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NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

Scholarship 2009
Geography

2.00 pm Saturday 21 November 2009

RESOURCE BOOKLET

Refer to this booklet to answer the questions for Scholarship Geography 93401.

Check that this booklet has pages 2–21 in the correct order and that none of these pages is blank.

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GLOSSARY

FAO (Food and Agricultural Organisation)	A specialised agency of the United Nations that leads international efforts to defeat hunger.
EU (The European Union)	An economic and political union of 27 member-states, located primarily in Europe. It is committed to regional integration.
The World Bank	An international financial institution that provides loans to poorer countries for capital programmes, with a goal of reducing poverty.
UNFPA (United Nations Population Fund)	An international development agency that promotes the right of every woman, man and child to enjoy a life of health and equal opportunity.
WFP (World Food Programme)	The food-aid branch of the United Nations, and the world's largest humanitarian organisation. WFP provides food, on average, to 90 million people per year, 58 million of whom are children.
UNICEF (United Nations Children's Fund)	An organisation that provides long-term humanitarian and developmental assistance to children and mothers in developing countries.

PART A: THE GLOBAL FOOD CRISIS

Introduction

Two billion people suffer from chronic undernutrition and millions of people die each year from hunger-related diseases … What are the consequences for the globe?

Figure 1: Queuing for grain

If all the cereal produced each year was divided evenly among the world's population, everyone would receive more than is needed for them to survive … In most industrialised countries, the opposite is true; the average intake of calories is significantly above the 2 500 calories recommended as healthy by nutritionists, leading to a different kind of malnutrition.

Averages hide wide disparities, however, and everywhere there are extremes of undernutrition and overnutrition … The change in the diet towards more meat consumption per year in China has also led to changes in water use across the country, leading to pressure on resources (**see Figure 2 below**).

Figure 2: Changing eating habits in China and pressure on resources

There are large surpluses of food across the world – in particular grain … In addition, the growth of the biofuels industry has led to grain being diverted into ethanol production when possibly it could be spent on providing food for people (**see Figure 3 below**).

Figure 3: Growing food for vehicles or people?

Food-rich countries send large quantities of their surplus food to countries where it is in short supply (**see Figure 4 below**) … The long-term reduction of hunger and malnutrition worldwide requires an increase in income levels brought about by improvements in local food production and better access to food.

