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Ready-Ed Publications

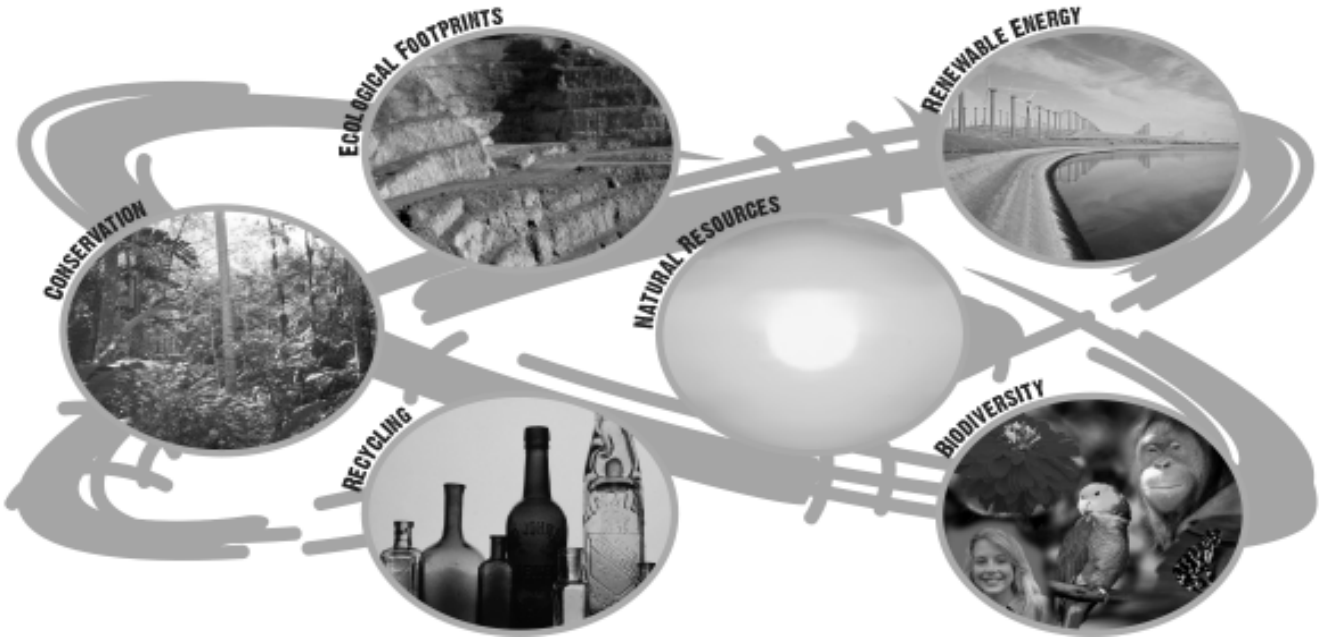
For Ages 10+

PHOTOCOPY MASTERS

SAVE THE PLANET

BOOK 1

- READING AND COMPREHENSION ACTIVITIES THAT EXPLORE THE IMPACT OF HUMAN ACTIVITY ON THE ENVIRONMENT.
- CONTAINS LESSON OUTLINES, EXTENSIVE BACKGROUND NOTES, EXTENSION IDEAS AND RELEVANT WEBSITES.



Written by Amelia Ruscoe & Naomi Budden. Illustrations by Melinda Brezmen.
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Email: info@readyed.com.au Website: www.readyed.com.au

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Contents

Teachers' Notes

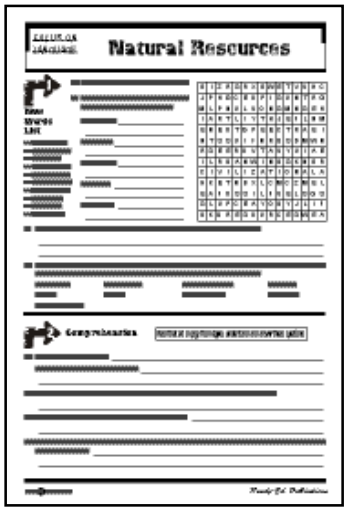
Save The Planet has been designed to encourage students to investigate aspects of our environment which are under threat due to human activities and consumption. By building a framework of familiar environmental terminologies and concepts, the book aims to promote an understanding of the progress that is being made towards creating a sustainable planet. Aspects addressed include natural resource use, renewable energy sources, biodiversity, pollution, recycling and conservation.

