AUSTRALIAN EARTH SCIENCE EDUCATION

Rocking the Future 1: Resources
Student Worksheet

Earth's Resources

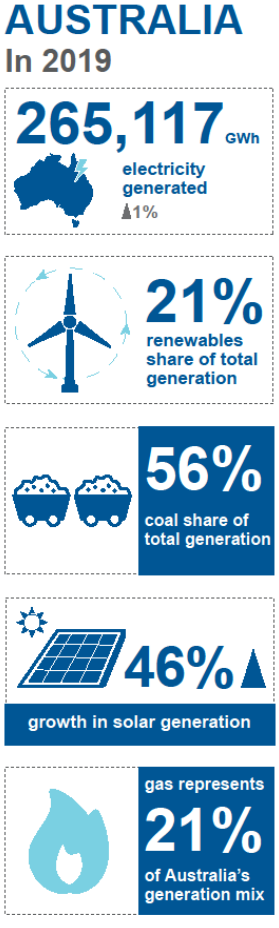
Earth's resources are anything found in nature that people can use. **Renewable** resources are those that can be replenished in a lifetime, such as water, sunlight, wind, plants and animals. **Non-renewable** resources cannot be replenished quickly, such as fossil fuels, rocks and metals.

List items shown in the photo (below) that come from renewable and non-renewable resources. Include brick, wood, paper cup, cotton cloth, plastic lid and metal doors. What others can you identify?

Renewable	Non-renewable

Renewable energy for the future

The infographic shows Australia's electricity generation in 2019. Complete the passage below using information about resources and the infographic.



Australia generated _____% of its electricity from coal and gas.

Coal and gas are renewable / non-renewable resources. (circle correct answer)

Renewables accounted for _____% of total generation. The renewable energy with the greatest increase since last year was _____.

Capturing renewable energy with non-renewable resources

Sun, wind and running water are renewable energy sources. We capture energy from renewable resources using wind and water turbines, solar panels and batteries. Building this equipment requires non-renewable Earth materials, especially metals.

Metals are extracted from natural minerals that occur in rocks. If there is enough mineral to be mined at a profit, the rock is referred to as ore.

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Our high-tech future needs metals

Read the *Introduction to High-tech Metals* from the Geological Survey of New South Wales. This is available online at https://resourcesandgeoscience.nsw.gov.au/__data/assets/pdf_file/0007/836953/high-tech_introduction.pdf or on the back of the printed *High-tech metal resources* map in the section entitled "What are high-tech metals?"

Use the fact sheet to answer the questions below. The bold headings match the resource and will help you find the information you need.

What are high-tech metals?

1. Why are some metals considered "high-tech"?_____

_____

2. List at least six high-tech metals that can be produced in NSW._____

_____

The high-tech world needs metals

3.

Industry	Products made from high-tech metals

Environmental sustainability

4. Explain why large-capacity batteries are needed for sustainability. _____

_____

5. Explain how a named high-tech metal is used to improve the efficiency of a form of transport.

_____

_____

Supply challenges

6. Which of the supply challenges do you think is the most important? Why?_____

_____

7. How do leading car and battery manufacturers make certain of an ethical supply of high-tech metals?_____

Summary

Why do we need to use non-renewable resources for a sustainable future?_____

_____

_____

References:

Department of Industry, Science, Energy and Resources 2020. Australian Energy Statistics, Table O Electricity generation by fuel type 2018-2019 and 2019. Accessed 8/10/2020 from https://www.energy.gov.au/publications/australian-energy-statistics-table-o-electricity-generation-fuel-type-2018-19-and-2019

M.J. Armstrong, P.J. Carter, M.J. Drummond, G.D. Fleming, D.B. Forster & L.M. Talbot (compilers) 2018. High-tech metal resources of New South Wales. Geological Survey of New South Wales, Maitland. Available online at https://resourcesandgeoscience.nsw.gov.au/miners-and-explorers/geoscience-information/products-and-data/high-tech-metal-resources-of-nsw

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