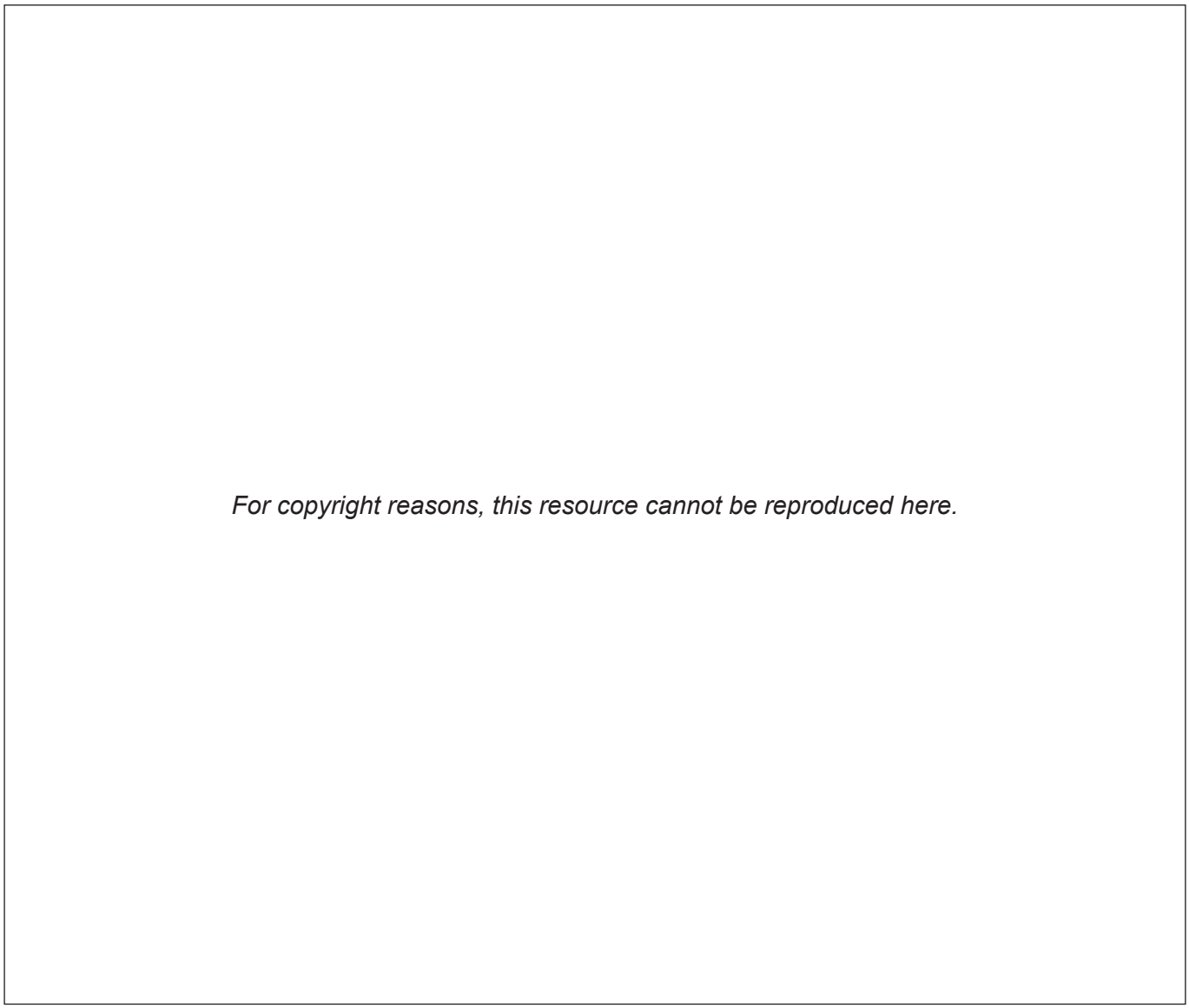

Figure 4: Global trade and worldwide grain production 2007

Famine traditionally means mass starvation … The desperate – those on 50 cents a day – faced disaster (**see Figure 5 below**).

Percentage of population that is undernourished

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Daily grams of protein per person

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Daily calories per person

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Daily grams of fat per person

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Figure 5: Food distribution maps

PART B: SO HOW DID THIS CRISIS COME ABOUT?

The years 2007–08 saw dramatic increases in world food prices, creating a global crisis and causing political and economic instability, and social unrest in both poor and developed nations …

As of 2009, food prices have fallen significantly from their earlier highs, although some observers believe this decrease may be temporary.

Population Growth

The world's population is unevenly distributed, and the rate at which populations are increasing also varies widely, with countries in the tropics and the southern hemisphere increasing more rapidly than those in the north … Predictions for future growth vary, but even if the rate of increase slows down, the world's population is still likely to exceed 9 billion by 2050, with more than half of all people living in cities (**see Figure 6 below**).

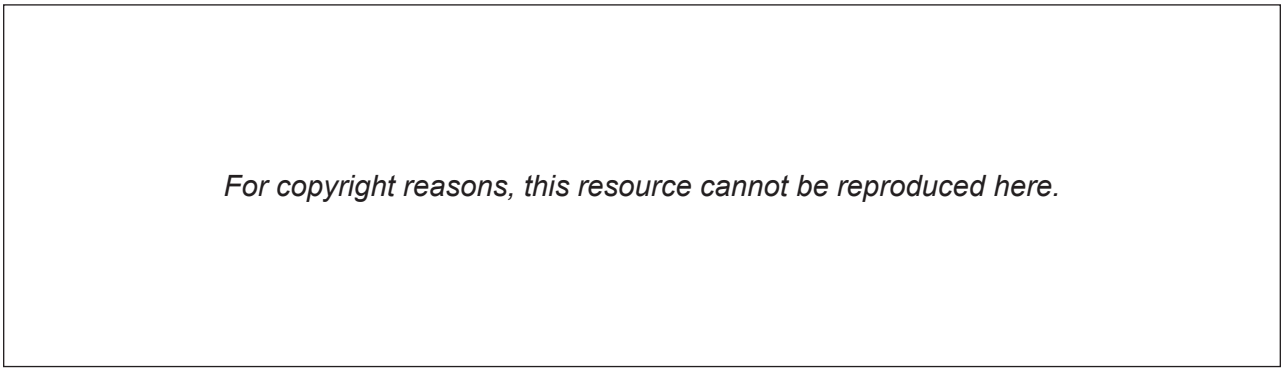

Figure 6: Growth in the world's population

Figure 7: Growth in the world's population by region

The regions currently unable to produce sufficient food to keep people healthy, are also the ones facing the most rapid population increase (**see Figure 7 above**) … The world's population, on its current growth trajectory, is expected to reach nearly 9 billion by the year 2042.