The material can be taught as whole units of work in conjunction with the Science and HSIE /SOSE / Society & Environment activities in Save the Planet Book 2. Alternatively, the activities within each unit can be used to complement existing environment based programs.


FOCUS ON READING

Natural Resources

Each unit includes a student reading passage (*Focus on Reading*) for the students to read either in a whole class situation, in small focus groups, independently or as part of a home study assignment. Each 'Focus on Reading' blackline comes with background information for the teacher and websites relevant to the topic. Teachers' notes also include discussion questions to encourage the students to comprehend, assess and form opinions about what they have read.


Natural Resources

The student reading passage in each unit is supported with a 'Focus on Language' page which includes language-based activities to clarify definitions and promote familiarity of new words and their spelling within the text. The activities also provide comprehension questions to assist in developing an understanding of the new concepts being introduced.

The 'Focus on Language' page directly relates to the 'Focus on Reading' page, providing a practical and informative reading program. Answers are provided on the accompanying teacher resource pages at the end of each theme.

Curriculum Links

For the activities in the **Save The Planet** series, a cross-curricular approach is taken and many learning areas are covered in the activities. A summary of the key strands from each state is provided with the focal state outcomes listed below. Please note that learning areas and strand headings will vary from state to state and therefore not all suggested strands and outcomes will address the same activities. All activities are aimed at Level 3-4.

