



Y7 Sustainable World Topic – Summer 1

Your Geography Enrichment homework task for this term is to plan a year's survival in a sealed dome in the desert as preparation for possible space colonisation in the future.

Enrichment Homework Due: 22nd May



You will need to imagine that they will be sealed up for a year in a vast plastic dome, rather like a huge poly tunnel.

(Note: the composition of the modern atmosphere is 78% nitrogen, 21% oxygen, and 1% for the rest, including CO₂ (0.03%) with variable amounts of water vapour.)

The dome is sealed so unless we do something, before we all die inside, the oxygen content will decrease, CO₂ will increase at a similar rate and the sides will steam up due to the water vapour that is breathed out.

It is, therefore important to understand the water and carbon cycles. You may also find it useful to have a copy of the nitrogen cycle.

Resource list:

- carbon/water/nitrogen cycle diagrams (easily found on the internet with a search engine)
- optional photos of domes inside and out.

Useful links:

Biosphere 2 Centre - <https://biosphere2.org/> or by searching for "Biosphere 2" on the internet.
The Desert USA website - <http://www.desertusa.com/mag99/apr/stories/bios2.html>
Eden Project <http://www.edenproject.com>

Success criteria: Presented neatly in your books or digitally.

The following questions must be answered (in any order you wish):

- What are you going to breathe?
- What clothes will you take with you?
- What are you going to drink? How will you collect fresh water?
- What are you going to eat? Will you be vegetarian? If not, how will you get meat?
- What is your likely water/oxygen/food consumption per day?
- How will you dispose of waste?
- What energy source will you use? How will you use it?
- How will you produce power?
- How will you control temperature?
- What will your medical requirements be?
- What jobs are you going to do when you get there?
- What else will you need to consider?

Also remember, you may be travelling in space so the total mass of equipment may be critical, only take what is essential and recyclable!

Note: **All natural resources used** must be renewable.

Note: This is based on the project called 'Biosphere 2' because 'Biosphere 1' was regarded as the Earth. More detail see www.earthscienceeducation.com