Growth in food production has been greater than population growth (**see Figure 8 below**) … Although some commentators have argued that the food crisis stemmed from unprecedented global population growth, others point out that world population growth rates have dropped dramatically since the 1980s, and grain availability has continued to outpace population.

Figure 8: World food production and population growth

So are we running out of land to feed the growing world population?

Ecological campaigners claim that climate change, urban sprawl, and the toxic effects of industrial farming have had that effect, and the bald statistics seem to support them: the global area under cereal production fell from a peak of 740 million hectares in 1981, to 680 million in 2005 …

Yields could possibly be trebled if high-tech farming techniques were applied, enabling the world to be fed for years to come.

Soil Degradation

Over 80 per cent of arable land worldwide is affected by sufficient soil degradation to reduce its productivity (**see Figure 9 below**) …

Some soil problems occur naturally; others result from human action, such as the excessive use of fertilisers, or overworking (**see Figure 10 on the following page**). Either way, they adversely affect the productivity of the soil.

Figure 9: Global soil degradation

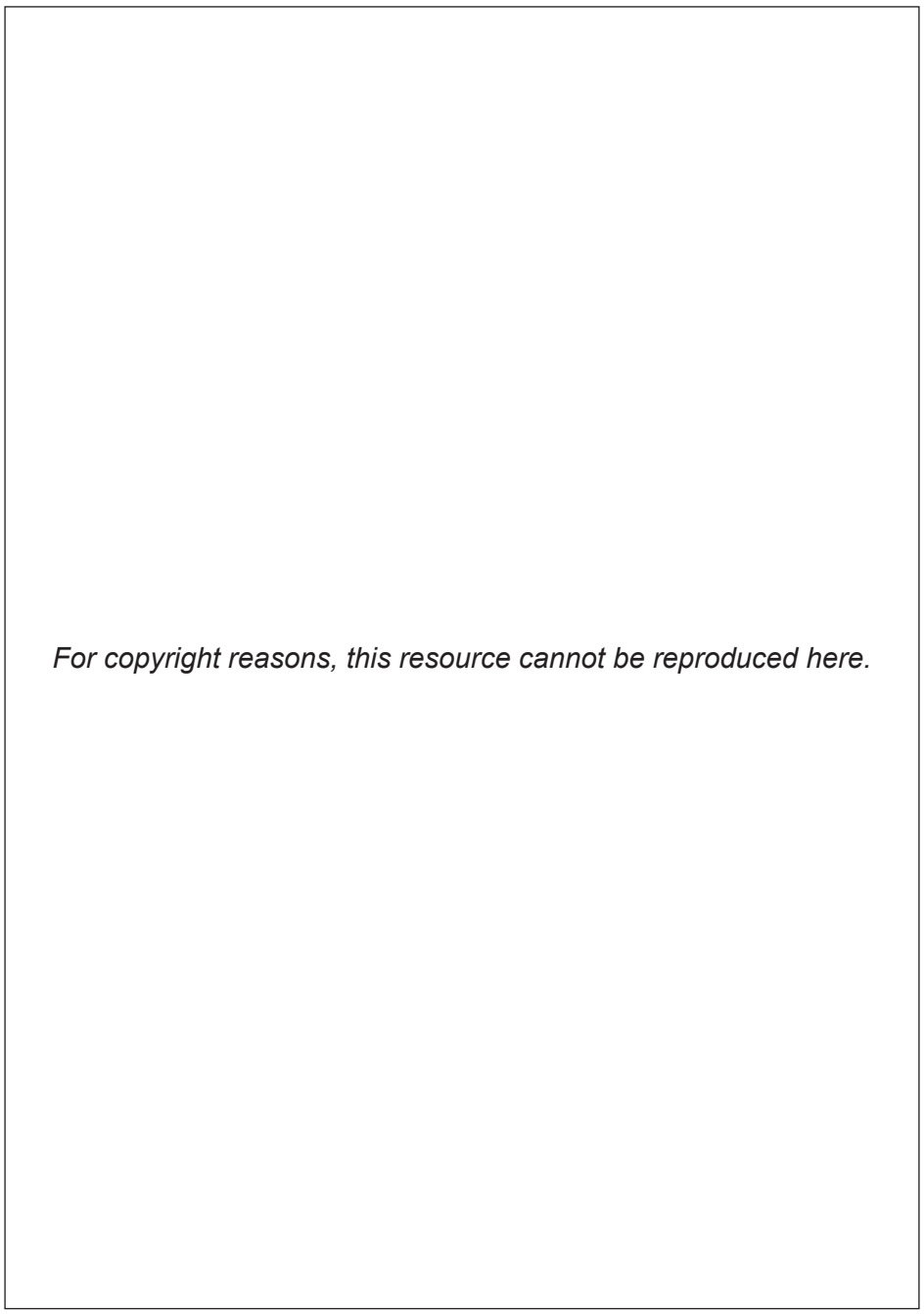

Figure 10: Principal causes of soil degradation

Water

Many countries already have insufficient fresh water. Many more are expected to experience water scarcity or water stress by 2050 (**see Figure 11 below**) …

Many less-industrialised countries, especially those in Africa, are even more vulnerable to water stress: when they experience drought they are too poor to buy food elsewhere.

Figure 11: Lack of access to safe water

Biofuels

The global drive for a new green fuel to power cars, trucks and planes is worsening world food shortages and threatening to make billions go hungry …

Some of the proposed biofuels schemes were "hopeless", warned Beddington, formerly Professor of Applied Population Biology at Imperial College, London. "The idea that you cut down rainforest to actually grow biofuels seems profoundly stupid" (**see Figures 13 and 14 overleaf**).

Figure 12: US ethanol production from 1995 to 2016

Figure 13: Cartoons commenting on the biofuels dilemma

Figure 14: Feed corn and ethanol production

Crop Shortfalls from Natural Disasters

Several distinct weather- and climate-related events caused disruptions in crop production …

The Food and Agricultural Organisation (FAO) had previously estimated that Myanmar would export up to 600 000 tons of rice in 2008, but Myanmar was forced to import rice for the first time, putting further upward pressure on global rice prices.