Subject Areas / Strands	State Outcomes
Science ***Working Scientifically (Investigating Scientifically)*** • Works methodically through a scientific experiment to formulate and investigate predictions, gather data and record outcomes. • Uses scientific understandings to develop responsible behaviours such as recycling materials or being "water-wise", "energy-wise". • Argues conclusions on the basis of collected information and personal experience. • Compares ways of solving problems and finding explanations. • Identifies ways science is used responsibly in the community. ***Earth Sciences/ Earth and Beyond*** • Examines the various sources of energy used by humans and the impact of mining and burning of fossil fuels versus use of renewable energy sources. • illustrates ways that used of the earth's resources can change the physical environment. ***Energy and Change*** • Reports on patterns of energy use at home and at school. Investigate the systems in which various forms of energy are transferred. • Compares energy options available in the community. ***Life and Living*** • Understands how living things depend on the features of the natural and built environment (considers and designs appropriate living requirements for animals and humans). • Maps relationships between living things in a habitat. • Explains why some living things have become extinct and identifies threats to current endangered species.	**Vic:** BS 3.1, 3.2, 4.1, ES 3.1, 3.2, 4.1, PS 3.1, 4.1 **WA:** IS3.3, IS3.4, IS4.3, IS4.4 EB3, EB4, EC3, EC4, LL3, LL4 **National:** 3.1, 3.2, 3.4, 3.7, 3.9, 3.13, 3.16, 3.18. Level 4 equivalents. **NSW:** BE S3.1, IC S3.2, LT S 3.3, PP S3.4, PS S3.5, ES S3.6, INV S3.7, DM S3.8 **QLD:** SS 3.2, 3.3, EB 3.1, 3.2, 3.3, EC 3.2, 3.3, LL 3.1, 3.3, NPM 3.1, 3.2, 3.3 **SA**: ES 3.1, 3.2, 4.1, 4.2; EC 3.3, 3.4, 4.3, 4.4, LS 3.5, 3.6, 4.5, 4.6, 3.1, 3.2 3.3, 3.4, 3.5, 3.7, 3.8
Society & Environment / SOSE / HSIE ***Time, Continuity and Change*** • Understands why the local community and global environments have changed or are likely to change. ***Place and Space*** • Considers how humans care for the environment by using "friendly" alternatives. • Investigates how local environments such as the home and school can participate in responsible practices. • Identifies issues that arise when people's actions affect other living things and places. ***Resources*** • Understands that alternative resources such as wind, solar and hydro-power are being sought as solutions to the threat of environmental destruction and depletion of fossil fuels. ***Natural Systems*** • Describes the components of a natural system such as the water system or ecosystem, and considers how humans are influenced by, and can influence, this system. • Illustrates the linkages between rights and responsibilities for members of a community. ***Investigation, Communication and Participation*** • Presents information to explore a key idea. • Frames questions and identifies sources of information.	**Vic:** TIme, Cont. and Change 3 (3.2), Natural and Social Systems 3 (3.1, 3.2, 3.3), Place and Space 3 (3.1, 3.2, 3.3, 4.2), Resources 3–4 (3.1, 4.1, 4.3) **WA**: ICP3.2, ICP3.3, ICP3.4, ICP4.3, ICP4.4, PS3.1, PS3.2, PS3.3, PS4.1, PS4.2, PS4.3, R3.2, R3.2, R4.1, R4.2, TCC3.2, TCC3.3, TCC4.2, TCC4.3, NSS3.1, NSS4.1 **National**: TCC 3.1b, 3.3, PS 3.4, 3.5, 4.5, 3.6, 4.6, R 3.10, 4.10, 3.12, NSS 3.13, 3.14, ICP 3.16, 3.17 **NSW:** ENS3.5, ENS3.6, SSS3.7, SSS3.8 **QLD**: TCC 3.1, 3.4, 4.5, PS 3.1, 3.2, 3.4, 3.5, D3.6, 4.1, 4.2, SRP 3.1, 3.5, D3.7, 4.1, 4.5 **SA:** Time, Cont., & Change 3.3, Place, Space & Env. 3.4, 3.5, 3.6, Society & Culture 3.9
English ***Speaking and Listening*** • Participates in a range of speaking and listening activities such as debates, peer interviews, presentations and role-play. ***Reading / Viewing*** • Engages in research to locate additional information and word meanings to enhance topic understandings. ***Writing*** • Expresses understanding of topics in a variety of creative and formal written formats, including stories, debating topics, signwriting, newspaper articles, reports and letters.	**Vic:** SL 3.1, 3.2, 3.4; RE 3.5a & b, 3.8 a & b; WR 3.9, 3.10 **WA**: SL 3.1a & b, SL 4.1a & b, 3.2; R 3.1, 3.2, 3.3, 3.4; W 3.1, 3.2, 4.1, 4.2, V 3.2, 4.2 **National:** 3.1, 3.2, 3.3, 3.4, 3.8a & b, 3.9 **NSW:** TS 3.1, 3.2; RS 3.6, WS 3.9 **QLD:** Cu 3.1, 3.2, 3.3; Cr 3.2, 3.3 **SA:** 3.1, 3.2, 3.3, 3.4, 3.9, 3.10, 3.11

BACKGROUND INFORMATION FOR TEACHERS

Ecological Footprints

The study of the origins of language is very interesting. Anyone involved in the field of science will know that every living thing on earth is given a scientific name with usually Latin or Greek derivatives. Strict guidelines for classification called the *International Rules of Nomenclature* are followed all around the world (Note: nomenclature means naming). The scientific name is always written in Latin because it is a "dead" language that means the meaning of words do not change over time.

However, the world ecology is derived from a Greek word "oikos" that means home. Whenever a word ends with "ology" it refers to "the study of something", e.g. parasitology – the study of parasites; biology – the study of life; and so on. So ecology literally means "the study of the home", the *home* referring to the environment of a plant or animal (including the non-living elements of matter and energy). The study of ecology includes an organism's interactions within its environment and with other organisms.

