



Lesson Seven:	Is there enough water in the water cycle?		
Aim:	To make judgements and form opinions about future water supply and demand, using Oman and the UK as examples		
NC Links:	contrasting the UK and the Middle East, focusing on their environmental regions, including hot deserts; key physical and human characteristics in terms of population distribution and rainfall patterns; understand geographical similarities, differences and links between places; hydrology; the use of natural resources; understand how human and physical processes interact to influence and change environments and the climate; how human activity relies on effective functioning of natural systems		
Scottish NC Es and Os:	SOC 3-08a; LIT 3-02a; LIT 3-09a; HWB 3-14a		
Key Vocabulary:	water stress desalination	groundwater saltwater intrusion	greywater sustainable development
Resources:		Learning Outcomes:	
PowerPoint: Is there enough... Resource Pack One Resource Pack Two Resource Pack Three Resource Pack Four Glossary		<ul style="list-style-type: none"> • To describe how water is supplied and how demand can be unevenly distributed, using Oman and the UK as examples • To explain how countries can increase supply and the impact this may have • To make judgements and form opinions on how we can secure future water needs 	
Lesson Introduction:			
<p>Students will be researching and forming opinions on the future of water supplies and demands in the UK and in Oman.</p> <p>Teachers should encourage the understanding that the amount of water in the water cycle will not change. However, there are three main issues:</p> <ol style="list-style-type: none"> 1. The distribution of freshwater and populations is mismatched. 2. The stores and flows of water are changing and there may be a decrease in the supply of freshwater as a result of increased saltwater intrusion into freshwater stores. 3. Our demand for water is growing as populations increase and economies develop. <p>Students should begin to consider whether we can supply the growing demand in the future.</p> <p>Students will work collaboratively to present information and create a body of shared knowledge within the classroom.</p> <p>The class should be arranged in either groups of four with one task for each student in the group or in groups of four with one task per group as a whole.</p>			
Starter: (10 mins)			
<p>Slide 2: First Thoughts</p> <p>Students can be asked to comment on whether there is enough water in the water cycle. They should note their initial ideas down.</p> <p>Slide 3-5: Evidence of Water Stress</p>			

Students can share ideas and there can be a teacher-led discussion based on the distribution of the supply of water and its demand in both countries. Students should comment on which country they believe experiences the greater water stress.

Main Activities (40 mins)

Slide 6: Researching Water Stress

With the class split into four, each should be allocated a *Resource Pack*. For differentiation purposes, the packs are ordered 2, 4, 1, 3 from most to least challenging. Each group is challenged to become experts in their allocated set of resources. It may help to have a *Glossary* on each table to help students use more geographical language. Groups share their findings and the key points are recorded by the whole class.

Slide 7: What's your opinion?

With a length of ribbon or similar stretched out across the classroom, students should reflect on what they have learnt from the task and place themselves somewhere along that line. Students can then discuss why they have chosen to adopt that particular position.

Reflection: (10 mins)

Slide 8: Time for Reflection

Students can revisit the starter question and write additional notes (in a different colour pen) to show how their thinking has progressed.

Additional Lines of Enquiry:

- Research methods that are used to increase water supplies as well as their possible positive and negative impacts
- Research the concept 'water footprints' and 'virtual water trade'
- Research more sustainable management of water demand, including reducing water footprints
- Design a future city where water supply and demand are balanced. This should include a combination of technological design and behavioural changes

Bibliography:

Slide 3: Water stress map from OECD

Slide 4: Oman maps from MEDRC

Slide 5: UK population density map from Nilfanion; UK precipitation map from MET office

Resource Pack Two images from <https://pixabay.com/en/>

Resource Pack Three images from <https://pixabay.com/en/>