Activity Sheet 2

"The global distribution of freshwater reserves"

<u>Introduction</u>

With an estimated 1,260,000,000,000,000,000,000 litres of water in the world one can assume that there is water everywhere. But how much of this is really available for human consumption and how evenly is this resource distributed?

Activity Sheet 2 is designed to provide students with the knowledge that the global supply of fresh water is uneven, creating issues for those regions reaching freshwater stress. There is a range of quite good data and associated activities similar to those below in a number of textbooks and online. Feel free to use what suits – the important thing is to raise awareness that this distribution is not even. The content of this activity sheet relates to the following Geographical Concepts and Skills and Geographical Knowledge.

<u>Geographical Concepts and Skills:</u>

Place, space and interconnection

- Identify, analyse and explain spatial distributions and patterns and identify and explain their implications.
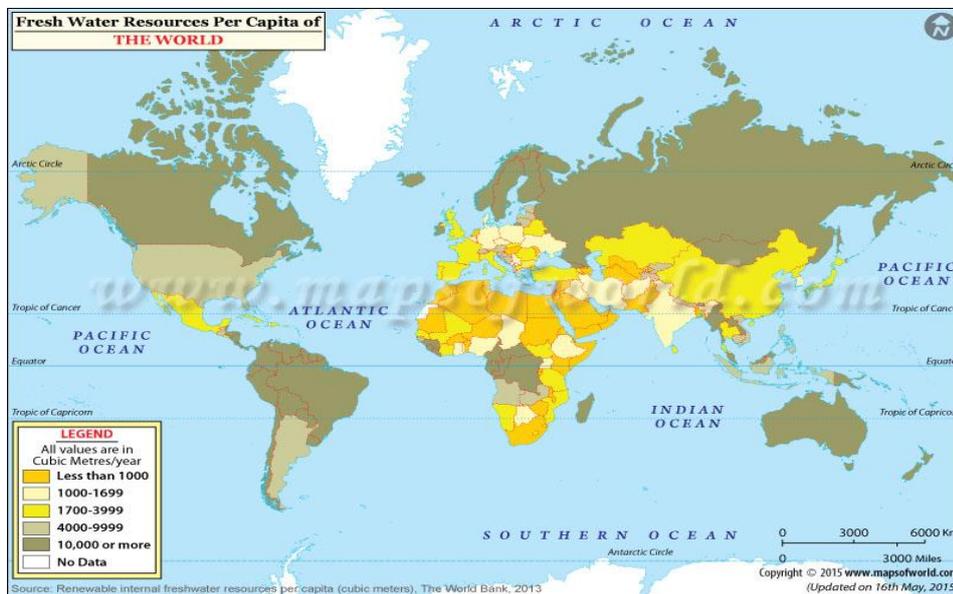
Data and Information

- Collect and record relevant data and information from useful primary and secondary sources, using ethical protocols
- 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
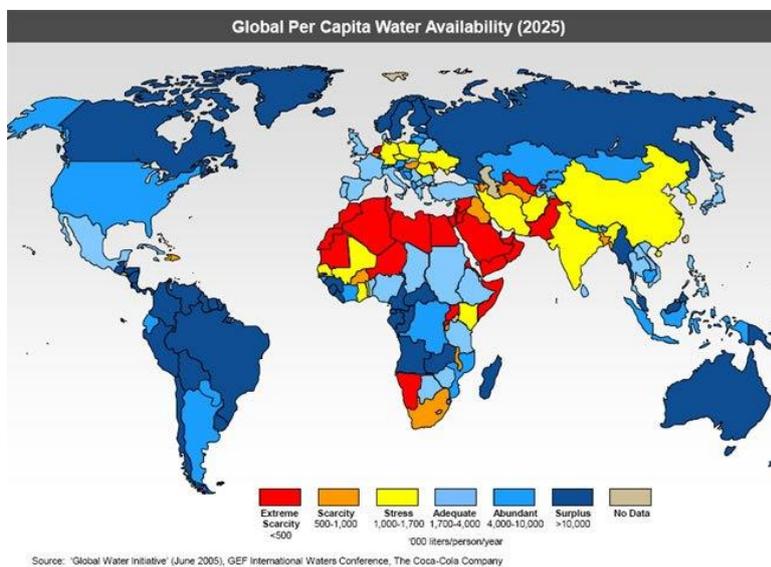
<u>Geographical Knowledge:</u>

- The quantity and variability of Australia's water resources compared with those in other continents and how water balance can be used to explain these differences.
- 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. Obtain either via a textbook or online a map similar to those below showing the global distribution of freshwater resources.