The term "footprint" used in this lesson acknowledges that each and every organism impacts on the world in some way. Of course the impact need not be a negative one, but unfortunately, we are currently witnessing more negative than positive impacts of one particular organism – *Homo sapiens* – human beings.

Humans are currently impacting on the earth at a greater level than is sustainable. In very simple terms this is basically the compounding result of:

- *significantly increasing world populations*; and
- *the over-exploitation of resources made possible by powerful technologies.*

How can this be solved? Should the world strive for population decrease? Should we decrease the level of natural resources consumption? Or should we be focusing on new solutions in sustainability? Maybe it is a combination of all three that will be required.

WEBSITES

- **www.lead.org/leadnet/footprint/intro.htm**
- **www.earthday.net/footprint/index.asp**
- **www.nd.edu/~archives/latgramm.htm (Latin)**
  (from University of Notre Dame www.nd.edu/)

DISCUSSION POINTS

- Why is population growth so detrimental to the environment?
- Is it possible for us to not deplete the natural resources of the world?
- Why is the ecological footprint of a person living in Australia or America so much greater than one living in India?
- What can be done to reduce ecological footprints?

Ecological Footprints

It is no secret that around the world we are witnessing and participating in a range of activities that are having a detrimental effect on our environment.

The way this is happening is through:

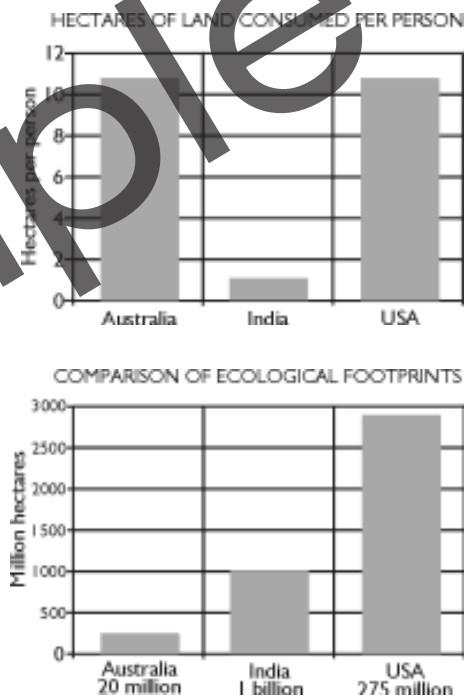
- population growth;
- increasing use of our natural resources;
- destruction of wildlife habitats;
- extinction of plants and animals (loss of biodiversity);
- poverty;
- pollution.

Many experts, such as environmental scientists, ecologists, conservationists and restorationists, are working to solve these environmental problems. However, solving environmental problems is not as easy as simply reducing population growth. All detrimental impacts and their causes need to be addressed together to achieve sustainable living.

For the world to be sustainable, it would mean that all people's basic needs can be satisfied without the depletion of natural resources for current and future generations of humans and all other species.

To understand the compounding effect of environmental damage to the planet, often environmentalists refer to a person's *ecological footprint*. A person living in Australia or the United States of America has a high environmental impact per person because of the amount of natural resources individually being consumed compared to, say, a person living in India.

For example, it takes about 10.9 hectares of land to sustain each person in Australia, as opposed to only one hectare to sustain a person in India. But if you look at the compounding effect of population on the use of natural resources, the impact of India as a country is much greater than Australia because their population is so much higher. (See figure below.)



As the standard of living increases in all countries around the world, so does the pressure on natural resources. If the entire world population of 6.1 billion consumed as much as each Australian, we would require the land area of *three* worlds.

However, all humans should have the same standard of living and this is where we get back to sustainability. Our use of natural resources has to become less wasteful, so that our ecological footprints are considerably reduced. ●

FOCUS ON LANGUAGE

Student Information Page

Ecological Footprints

1 New Words List

- ecological
- witness
- biodiversity
- detrimental
- destruction
- extinction
- poverty
- sustainable
- depletion
- population

A) Find each new word in the puzzle.

