

ENVIRONMENTAL CHANGE AND MANAGEMENT

Stage 5: Geography

GE5-2, GE5-3, GE5-4, GE5-5 , GE5-7, GE5-8



Students will develop an understanding of the causes and consequences of human-induced environmental change that challenges sustainability in Australia and Sumatra. They will explore worldviews influencing approaches to environmental use and management. They will compare and evaluate the management responses in both countries, propose ways individuals can contribute to environmental sustainability and recognise that there are differing views on how sustainability can be achieved.

OUTLINE

AT SCHOOL

Begin your investigation of Australian and Sumatran environments; examine their unique features and causes of environmental change.

AT THE ZOO

Investigate the unique flora and fauna of the Wild Asia precinct. Immerse yourself in the Sumatran Tiger exhibit and experience first hand the Asian animal habitats. Explore the actions that you can take to help protect local and Asian species.

ZOO WORKSHOP

In this workshop students will develop an appreciation of the causes, consequences and management of deforestation taking place in Australia and Sumatra. They will examine how differing worldviews influence the importance people place on natural habitats and the environmental management strategies used in each country. They will feel empowered as they discover ways individuals can contribute to sustainability.

BACK AT SCHOOL

Investigate the diversity of perspectives surrounding the management of global forest habitats. Empower students to make informed decisions about the use of palm oil. Challenge your students to educate their community about the use of certified sustainable palm oil products.

AT SCHOOL

How do environments function?

KEY INQUIRY QUESTIONS

- How do environments function?
- How do people's worldviews affect their attitudes to and use of environments?
- What are the causes and consequences of change in environments and how can this change be managed?
- Why is an understanding of environmental processes and interconnections essential for sustainable management of environments?

THE LUNGS OF THE EARTH

Research - the ecosystem services that rainforests provide (label the image below).



Erosion control

Categorise - the identified services into the table below.

Provisional Services (any type of benefit to people that can be extracted from nature)	Regulating Services (benefits provided by ecosystem processes that moderate natural phenomena)	Cultural Services (any non-material benefit that contributes to the development and cultural advancement of people)	Supporting Services (underlying natural processes, such as photosynthesis)

Highlight – the services that would be lost if the rainforest is cleared

Mark - the distribution of rainforest on a blank map of Australia and Sumatra

Draw – one basic food web that exists either in the Australian or Sumatra rainforest

Outline - how does deforestation affect biodiversity?

Explain - the impact deforestation is having on global warming

AT SCHOOL

What are the causes and likely consequences of the environment change being investigated?

CHANGE, CHANGE, EVERYWHERE

FOREST LOST IN AUSTRALIA AND SUMATRA

- [Observe global forest loss over from 2000-2015](http://www.globalforestwatch.org/country/IDN)
- Using the data showing tree cover from 2000-2015 in Indonesia (<http://www.globalforestwatch.org/country/IDN>) and Australia (<http://www.globalforestwatch.org/country/AUS>) answer the following questions:
 - ❖ Describe the trend in forest loss in both countries over the past 15 years
 - ❖ Determine the cause of the change in both countries
 - ❖ Calculate the average loss per year in both countries
 - ❖ Compare the types of forest (primary, naturally regenerated and planted) in the two countries
 - ❖ Does the forestry sector in Australian or Indonesia contribute more to the GDP?



THE LORAX

“A thing of beauty is a joy forever,” and to lose it would be a shame.

Read or View “The Lorax” (film or book). Discuss environmental/sustainability concepts evident in the film/book. Outline the different perspectives the characters hold towards the environment and how they change throughout the story.

PALM OIL INVESTIGATION QUESTIONS

- Why is Palm oil such a popular crop?
- Who benefits from the way that palm oil is grown and sold around the world?
- Who is impacted by the way palm oil is grown and sold?
- How do Australian consumers impact Indonesian rainforests?
- What animals are directly impacted by Indonesian rainforest destruction?
- What actions are being taken to address rainforest destruction and its consequences?