Map taken from: http://www.mapsofworld.com/images/world-fresh-water-resources-map.jpg

(This map is taken from here: http://geoawesomeness.com/mapping-the-water-reserve-of-the-world-china-and-india-face-acute-shortage/
It is worth investigating the source of the map more closely with students as it highlights the need for them to include the source, and also the question the reliability and any potential bias of the source).

With reference to these maps (above) a range of differentiated tasks, using Bloom's taxonomy, could be undertaken. Select those that best suits your class.

Knowledge

List those countries that that have a high access to freshwater supplies, a moderate access to freshwater supplies and a low access to freshwater supplies. (prior to commencing this task a discussion of what constitutes high, medium and low should take place. This will vary according to the map that you have accessed)

Comprehension

Using evidence contained in the map showing the global distribution of freshwater supplies comment on whether you consider the distribution of freshwater supplies is even.

Which regions of the world do you think are water rich? Which regions do you consider to be water poor? (Prior to this activity a discussion about the phrases "water rich" and "water poor" and what constitutes a region should occur). Justify your response and provide evidence for this.

Application

Brainstorm and then research factors that could explain these regional differences. Remember that these maps show the freshwater resources per capita.

Analysis

Using the PQE method (Pattern, Quantification, Exception) describe the distribution of freshwater supplies. (Teacher instruction and guidance highly recommended).

Synthesis

Using the maps, and your knowledge of climate and population, elaborate on the reasons why fresh water is distributed in such a manner.

If you wish you could complete an overlay map showing annual rainfall and freshwater supplies. This task would also enable you to introduce the concept of spatial association.

Here are some helpful links:

How to overlay Google Maps in Google Earth

How to use Maptiler

List of Best Map tools for students

National Map.Gov.au

<u>Evaluation</u>

Identify the ways in which water scarcity is determined. Evaluate whether these methods of evaluation are effective or whether they could or should be redesigned.

A useful source of background information for these tasks can be found at: <u>"A peek into the world's water infrastructure"</u>

2. Using the data from the map/activities above, as a class determine four countries that have:
   - High access to freshwater supplies
   - Moderate access to freshwater supplies
   - Low access to freshwater supplies

To link this to the curriculum your selection of these countries should include some from West Asia, North Africa and Australia. If you plan to do a case study of a specific country in this unit then also include this country.

For those countries selected get students to research and complete the table below. The criteria in this table is only a sample of what you could use. Students could develop their own criteria for investigation. Prior to commencing this task explain what each of the criteria means. You may choose to get students to complete this table individually, in pairs or in groups.

Name of country (order from highest to lowest re access to fresh water supplies)	Water use per person per day (litres)	Percentage of population who have access to clean water	Population Growth (%)
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			

3. For each of the criteria selected get students to comment on the relationship between access to freshwater supplies and that criteria. For example, those countries with high access to freshwater supplies tend to have a high access to clean drinking water.

   As the example below shows it is possible to differentiate this activity by adding extra criteria to research.

   Example: "Even though Bahrain is considered to be a water-scarce country, individual use of water sits at 340 litres per day. This is due partly to increased standards of living and also because of increased population rates."

   This activity could be done either as a whole class activity or individually or in pairs. It is important to follow this activity up with class discussion about each set of findings.

4. To bring the above facts to life access a clip such as "Walking in Sabina's Shoes" World Vision. (clip is a little old but makes the point)

    or "Water for Africa- The Marathon Walk" (clip is short and not your typical image but it makes a strong point about the issues and what is being done to address this) .

   Recent articles such as those found in "The Conversation" "Women still carrying most of the world's water" are a really good discussion piece.

   For an unusual comparison watch one of the Youtube clips on "Iceberg Hunters'. These people are blasting icebergs for bottled water which is marketed as pure iceberg water.