B) Write meanings for these words. Use a dictionary to help you.

- *Ecology* _____
- *Biodiversity* _____
- *Detrimental* _____
- *Sustainable* _____

B	A	E	L	B	A	N	I	A	T	S	U	S
E	I	C	D	E	P	L	E	T	I	O	N	B
N	S	O	T	X	U	L	K	X	Q	M	W	D
U	P	L	D	T	L	I	A	R	L	M	I	E
I	O	O	V	I	H	G	T	N	A	U	L	S
R	P	G	I	N	V	S	J	W	T	P	D	T
O	U	I	T	C	W	E	Z	X	N	S	L	R
N	L	C	E	T	N	Y	R	O	E	S	I	U
N	A	A	N	I	M	A	L	S	M	E	F	C
G	T	L	A	O	F	O	O	Y	I	N	E	T
N	I	K	L	N	P	C	V	E	R	T	Y	I
T	O	I	P	M	E	G	V	C	T	I	Y	C
D	N	L	J	H	P	Z	A	R	E	W	D	N
H	A	B	I	T	A	T	S	F	D	E	B	C

C) Use three words from the word list above to write a sensible sentence.

_____

_____

D) There are six words hidden in the puzzle which describe living things or where they can be found. Can you find them? (*Hint: They can also be found in the text on page 7.*)

- w_ _ _ l _ _ _
- h _ b _ _ _ _
- p_ _ _ t _
- a _ _ m _ _ _
- p _ _ _ _ t
- e _ v _ _ _ _ _ _ _

2 Comprehension

Read the text on page 7 to help you understand and answer these questions. Write your answers on the back of this page or in your exercise book.

A) Name three things which are having a detrimental effect on our environment.

B) What kinds of 'experts' might work to solve these environmental problems?

C) What is meant by 'sustainable living'?

D) (i) What is an 'ecological footprint'?

(ii) Rate your ecological footprint on the following scale. Please cirlce.

low impact on the environment ◂ 1 2 3 4 5 6 7 8 9 10 ▸ high impact on the environment

E) Do you think the amount of natural resources used by people in Australia is fair for everyone?

Yes / No Why?

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ANSWERS

Ecological Footprints

1

A) See diagram below.

B	A	E	L	B	A	N	I	A	T	S	U	S
E	I	C	D	E	P	L	E	T	I	O	N	B
N	S	O	T	X	U	L	K	X	Q	M	W	D
V	P	L	D	T	L	I	A	R	L	M	I	E
I	O	O	V	I	H	G	T	N	A	U	L	S
R	P	G	I	N	V	S	J	W	T	P	D	T
O	U	I	T	C	W	E	Z	X	N	S	L	R
N	L	C	E	T	N	Y	R	O	E	S	I	U
M	A	A	N	I	M	A	L	S	M	E	F	C
E	T	L	A	O	F	O	Q	Y	I	N	E	T
N	I	K	L	N	P	O	V	E	R	T	Y	I
T	O	I	P	M	E	G	V	C	T	I	Y	O
D	N	L	J	H	P	Z	A	R	E	W	D	N
H	A	B	I	T	A	T	S	F	D	E	B	C

B) Check dictionary meanings.

C) Teacher to check.

D) See diagram below.

B	A	E	L	B	A	N	I	A	T	S	U	S
E	I	C	D	E	R	L	E	T	I	O	N	B
N	S	O	T	X	U	L	K	X	Q	M	W	D
V	P	L	D	T	L	I	A	R	L	M	I	E
I	O	O	V	I	H	G	T	N	A	U	L	S
R	P	G	I	N	V	S	J	W	T	P	D	T
O	U	I	T	C	W	E	Z	X	N	S	L	R
N	L	C	E	T	N	Y	R	O	E	S	I	U
M	A	A	N	I	M	A	L	S	M	E	F	C
E	T	L	A	O	F	O	Q	Y	I	N	E	T
N	I	K	L	N	P	O	V	E	R	T	Y	I
T	O	I	P	M	E	G	V	C	T	I	Y	O
D	N	L	J	H	P	Z	A	R	E	W	D	N
H	A	B	I	T	A	T	S	F	D	E	B	C

- wildlife
- plants
- habitat
- animals
- planet
- environment

2

A)
- population growth;
- increasing use of our natural resources;
- destruction of wildlife habitats;
- extinction of plants and animals;
- poverty;
- pollution.

