



1. Running Out of Resources

Lesson Objectives:

- Students will gain an understanding and appreciation of the Earth's natural resources.
- Trace products we use in everyday life back to their origin as a natural product.
- Able to classify natural resources into renewable and non-renewable resources.
- Students will record the large amounts of resources thrown away by their family members and in the process they may become more conscious consumers.

Procedure:

- Explain by the use of photos and pictures the concept of natural resources to the students.

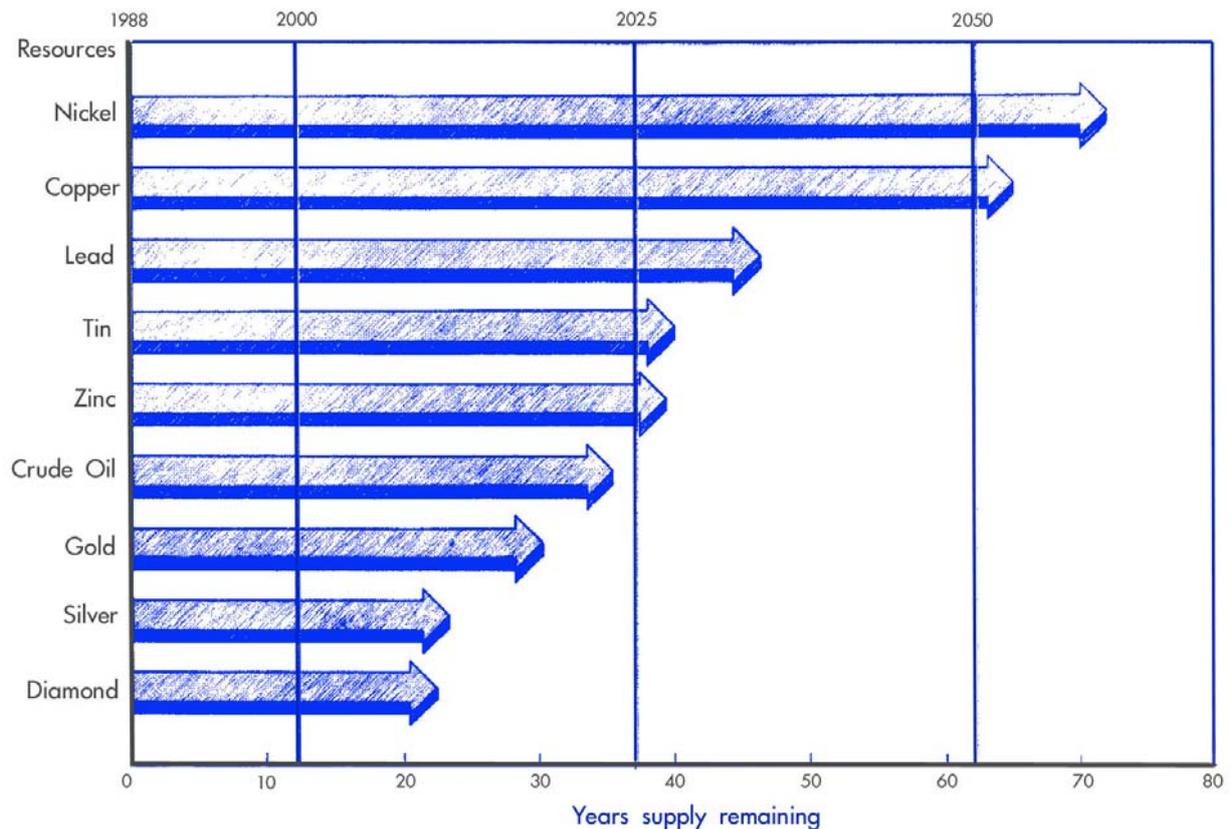
Natural resources are the raw materials provided by the Earth, which can be used by people. Everything we produce, use and throw away originates from natural resources. People cannot create raw materials but they can mine, quarry, harvest, catch or rear such natural products supplied by nature. Natural resources include minerals, fossil fuels such as oil or coal, animals, plants and trees, soil, water and air.

- After defining the term resource, review the difference between a renewable resource and a non-renewable resource. Provide examples of each.

Some natural resources are **renewable** (or infinite), while others are **non-renewable** (or finite), that is cannot be replaced because of their limited supply. Once people have used fossil fuels and minerals they are gone and cannot be replaced. Renewable resources are **sustainable** which means they are self-generating if left to nature. However a renewable resource if used carelessly or is over-exploited the possibility of it achieving a non-renewable status can occur.

