local area to support a sustainable future.

Connections

Find out how much Western Australia's population is expected to increase by.

What will be the impact of this increase? How can we 'live more lightly' on the Earth?

In a central circle write 'More People'. In surrounding circles write some of the effects this would have. Compare your ideas with others when back in class. See the zero population growth website; http://www.zpg.org/



Air, River, Sea, Soil

Western Australia is made up of many types of environments. Classify and list the different environments in W.A.

Different types of pollution threaten each environment. What do you think are the worst pollution problems in Western Australia? What are the pollutants that threaten your local environments?

How can we lessen the impact of these pollutants? For some ideas see these websites; www.watercorporation.com.au/student/content-home-student.asp www.wrc.wa.gov.au/about/index.html

Sustainable Jobs?

If we reduce consumption and the impact of industry on the Earth will this lead to a loss in jobs and a drop in standard of living?

Take a look at the jobs of the people shown in the panels. How many of these jobs do you think didn't exist 30 years ago? Which jobs do you already know about? Which ones are new to you? Do you think these people enjoy a good standard of living? In some jobs, the pay is not the only reward. What are the other rewards that make these jobs worthwhile? Do any of these jobs appeal to you?

Select one of the people profiled that you would like to give a 'Sustainability in Western Australia' award.

Tread Lightly

Why do you think scientists use ideas like 'ecological footprinting'? Why is it useful to compare different countries? What do you understand about 'ecological footprinting'?

What are some of the ways we could reduce our 'ecological footprint' in WA? Do you and your family do any of these things already?
Have you found any new ideas in the exhibition?
At home or at school work out your own footprint with the following website; www.phm.gov.au/ecologic/games.htm

AFTER THE EXHIBITION

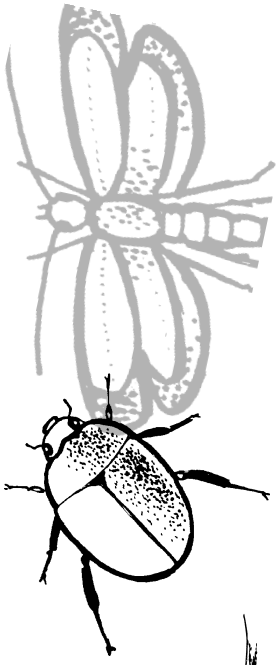
Waste Not, Want Not

More than three million tonnes of waste were dumped in Perth landfills in 2000.

Select a rubbish bin at school. How much do the contents weigh? With disposable gloves sort the contents into potentially recyclable, non-recyclable, organic and non-organic waste. Weigh each component and calculate the percentage of the total. There are about 206 school days per year. Calculate how much waste from this bin goes to a land fill each year.

Make a report suggesting ways you can reduce the amount of waste going to landfill.

List reasons why we need to minimise the amount of land used for landfill. For more information try this website;
www.wastewise.wa.gov.au/index.asp



Find Out

Western Australia largely depends on coal, oil and gas for its energy, with less than 2% of the energy sold coming from renewable sources such as wind or solar.

Choose a renewable energy source, such as solar, wind, or tidal energy and work in groups researching some of the following questions.

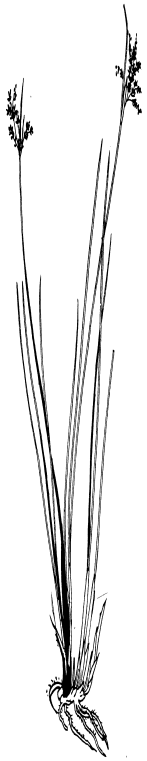
- What does it need in order to work?
- How does it work?
- How efficient is it?
- Are there any negative effects?
- Where has this technology been put into practice successfully?
- Is it expensive or affordable?

Check out books in your library and websites such as http://www.det.csiro.au/ or visit the Western Power World of Energy
Tel: (08) 9430 5655
Present your report to your class.

Neutralise

Carbon dioxide is the most significant greenhouse gas contributing to global warming and represents about 94% of the gas emitted from vehicle exhaust pipes. Trees and green plants take up carbon dioxide and respire oxygen.

Calculate how many trees you would need to plant to neutralise the effects of the carbon dioxide emitted from your family car.
Use the Men of the Trees Calculator at this website;
http://www.menofthetrees.com.au/



Consumption and Waste

About two thirds of Australian Green House Gas emissions occur initially in factories or on farmland. Is the consumer who buys a product ultimately responsible for the emissions produced in the production of that product?

Debate this in your class. What other environmental topics would be good for a debate?

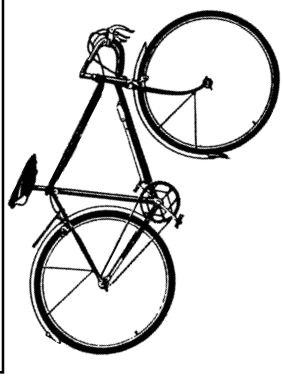
How can we reduce green house gas emissions and still provide jobs and economic growth?

For more information use books in the library and look at websites such as;
http://www.physics.usyd.edu.au/apphys/greenhouse/greenhouse.html or http://www.sedo.energy.wa.gov.au/

It's Keen to be Green

A surprisingly small planting project can reap great rewards. Planting an area with a range of local plant species creates invaluable habitat for birds, small reptiles and invertebrates to feed and breed. How does this support Biodiversity?

Help in establishing a small planting project of local species. Contact Greening Australia for ideas and help.
Phone: (08) 9335 8933, Fax: (08) 9335 9203, or see their website;
http://www.greeningaustralia-wa.org/



Fit Go-Getters or Flabby Loafers?

Make a list of all the ways you can travel to school and note the good and bad points for each. Estimate which way you travel the most.
Find out about the WA Bicycle Transportation Alliance;
http://sunsite.anu.edu.au/wa/bta/