

# **PiXL Independence:**

## **Geography – Student Booklet**

### **KS4**

## **Resource Management**

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## **I. Multiple Choice Questions**

1. What is a fossil fuel?
  - a. Energy resource formed from the remains of plants and animals that lived millions of years ago
  - b. Natural source of energy
  - c. Infinite energy resource formed from the remains of plants and animals that lived millions of years ago
  - d. Energy resource created by humans
2. The burning of fossil fuels causes a build-up of gases in the atmosphere called:
  - a. Air pollution
  - b. Greenhouse gases
  - c. Carbon credits
  - d. Biomass
3. What is a water transfer scheme?
  - a. Transfer of water from an area of deficit to an area of surplus
  - b. Transfer of water through pipes
  - c. Transfer of water from an area of surplus to an area of deficit
  - d. Water transferring from one river to another
4. Which of these is the correct definition of sustainable management?
  - a. Using energy resources in a way which ensures that they are not exploited and will hopefully be able to meet the needs of future generations
  - b. Using energy resources in a way which ensures that they are exploited and will hopefully be able to meet the needs of future generations
  - c. Using energy resources in a way which ensures that they are not exploited and won't be able to meet the needs of future generations
  - d. Using energy resources in a way which ensures that they are exploited and won't be able to meet the needs of future generations
5. What is fracking?
  - a. Drilling down into oil-bearing rock; blasting it with water, sand & chemicals at high pressure to release the oil inside the rock layers
  - b. Drilling down to get gas out of the earth
  - c. Drilling down to get oil out of the earth
  - d. Drilling down into gas-bearing rock; blasting it with water, sand & chemicals at high pressure to release the gas inside the rock layers

6. Which of these is the correct definition of energy mix
- a. Using different types of energy in a country
  - b. Proportion of different energy sources used in a country
  - c. Mixing different types of energy used in your home
  - d. Volume of different energy sources used in your home
7. What is an onshore oilfield?
- a. Oil drilled from under the sea
  - b. Oil drilled on land
  - c. Oil transferred from ships on to the land
  - d. Oil transferred from the land on to ships
8. Which of the following is a consequence of resource exploitation?
- a. Deforestation
  - b. Water surplus
  - c. Afforestation
  - d. Large reserves of coal
9. Which countries produce the most carbon emissions?
- a. Russia & India
  - b. China & India
  - c. China & USA
  - d. Russia & USA
10. Where is the biggest growth in energy demand?
- a. Developing countries
  - b. Developed countries
  - c. Emerging countries
  - d. HICs (High Income Countries)
11. Which of these activities is not energy efficient?
- a. Switching lights off when you leave the room
  - b. Washing clothes at 30°
  - c. Insulate house properly
  - d. Leave doors open

12. Which of the energy sources listed is NOT a renewable source of energy?
- a. Coal
  - b. Solar
  - c. Tidal
  - d. Wind
13. Which of the following gases are greenhouse gases:
- a. Carbon monoxide & methane
  - b. Carbon dioxide & nitrous oxide
  - c. chlorofluorocarbons & helium
  - d. hydrofluorocarbons & carbon monoxide
14. What is the name of the source of energy created with burning of decaying plant/animal waste?
- a. Biosphere
  - b. Biodegradable
  - c. Biomass
  - d. Biodome
15. What is the name of the renewable energy supply generated by capturing sunlight in panels to create electricity?
- a. Solar
  - b. Wind
  - c. Tidal
  - d. Biomass
16. Which energy source is derived from the movement of sea water in and out of turbines to generate electricity?
- a. Solar
  - b. Wind
  - c. Tidal
  - d. Biomass
17. Which statement is NOT an advantage of tidal energy?
- a. Low running cost
  - b. No harmful polluting gases are produced
  - c. Effective
  - d. Disturbs habitats & ecosystems

18. Which of these is NOT a way that households can reduce their use of water?

- a. Have a bath instead of a shower
- b. Have a shower instead of a bath
- c. Turn tap off while brushing your teeth
- d. Dual flush toilets

19. A carbon footprint is:

- a. The amount of carbon monoxide trapped in the biosphere as a result of the activities
- b. The amount of carbon dioxide released into the atmosphere as a result of the activities
- c. The amount of carbon monoxide released into the atmosphere as a result of the activities
- d. The amount of carbon dioxide trapped in the biosphere as a result of the activities

20. Energy resources that, once used, can replenish themselves are called:

- a. Renewable
- b. Finite
- c. Fossil fuels
- d. Non-Renewable

21. What is another term used to mean non-renewable?

- a. Renewable
- b. Finite
- c. Fossil fuels
- d. Infinite

22. What is a water deficit?

- a. More rainfall than evaporation and transpiration
- b. More evaporation and transpiration than rainfall
- c. Water supplies fall below 1000m<sup>3</sup> per person
- d. Not enough water to meet people's needs, below 1700 m<sup>3</sup> per person per year

23. What is water scarcity?

- a. More rainfall than evaporation and transpiration
- b. More evaporation and transpiration than rainfall
- c. Water supplies fall below 1000m<sup>3</sup> per person
- d. Not enough water to meet people's needs, below 1700 m<sup>3</sup> per person per year

24. What is water stress?

- a. More rainfall than evaporation and transpiration
- b. More evaporation and transpiration than rainfall
- c. Water supplies fall below 1000m<sup>3</sup> per person
- d. Not enough water to meet people's needs, below 1700 m<sup>3</sup> per person per year

25. What is the key word to this definition: The process of removing salt and other minerals from sea water to make it suitable for human consumption:

- a. Waterisation
- b. Saltations
- c. Desaltation
- d. Desalinisation

## II. Short Answer Questions

Write answers in full sentences and use geographical terminology where possible.

