THE SEARCH FOR FRESH WATER

The assertion that water has always been the essence of life is nothing new. Water comes in many forms: spring water, sea and river water, rainwater, and fog and dew water. Yet water is becoming scarce and this scarcity is becoming a very real worry for governments all around the world. The reality is that one of the main obstacles to the economic development of a particular country is its lack of an adequate supply of fresh water. Current figures show that an inhabitant of a wealthy, modern town consumes 100-400 litres of water daily. In some developing countries the amount of water consumed does not exceed 20-30 litres per day. Rich or poor, annual water consumption has continued to grow, increasing fourfold over the last 50 years.

The world's fresh water supplies are drawn from a number of sources. The largest cache of the estimated 35 million km3 fresh water reserve is located in glaciers and snow. The amount contained in these 'storehouses' has been estimated to be around 24 million km3. Ground water is also a big contributor to the world's fresh water supplies amounting to an estimated 10.5 million km3. Considering that the total volume of water, salt and fresh, is estimated to be around 400 million km3 it can be clearly seen that the amount of fresh water available in the world is only the proverbial 'drop in the bucket'. Artesian wells, rivers and lakes only account for about 0.1 and 0.5 million km3 respectively, all of which include atmospheric precipitation such as rain and snow.

Since water is such an important commodity, various attempts to acquire stores of it have been tried with varying degrees of success. The question of what are the

Choose the correct letter, A, B. C or D

Question 1. As a method of obtaining fresh water, fog

A.   forms best when the air is dry.

B.   is easier to collect than dew.

C.   is being tried in a large-scale way in Senegal.

D.   is not easy to collect.

Question 2. Small-scale 'greenhouse effect' desalination

A.   uses a considerable amount of energy.

B.   is the most effective way to obtain larger water reserves.

C.   uses very little energy.

D.   burns quite a lot of fossil fuel.

Question 3. One of the largest stores of fresh water in the world is

A.   rivers and lakes.

B.   atmospheric rain and snow.

C.   ground water.

D.   artesian wells.

alternative water sources available to us today is not an easy one to answer but is certainly worthy of our best efforts to find one. One such area of interest has been desalination – the turning of salt water into drinkable water. As there is much more salt water on the earth than dry land, the idea of using desalinated seawater seems a logical one. However, some estimates put the annual quantity of desalinated water at only around ten cubic kilometres – a tiny amount given the amount of sea water available. In parts of Senegal, for example, the greenhouse effect has been one way to desalinate seawater whereby the salt in the water is separated from the water through a process of evaporation. As part of the process, water vapour forms on large panes of glass at outside air temperature and is transported via gravity into drums. This method yields only a few cubic meters per day of fresh water but is surprisingly energy efficient. In larger scale production however, the energy efficiency plummets. The best systems bum at least a tonne of fossil fuel to produce approximately one hundred cubic metres of fresh water. This amounts to almost $ 1 per cubic metre – a considerable cost.

Although there are several different areas from which water can be sourced, paradoxically the most extensive are the most difficult to tap. The atmosphere, for example, contains vast amounts of fresh water composed of 2% condensed water in the form of clouds and 98% water vapour. The vastness of this water source is comparable to the renewable liquid water resources of all inhabited lands. The amounts are easy to calculate, but being able and knowing how to economically obtain this water in liquid form is most challenging. One approach in drawing water from the atmosphere is fog nets. Places such as the coastal desens of West Africa and areas of Chile and Peru have favourable condensation conditions. In these areas, ocean humidity condenses in the form of fog on the mid-range

Complete each sentence with the correct ending A-F from the box below.

Question 4. Turning salt water into drinking water

Question 5. Large-scale fresh water production through evaporation

Question 7. Water available in the atmosphere

Question 8. The use of dew as a water source

Question 9. The amount of water collected from dew

mountains (over 500m). This fog composed of droplets of suspended water can be collected in nets. In the 1960s, a University in Northern Chile conducted the first major experiments with fog nets. Drawing on the knowledge gained from these experiments, further testing was done which culminated in one village using fog nets to yield a healthy daily average of 11,000 litres of water. On a smaller scale, fog-collecting nets have recently been used in the Canary Islands and Namibia.

Unfortunately, due to its need for a combination of several factors, fog is not readily available. Dew however appears far more frequently and is less subject to the constraints of climate and geography. In order for dew to form there needs to be some humidity in the air and a reasonably clear sky. Many hot areas of countries that suffer from a lack of water such as the Sahel region of Northern Africa for example, experience significant quantities of dew. When the temperature is lowered over a short space of time by ten degrees or so, the water-harvesting possibilities from the air yield an amazing ten grams of water from each cubic meter of air – significant drops in air temperature make for greater yields. Unlike fog, dew formation can occur even in a relatively dry atmosphere, such as a desert. All it takes is for the right mix of temperatures between the earth and the air to combine and dew formation occurs.

Source: Cambridge IELTS Test Plus 1

LIVEWORKSHEETS