

Activity Sheet 5

“Water Scarcity”

Introduction

The previous activity sheets have initially focussed on the supply of freshwater and then the demand for this resource. The concept of water scarcity brings this knowledge together.

Water Scarcity is the imbalance between water availability and demand for fresh water, leading to water shortages. (Source: [“Water for life. Investigating water as a global issue”](#))

This activity sheet will enable you to introduce and discuss the reasons for water scarcity and the repercussions of water scarcity.

The content of this activity sheet relates to the following Geographical Concepts and Skills and Geographical Knowledge:

Geographical skills:

Place, space and interconnection

- Explain processes that influence the characteristics of places
- Identify, analyse and explain spatial distributions and patterns and identify and explain their implications
- Identify, analyse and explain interconnections within places and between places and identify and explain changes resulting from these interconnections

Data and Information

- Collect and record relevant geographical data and information from useful primary and secondary sources, using ethical protocols
- Select and represent data and information in different forms, including by constructing appropriate maps at different scales that conform to cartographic conventions, using digital and spatial technologies as appropriate
- Analyse maps and other geographical data and information using digital and spatial technologies as appropriate, to develop identifications, descriptions, explanations and conclusions that use geographical terminology

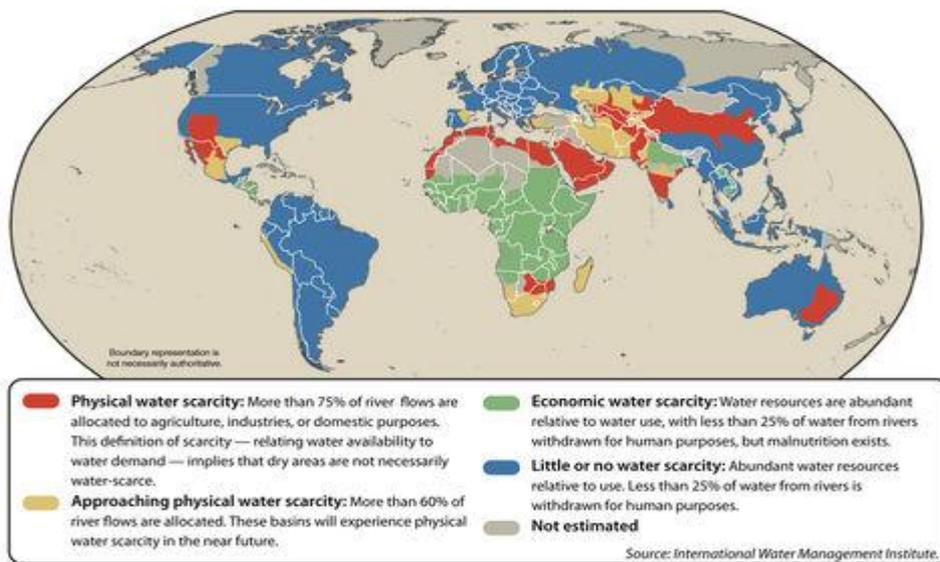
Geographical knowledge:

- Nature of water scarcity and the role of humans in creating and overcoming it, including studies drawn from Australia and West Asia and/or North Africa

Activities

1. Go to "[Water Scarcity](#)"
This has a simple clip explaining the concept of water scarcity as well as distinguishing between physical and economic water scarcity. Students could use this site to define these key terms.
2. Download a map showing Projected Global Water Scarcity 2025 (Source: International Water Management Institute). This map includes both physical and economic water scarcity.

Projected Global Water Scarcity, 2025



Map taken from: <http://www.gifex.com/fullsize-en/2009-09-18-7108/Projected-world-water-scarcity-2025.html>

Using the data from this map complete a range of the following tasks

- Estimate the percentage of the world that is projected to have physical water scarcity by 2025.
- Estimate the percentage of the world that is projected to have economic water scarcity by 2025.
- Which regions in the world tend to suffer from physical water scarcity? Describe their geographic locations and suggest reasons that can account for this distribution.
- Estimate the percentage of Australia that suffers from physical water scarcity.

