

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Class: \_\_\_\_\_

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## IB ESS

# 4.2 Access to Freshwater

### Significant Ideas

The supplies of freshwater resources are inequitably available and unevenly distributed, which can lead to conflict and concerns over water security.

Freshwater resources can be sustainably managed using a variety of different approaches.



## Freshwater Use

1. Humans use a lot of fresh water in their daily lives. List the uses of freshwater under the categories below. (Focus on what grey water *can* be used for, not necessarily what it commonly is used for).

"White" water	"Grey" water
<ul style="list-style-type: none"><li>• Drinking water</li></ul>	<ul style="list-style-type: none"><li>• Water for cleaning the car</li></ul>



2. State a similarity and difference between white and grey water.

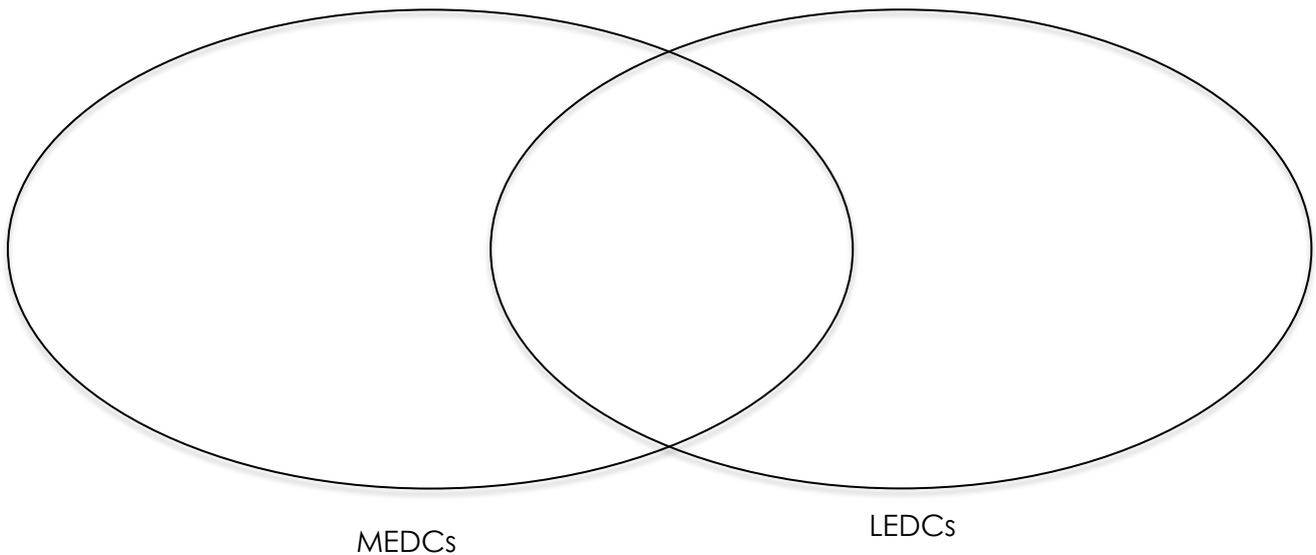
Similarity:

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Difference:

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3. Look at your lists in question 1. Categorise the uses into those mostly used by people in MEDCs, those mostly used in LEDCs, and those used in both.



4. What can you deduce from your diagram in question 3?

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5. The diagram above is a type of model. Evaluate this model.

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## Freshwater Supply

6. Explain why the freshwater requirements of a nation increases over time with respect to:

*Population*

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*Industrial Development*

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*Expansion of farmland*

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7. Briefly describe the ways that the following can limit the supply of freshwater.

*Industrialisation*

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*Irrigation of farmland*

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*Use of pesticides*

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*Use of fertilisers*

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*High extraction rates from aquifers*

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8. Explain how the following issues linked to climate change can influence the availability of water.

Factor	Effect on water supply
Rising sea level	<hr/>
Changing rainfall patterns	<hr/>
Changes in amount and timing of snow melt	<hr/>

9. Outline how water scarcity can lead to conflict.

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## Enhancing Freshwater Supplies

11. Draw a labeled diagram to show the structure of an aquifer.

12. State what is meant by "aquifer".

13. Look at the following ways to increase water supply. Describe and evaluate each one.

Method	Brief Description	Evaluation
Build reservoirs	<hr/> <hr/> <hr/> <hr/> <hr/>	<hr/> <hr/> <hr/> <hr/> <hr/>
Redistribute water	<hr/> <hr/> <hr/> <hr/> <hr/>	<hr/> <hr/> <hr/> <hr/> <hr/>

Desalination	<hr/> <hr/> <hr/> <hr/> <hr/>	<hr/> <hr/> <hr/> <hr/> <hr/>
Rainwater harvesting	<hr/> <hr/> <hr/> <hr/> <hr/>	<hr/> <hr/> <hr/> <hr/> <hr/>
Recharging aquifers	<hr/> <hr/> <hr/> <hr/> <hr/>	<hr/> <hr/> <hr/> <hr/> <hr/>
Closed-water car washes	<hr/> <hr/> <hr/> <hr/> <hr/>	<hr/> <hr/> <hr/> <hr/> <hr/>
Grey water recycling	<hr/> <hr/> <hr/> <hr/> <hr/>	<hr/> <hr/> <hr/> <hr/> <hr/>
Use drought resistant crops	<hr/> <hr/> <hr/> <hr/> <hr/>	<hr/> <hr/> <hr/> <hr/> <hr/>



<p>Reduce fertilizer and pesticide use</p>	<hr/> <hr/> <hr/> <hr/> <hr/>	<hr/> <hr/> <hr/> <hr/> <hr/>
<p>Use organic (instead of chemical) fertilisers</p>	<hr/> <hr/> <hr/> <hr/> <hr/>	<hr/> <hr/> <hr/> <hr/> <hr/>
<p>Water treatment by factories</p>	<hr/> <hr/> <hr/> <hr/> <hr/>	<hr/> <hr/> <hr/> <hr/> <hr/>
<p>Reduce temperature of water discharge</p>	<hr/> <hr/> <hr/> <hr/> <hr/>	<hr/> <hr/> <hr/> <hr/> <hr/>



## CASE STUDY: Freshwater and Conflict

**Conduct your own research to answer the following questions about water scarcity in North Eastern Africa.**

A helpful article regarding the freshwater supply of the Nile Basin can be found at:

<http://www.futuredirections.org.au/publication/conflict-on-the-nile-the-future-of-transboundary-water-disputes-over-the-world-s-longest-river/>

14. List the countries that rely on the River Nile for freshwater.

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15. State why the above nations are motivated to claim a share of freshwater from the Nile.

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16. Describe how freshwater distribution has changed as a consequence of the Entebbe agreement.

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