AT THE ZOO

Get up close to native Australian animals during the zoo workshop and compare these to Asian species seen during your self-guided tour of the Zoo.

EXPLORE

SUGGESTED ANIMAL EXHIBITS

Find and compare one Australian animal with one Sumatran animal.

For each animal, document:

- How they influence the biophysical processes in the wild (e.g. seed dispersal)
- How current management practices influence the species (e.g. impact on population numbers)

Suggested Australian animals:

- Emu
- Dingo
- Koala

Suggested Sumatran animals:

- Asian Elephant
- Sumatran Tiger



CONNECT

ZOO WORKSHOP (WITH A TARONGA EDUCATOR)

- Meet native Australian animals and discuss the importance of Australian and Sumatran rainforests to both animals and people
- Identify different strategies that are used to manage environmental change in both countries
- Recognise that there are differing views on how sustainability can be achieved.



DISCOVER

ASIAN FOREST WETLAND -SUMATRAN TIGERS (SELF GUIDED)

- Visit the Sumatran Tigers at Taronga Western Plains Zoo and see these amazing big cats.
- Listen to a fascinating keeper talk about these critically endangered animals and learn about how your choices can help save them in the wild.



BACK AT SCHOOL

Environmental, economic and social criteria can be used in evaluating management responses

INGREDIENTS LIST

Explore [Which Everyday Products Contain Palm Oil](#)

Many products that use palm oil aren't clearly labelled. Palm oil and its derivatives can appear under many names, including: Vegetable Oil, Vegetable Fat, Palm Kernel, Palm Kernel Oil, Palm Fruit Oil, Palmate, Palmitate, Palmolein, Glyceryl, Stearate, Stearic Acid, Elaeis Guineensis, Palmitic Acid, Palm Stearine, Palmitoyl Oxostearamide, Palmitoyl Tetrapeptide-3, Sodium Laureth Sulfate, Sodium Lauryl Sulfate, Sodium Kernelate, Sodium Palm Kernelate, Sodium Lauryl Lactylate/Sulphate, Hydrated Palm Glycerides, Etyl Palmitate, Octyl Palmitate, Palmityl Alcohol

SO WHAT IS RSPO CERTIFIED SUSTAINABLE PALM OIL?

RSPO palm oil is grown and certified against eight RSPO principles and criteria. These stringent sustainability criteria relate to social, environmental and economic good practice.

Look up the [eight RSPO principles and criteria](#) on the Green Palm website and create a community awareness campaign about Certified Sustainable Palm Oil.

CONSCIOUS CONSUMERS START AT SCHOOL

Use the [Palm Oil Buyers Scorecard](#) and your own research identify products in your school canteen containing RSPO palm oil. For the products that contain non-sustainable palm oil, recommend replacement products that contain sustainable palm oil.



DIFFERENT PERSPECTIVES INFLUENCING ENVIRONMENTAL MANAGEMENT

Different groups of people use the land for different purposes and often have differing views regarding land management and practices.

Activity - divide your class into groups. Allocate a different stakeholder to each group from the list below. Using the drama technique [Mantle of the Expert](#), have students debate the issues from the perspective of their assigned stakeholder.

Scenario One: Deforestation in Sumatra

There is a proposal to clear a section of old growth rainforest and replaced it with a palm oil plantation. People with different perspectives may include:-

- Farmers
- Local residents
- Indigenous community members
- Palm oil companies
- Environment advocates
- Tourists
- Tourism operators
- Government

Scenario Two: Deforestation in Australia

There is a proposal to clear a section of old growth rainforest in the Daintree to build a 5 star resort.

People with different perspectives may include:-

- Local residents
- Indigenous community members
- Local eco resort owner
- Business owner of the proposed resort
- Environment advocates
- Tourists
- Government

Areas to be addressed by each group include:

- how they use the native land
- their feelings about the native forest
- what changes they have observed in Sumatra/Australia
- what have been the responses to this environmental change so far, and at a variety of scales, including worldviews
- the impact they will have on the environment
- the impact they will have on the local community
- what strategies they suggest for future sustainable interactions between the people and the rainforest