B) Environmental scientists, ecologists, conservationists and restorationists.

C) Sustainability is a state where all people's basic needs can be satisfied without the depletion of natural resources.

D) (i) An 'ecological footprint' is a term used to describe the amount of environmental damage or impact an individual or a country has on the earth.

(ii) Answers will vary.

E) Answers will vary.

BACKGROUND INFORMATION FOR TEACHERS

Natural Resources

Natural resources can be likened to the natural capital of our countries and world. 'Capital' traditionally refers to accumulated wealth owned by a person, business or country. Natural capital is a source of wealth used to support life – natural resources, living systems and ecosystem services. It provides all the requirements to sustain life now and in the future for humans and just as importantly, for all other animals and plants on the earth.

Just as with traditional capital, natural resources have been given different 'values'. Rice and wheat plants have significantly high value to humans in being staple food resources. Fossil fuels currently supply us with the majority of our energy resources. However, applying a value to natural elements is subjective – influenced by personal opinions, beliefs and understanding.

Take for example, the passage in the reading about snakes. Some people highly value certain species of snakes and will pay large sums of money to have these animals in their collection. Unfortunately, international illegal trade in such animals is high. Others fear snakes, regardless of whether they are any threat or not. These people feel snakes have no possible value and many snakes are killed even though in Australia this is an illegal practice. However, to ecologists, snakes have another value altogether because they can see how snakes belong to the 'web of life'. Like every other living thing they have value in maintaining the environmental balance needed for ecological health.

We know that many things occurring naturally in the environment have yet to be examined for their possible medicinal qualities or other use or value to humans as a natural resource. This is another strong motive to protect natural environments. However, there is another even more important reason – all elements of our natural world have an inherent right to exist regardless of value. When we think in these terms, we are compelled to regard the world not so much as what it can give to us, but what we, as humans, can give to the world to ensure sustained ecological health now and for the future.

WEBSITES

- **www.nrm.qld.gov.au/education/index2.html**
- **water.usgs.gov/education.html**
  (*containing a trivia game on water basics*)
- **interactive2.usgs.gov/learningweb/fun/trivia.htm**

DISCUSSION POINTS

- What do you consider to be the world's most valuable resources?
- Discuss the differences between renewable, potentially renewable and non-renewable resources.
- Should all natural environments be preserved? How could this be achieved?

Natural Resources

A resource is anything that has value to humans. Resources can either come from nature or from humans. Human resources include everything that has been achieved through development and civilisation, as well as cultural things such as music, art and religion.

Natural resources can be renewable, non-renewable or potentially renewable. Energy from the sun, tides and wind are examples of resources which have little chance of running out. These are known as *renewable* resources. Fossil fuels and minerals take so long to be produced naturally, that they are considered *non-renewable* resources.

Potentially renewable resources are those which must be used carefully to be sustained. For example, air and water are resources that can only be used if kept clean from pollution. Extinction of plant and animal species results in potentially renewable resources being lost forever.

When we think of resources as being things that have 'value', it suggests that maybe there are things that do not have any

value. Different people value different things based on their cultural beliefs and their level of understanding. For example, many people fear snakes and feel they have no useful value to them. However, ecologists understand the important value snakes have for the health of an ecosystem. Indirectly, snakes have a value to humans by keeping ecosystems functioning correctly and therefore maintaining environmental health.