Answers should not be longer than 1 paragraph.

### Energy Resources

1. What is the difference between abiotic & biotic factors?
2. What is the difference between renewable & non-renewable energy?
3. Explain the problems caused by extraction of fossil fuels.
4. Describe how exploiting environments for food can cause reduced biodiversity.
5. Explain how deforestation has been caused by world population growth.
6. Which countries in the world have the highest gas reserves?
7. Which countries in the world have the most oil reserves?
8. Explain why the Forestry Commission was set up in the UK.
9. Describe the advantages of using coal to produce electricity.
10. Explain the disadvantages of using coal to produce electricity.
11. Describe the advantages of using wind energy to produce electricity.
12. Explain the disadvantages of using wind energy to produce electricity.
13. State 3 factors that affect the energy mix of a country.
14. Explain why the global demand for energy has changed over the past 100 years.
15. Explain how technological advances have affected global supply of energy.
16. Describe how non-renewable energy resources affect people.
17. Describe the positive impacts of using renewable energy on the environment.
18. Explain the disadvantages to fracking.
19. Explain why energy resources require sustainable management.
20. Suggest ways that developed countries (HICs) are attempting to reduce energy consumption.

## **Water Resources**

21. What is the difference between physical and economic water scarcity?
22. Explain how water is being exploited.
23. Suggest reasons why developed countries consume more water than developing countries (LICs)
24. Describe the factors that affect water usage.
25. Explain why the global demand for water has changed over the past 100 years.
26. Explain how technological advances have affected global supply of water.



### III. Annotation

1. High energy consumption:  
What factors in the photo show high energy consumption? Why?  
How do you know this?



Figure 1 Shibuya crowd in Tokyo, Japan. Getty Images ©

2. Water supply & technology:

Why is the water supply in this area? What evidence is there? What impact may this have on the local population?



*Figure 2.:Kenya water containers. Sarah Bannister PiXL ©*

3. Factors affecting water supply:

Does this area have a water surplus or deficit? Why might this be? What factors will affect the access to water in this area? What will the economic, social and environmental impacts be?



*Figure 3: Kenyan drought. Sarah Bannister PiXL ©*

## IV. Suggested Reading

### Water Resources:

1. What are 21<sup>st</sup> century water issues? (Online Lecture)  
<https://www.youtube.com/watch?v=Zelq-RPPL8U>

### Energy Resources:

2. How are global public sectors leading the way in energy-efficiency practices?  
<http://www.businesstimes.com.sg/hub/energy-efficiency-national-partnership/ministry-of-finance-leading-the-way-in-energy-efficiency>
3. How has wind energy developed over time?  
[http://www.soest.hawaii.edu/GG/FACULTY/ITO/GG410/Wind/Kaldellis\\_Wind\\_Energy\\_Revolution\\_RenEn11.pdf](http://www.soest.hawaii.edu/GG/FACULTY/ITO/GG410/Wind/Kaldellis_Wind_Energy_Revolution_RenEn11.pdf)
4. Why is energy efficiency a priority for governments and oil companies?  
<https://www.thenational.ae/business/energy/energy-efficiency-and-resource-management-must-be-priorities-for-governments-and-oil-companies-1.628487>
5. How good are smart cities?  
<http://www.zdnet.com/article/a-bumpy-road-toward-the-smart-city/>
6. How are emerging countries using renewable energy to boost their economy?  
<https://www.pv-tech.org/editors-blog/renegeing-on-solar-module-supply-contracts-to-india-a-tit-for-tat-affair>
7. What is fracking?  
<http://www.investopedia.com/terms/f/fracking.asp>
8. What are fossil fuels?  
<http://video.nationalgeographic.com/video/101-video-shorts/fossil-fuels-climate-change>
9. How are renewable energy sources efficiency being questioned?  
<https://www.economist.com/news/leaders/21717371-thats-no-reason-governments-stop-supporting-them-wind-and-solar-power-are-disrupting>



## V. Long Answer Questions

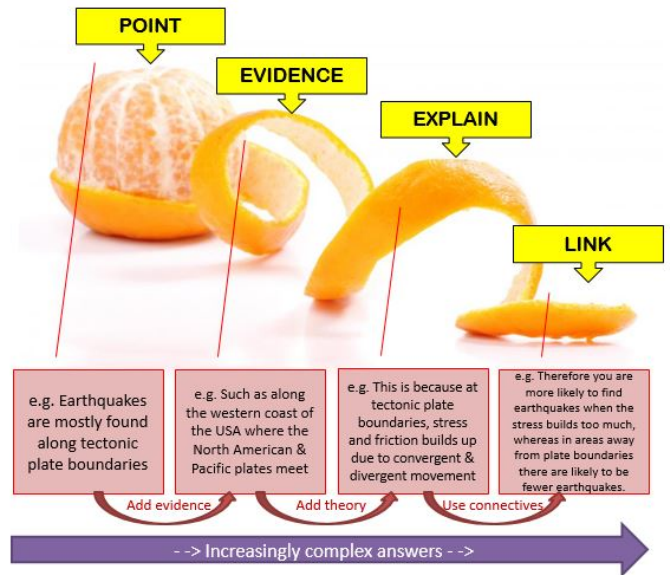
Write in essay format, with good structure and full sentences.