- Encourage students to list resources and together identify if they are renewable or non-renewable. Individually students can work out the first part of *Worksheet 1.1*
- Help students understand the fact that products we use in everyday life originate from raw materials; glass bottle, aluminium can, paper, shoes, plastic cover, cereal box etc. Discuss the raw materials needed to make each product. Have students distinguish which items trace back to renewable and which originate from non-renewable resources.
- Project graph entitled, *Number of years remaining of some resources at present rates of extraction.*

As a result of developments made in manufacturing industries, the rapid increase in population and higher standards of living, the consumption of non-renewable resources has increased drastically in these last years. Global supplies of many resources such as tin, crude oil and aluminium will be depleted soon.



Number of years remaining of some resources at present rates of extraction.
(Punnett, N. 1995)

- Work out *Worksheet 1. 2* to be sure that the students have understood clearly what the graph represents.
- Discuss the economic / environmental impact of the over-exploitation of non-renewable resources.
 - What will people do when minerals like crude oil run out?
 - How will our lifestyles be affected by such a change (no more fuel, plastic, etc.)?
- Ask students how we can conserve renewable and non-renewable resources on a personal basis? (ideas; use public transport, turn off lights and switch off computers when not in use, ride bicycles, recycle products, use paper on both sides, etc.)

Due to the effects of economic development and the rapid growth in population there is the urgent need to manage the Earth's resources properly. Management might be achieved through a range of approaches such as source **reduction**, **recycling** and **reuse** and adopting forms of sustainable development.

- Work out *Worksheet 1.3* for homework. The aim of this activity is to make students aware that we throw away huge amounts of resources each day some of which are renewable others are non-renewable.

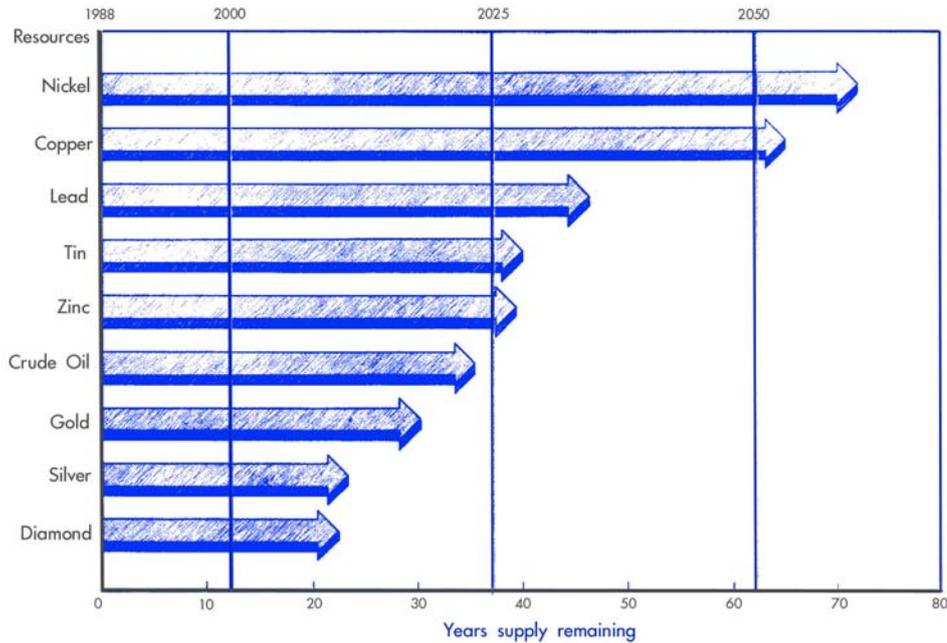


- Copy out the table below and indicate which of these raw materials are renewable and which are non-renewable by putting a (✓) in the correct column.

Resource	Renewable	Non-Renewable
Limestone		
Iron Ore		
Water		
Uranium		
Timber		
Fish		
Coal		
Gold		
Rice		
Crude Oil		

- How can renewable resources be exhausted? Give one example.

The graph shows life expectancies of some non-renewable natural resources at current rates of mining.



- Complete the Table below to show how many years' supply remain of the listed resources.

Mineral	Years Supply Remaining
Crude Oil	
Tin	
Aluminium	
Copper	
Zinc	
Gold	
Nickel	

Referring to the graph and the table above, make a list of all those minerals which will be depleted in the next 50 years. Start with the resource that will run out first. Next to each, write down how old you will be when the resource is depleted.

- By using a pair of sanitary gloves, have a look at household waste generated in a typical day. Make a list of some of the items present in the bin. Now try to trace back each product to its origin as a natural resource. Distinguish also if each resource is renewable or non-renewable by ticking (✓) the correct column.

 Household Waste			
Item	Raw Material	Renewable	Non-Renewable
Milk carton	timber	✓	
Tomato-paste tin	iron / tin		✓
Plastic bag	plastic		✓
Aluminium can	bauxite		✓
Newspaper	timber	✓	