It is also important to remember that some things may not appear to have a usage value to humans, but instead have an *inherent* or *existence* value. Visiting places of natural beauty, such as rainforests and reefs, enriches our experience of life. Most people now understand that the world is full of special places, rich in diversity, that should be preserved in their own right. To look at it another way, humans do not have the right to destroy these places just because the environments do not have a current resource use.

This is one reason why we now preserve and protect many natural environments throughout the world. ●

Natural Resources

1

New Words List

- resources
- civilisation
- cultural
- renewable
- fossil fuels
- potentially
- ecosystem
- inherent
- enriches
- preserve

A) Find each new word in the puzzle.

B) Write meanings for these words. Use a dictionary to help you.

- *renewable* _____
- *potential* _____
- *ecosystem* _____
- *inherent* _____
- *preserve* _____

B	I	Z	R	S	R	X	B	W	E	T	V	U	H	C
J	P	H	G	C	E	O	P	I	S	U	N	T	R	G
M	L	P	N	U	L	U	O	N	S	M	N	S	E	H
I	A	R	T	L	I	Y	T	H	J	E	F	L	N	M
E	N	E	O	T	G	P	E	E	C	T	R	A	E	I
N	T	S	S	U	I	F	N	R	Q	S	D	M	W	N
R	S	E	E	R	O	V	T	A	U	Y	U	I	A	E
I	L	R	D	A	N	W	I	N	D	S	K	N	B	R
C	I	V	I	L	I	Z	A	T	I	O	N	A	L	A
H	K	E	T	N	B	X	L	C	M	C	Z	M	E	L
E	A	F	O	S	S	I	L	F	U	E	L	S	G	S
S	L	U	P	C	E	A	Y	O	D	Y	J	L	I	F
D	K	Q	R	E	S	O	U	R	C	E	S	W	E	A

C) Use three words from the word list above to write a sensible sentence.

_____

_____

D) There are nine words hidden in the puzzle which are either human or natural resources. Can you find them? (*Hint: They can also be found in the text on page 11.*)

- m _ _ _ _
- p _ _ _ _ _
- m _ _ _ _ _ _ _
- w _ _ _
- a _ _
- s _ _
- a _ _ _ _ _ _
- t _ _ _ _
- r _ _ _ _ _ _ _

2

Comprehension

Read the text on page 11 to help you understand and answer these questions. Write your answers on the back of this page or in your exercise book.

A) (i) What is a resource?

(ii) List three human resources.

B) What is the difference between a renewable and non-renewable resource?

C) Why do different people value different things?

D) Why is it important to preserve environments which do not appear to have resources humans can use?

ANSWERS

Natural Resources

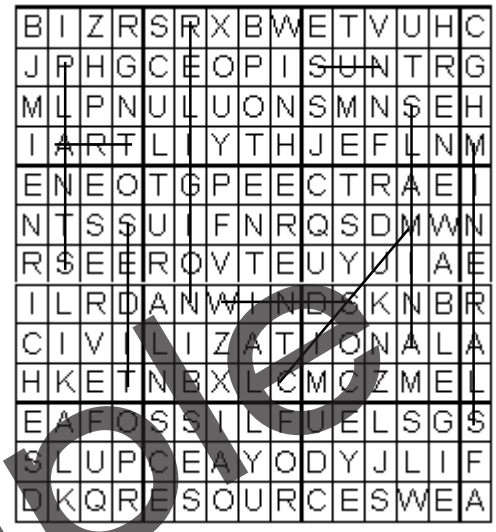
1

A) See diagram below.

B) Check dictionary meanings.

C) Teacher to check.

D) See diagram below.



- music
- minerals
- art
- animals
- religion
- plants
- wind
- sun
- tides

2

A) (i) A resource is anything that has value to humans.
(ii) Music, art, religion.

B) When non-renewable resources are used, they are gone forever or will take a long time to form again. Renewable resources keep replenishing themselves.

C) People value different things based on their cultural beliefs and level of understanding.

D) Answers will vary; because these environments may have a use in the future; because these environments have the right to exist regardless of their value to humans.