Use PEEL paragraph structure:

- Make your Point
- Add Evidence
- Add theory & Explain it
- Link to other geographical understanding

Use and develop named examples where possible to show your knowledge.

Write approximately 500 words per question.



### Water Resources:

1. Evaluate the impacts of over exploitation of water in developed countries.
2. Assess where the biggest water supply problems occur.
3. 'Desalination can solve water resources shortages.' Discuss the extent to which you agree with this statement.
4. Assess how successful a country you have studied has been in solving its water supply problems.

### Energy Resources:

5. Explain the variations in the global energy mix between countries at different levels of development.
6. Discuss the advantages and disadvantages of using renewable and non-renewable energy sources.

7. 'Fracking can solve non-renewable energy resource shortages.' Discuss the extent to which you agree with this statement.
8. 'Technology can solve the energy crisis.' Discuss the extent to which you agree with this statement.
9. Assess the importance of renewable energy in securing future energy demand.
10. Compare the way developed (HICs) and developing countries (LICs) manage their energy sources.

## VI. Synoptic Thinking

Being synoptic is about making connections between different parts of Geography. In this task, draw as many arrows as you can to show connections between the two concepts, along these arrows explain the links, use as many geographical ideas as possible. These links can be energy or water resources.

### 1. Development vs. Resource Usage

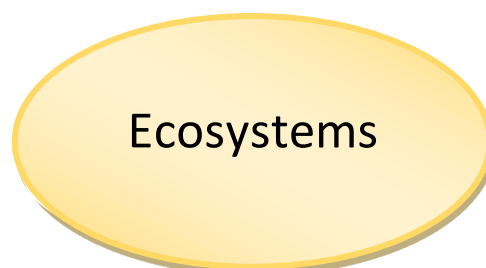


## 2. Development vs. Resource Management

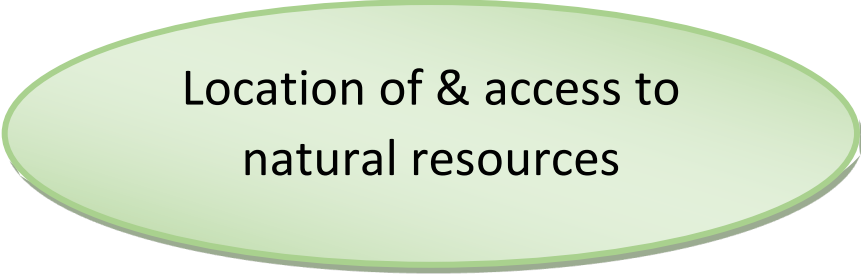




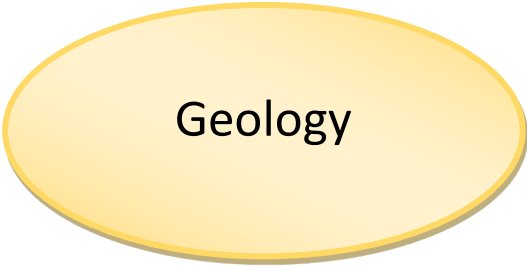
### 3. Ecosystems vs. Resource Management



4. Location of & access to natural resources vs. geology




Location of & access to  
natural resources




Geology

## 5. Sustainable Development vs. Sustainable Resource Management




Sustainable  
development




Sustainable resource  
management

## 6. Climate Change vs. Availability of Resources




Climate Change




Availability of  
resources

## 7. Exploitation of resources vs. Environmental degradation



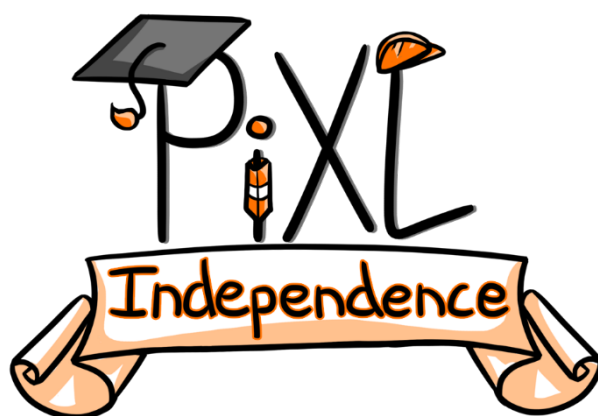
Exploitation of  
Resources



Environmental  
Degradation

## 8. Urbanisation vs. Resource usage





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