- What factors can you suggest to explain why this area of Australia is expected to have physical water scarcity? In crafting your response, think about
 - Australia's rainfall pattern. To extend this task you could refer to a map showing Australia's rainfall pattern and discuss the spatial association between physical water scarcity and rainfall.
 - The importance and types of agriculture in the region suffering water scarcity. Likewise to extend this task you could refer to a map showing the types and patterns of agriculture in Australia and discuss if there is a spatial association between physical water scarcity and types of agriculture (in particular agriculture using irrigation practices)
 - The location of underground water supplies. For this you could watch the clip "[The world is running out of freshwater- Nasa's latest discovery](#)" from YouTube and relate this to The Great Artesian Basin
 - How marginal the land is and soil types.

If you wish to further extend the above suggestions overlay maps showing the above associations could be done.

- Which regions in the world suffer from economic water scarcity? Suggest reasons for this scarcity. (The responses from this task could be used to lead into the next question)

3. As a class list six countries that have either physical or economic water scarcity and six countries that have little or no water scarcity. For each of those countries undertake research in order to complete the following table.

Teacher Notes:

a. This is only a sample of the criteria that could be used. (e.g: Human Development Index could be included). It is recommended that this criteria be explained to students prior to the commencement of this task.

b. This task can be done either individually, in pairs or small groups.

c. To link this to the Victorian Curriculum your selection of these countries should include some from West Asia, North Africa and Australia.

d. If you plan to undertake a case study of a specific country in this unit then include this country.

| Name of country | Category of water scarcity | Population growth % | GDP per capita | Average calorie Intake per person per day | % of people in poverty |
|-----------------|----------------------------|---------------------|----------------|-------------------------------------------|------------------------|
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| 12. | | | | | |

Once the table has been completed get students to write statements comparing the category of water scarcity to each of the selected criteria. For example, those countries with water insecurity tend to be those with a high population growth.

Examples of this statement are...

The Australian eastern seaboard is experiencing physical water scarcity. This is because there is high population growth and also eastern Australia has the highest population density in the country. Even though it experiences more rainfall than the centre and west of Australia, it has the highest level of scarcity because of the population demands.

Or,

The Middle East is approaching water scarcity. This is because there is low rainfall and high population growth.

Teachers should model an exemplar for students to follow such as the ones above.

The results from this table should provide an excellent base for further discussion re the impacts of water scarcity.

- To bring the above discussion to life refer to the next activity sheet on Capetown or watch clips such as:

[Water Scarcity Map](#)

[Water Scarcity](#)

[Water Crisis- a Short Introduction](#)

Extension Activities

1. Rather than creating a table in a workbook, students could use Google Maps to create a map of water scarcity using their selected 12 countries. There is an introductory video [here](#).

It is suggested that you “flip the classroom” and get students to watch the “How To” video at home so they can maximise their class time.

In the explanation for each place, they can include the data they have researched.

2. If you wish you could extend these activities by looking at the concept of water stress. Water stress refers to the imbalance between water use and water resources. Water stress impacts on the quantity and quality of fresh water. (Source: “Water For Life: Investigating Water as a Global Issue” can be downloaded by clicking on the hyperlink).
3. Refer to this article from “Kids News”: [World water supply worries scientists \(Herald Sun\)](#). Read the article and complete the comprehension questions attached. You may also want to undertake the other activities attached to this resource.

An alternative article to look at is [“Is the world running out of freshwater”](#) from The BBC. This article contains similar information but also finishes on more of a positive note by looking at possible solutions to water scarcity. Students could complete a PMI chart comparing the two articles to enhance their critical thinking and literacy skills.

4. The area of Australia impacted by water scarcity contains the Murray Darling Basin. Researching the economic, social and environmental significance of this region will provide an insight into what could be lost if water scarcity continues in this area.

If you wish you could introduce and discuss proposed changes to the Murray Darling Basin Plan.

Some sites that will assist with this are found below:

1. [Murray Darling Basin Authority](#)
2. [Murray Darling Basin Authority \(Education Page\)](#)
3. [Reuters Factbox](#)
4. [Basin Plan 2012 \(Australian Government\)](#)