

# Climate Change: "Ask the Expert" School Resources

<http://climatechange.wmnet.org.uk>

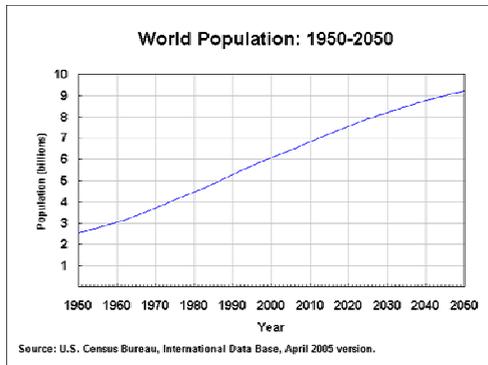
## Climate change - Implications for food production and the countryside:

**with Dr. Peter Kettleswell and Dr Paul Beckwith of Harper-Adams  
University College.**

*So that you can get the most out of the fantastic opportunity of questioning the experts we have assembled SOME of the popular evidence related to climate change that is available on the international web.*

*You can use this information as a foundation for your questions to the experts, as a support to your examination work and to increase your world knowledge on a major issue of our time.*

*If you use this information in your exam work it is really important that you acknowledge the original source; some of those people have been working on that data for many years.*



Source 1

### **World Population Growth**

World population growth continues at a steady state. *Can we sustain agricultural growth in line with world demographic trends?* There are suggestions that this is possible in the short-term (2).

*Consider though the impact of climate change in that equation; what complications do you envisage?*

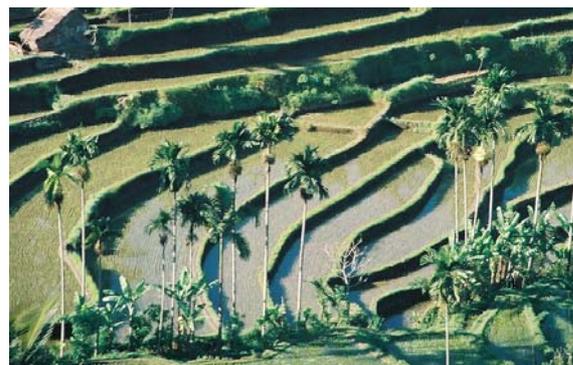


Source 3

### **What will the Impact be in Tropical Climate Zones?**

Many of the highly populated and poorer nations are located in the tropics. It has been suggested that there could be a 10% decrease in rice production for every 1.8 degree rise in temperature (4).

*If this is correct and at the same time those countries are experiencing rises in population, what are the implications?*



Source 5

### **What will the Impact be in Temperate Climate Zones?**

Wealthier nations employ a variety of methods to control agricultural production. As such they may be able to use their wealth and respond to alterations in cropping patterns brought about by climate change. However, finance is a limited resource.

*What political and economic pressures may limit more wealthy nations from responding to those climate changes?*

### **Population migration and climate change**

As cropping patterns become marginalised is there the possibility that whole populations will migrate as their food source comes under pressure?

In Tanzania drought years were 1 in 10, they are now 1 in 4/5.

*Is this increasing frequency of drought exacerbating rural to urban migration (6)?*

*How can agricultural communities respond?*

## Fertilisers and pesticides

As temperatures rise so does the speed with which bacteria break down the decaying material in soil. This may lead to an initial bloom in growth, followed by a more permanent nutritional loss – which will result in a greater dependence on fertilisers (7).

*What may be the impact of a longer (or shorter) growing season on agricultural pests and diseases?*



Source 8

## Food processing and packaging

In the wealthy west we demand aesthetic packaging and processing systems that ensures a long shelf life. The production of those machines, their environmental operation and running costs (not to be confused with monetary cost) may well contribute to global warming and climate change.



Source 9

*To what extent could global warming be reduced by removing aesthetic packaging (but without compromising shelf life)?*

## Methane

Methane released into the atmosphere is a powerful and immediate greenhouse gas. Nearly 15% of methane comes from the production of rice and, as this is amongst the staple diet of the regions that show the most population growth, it is set to continue. 14 % of methane comes from the waste product of animal husbandry, in wealthy countries and emergent nations this demand is also set to rise.

*The question that emerges is: to what extent can we manage the production of foodstuffs that will feed people and minimise greenhouse gases?*

## Food miles

In the wealthy west we demand fresh and exotic food all the year round.

Our food is seasonal; we extend the season by buying from further south as our growing period comes to an end. Meeting the demand for out of season and exotic food costs a great deal in added pollution, which in turn contributes to climate change.

*How much pollution does one articulated truck produce? Multiply that by the number of vehicles on the roads. Consider the ferry(s) and even manufacturing and maintaining the actual vehicles.*



Source 10

## Tree Cover

In the year 1086 it has been estimated that tree cover in the UK was 15%. Today it is probably just over 8%. Compare this to mainland Europe with 35% and Brazil with 57% (11).

Trees are a carbon sink. Trees do reduce flooding. Trees are a part of the weather system.

*Are we cutting down too many? Is our pattern of tree harvesting influencing climate change?*

*Discuss the planting of deep-rooted African grasses as alternative carbon sinks - with the added bonus of growing them as a fodder crop (12).*

## Biomass

We need electricity and there is an environmental cost. A natural gas power plant emits 400-500 grams of carbon dioxide per kilowatt hour. It is estimated that a Biomass power plant would emit 60-75 grams of carbon dioxide emissions for each kilowatt hour (13).

*If we in west are overproducing in food products, how feasible would the change to biomass be?*



Source 14

### Sources

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