Global Climate Change

Climate change is likely to affect global food security in several ways …

Economic crises and continued internal conflicts such as those occurring in Sudan, Afghanistan and Iraq, have resulted in some countries being more exposed to the food crisis than others that have more stable economies (**see Figure 15 below**).

Figure 15: Countries with food crises

PART C: IMPACTS OF THE GLOBAL FOOD CRISIS

As a result of the recent food shortages people worldwide are coping in different ways …

In the meat aisles of major grocery stores, said Phil Lempert, a supermarket analyst, steaks are giving way to chopped beef, and people used to buying fresh blueberries are moving to frozen. Some are even trying to grow their own vegetables.

Food Crisis Impacts Heavily on Women and Children

The spreading food crisis is threatening to impact heavily on the most vulnerable in society: women and children …

Ann Veneman, Executive Director of the UN children's agency UNICEF, warns that rising prices "will most affect the most vulnerable, including people depending on humanitarian assistance, orphans, those affected by HIV / AIDS, refugees and poor urban families." She said that increases in food prices may not only slow down progress towards achieving health and nutrition-related Millennium Development Goals (MDGs), but can also reverse or negatively impact on child-related social indicators.

The survival and well-being of vulnerable children depend on meeting current and impending food shortages and on addressing the root causes of food insecurity …

Cagar said UNFPA is also deeply concerned that the food crisis can potentially generate emergencies and disasters, with massive movements of people.

Consequences of the Food Crisis

As a result of increasing food prices, many countries have suffered unrest and protests, including marches and political campaigns to slow price rises. Other countries have put export bans on food as the prices of grains, such as wheat and rice, rose dramatically (**see Figure 16 below**).

Figure 16: Consequences of the food crisis

The Challenges Ahead

Despite improvements in agricultural practices, major environmental challenges are likely to make it difficult to maintain even the present level of global productivity, let alone increase yields …

International cooperation is essential to reduce greenhouse gas emissions and encourage educational and economic opportunities for people in poorer countries, and to allow them to prepare for the disruptions and challenges that lie ahead.

Acknowledgements

Text – information used in this examination was adapted from the following sources:

http://www.sundayherald.com/news/heraldnews/display.var.2104849.0.2008_the_year_of_global_food_crisis

Erik Millstone & Tim Lang, *The Atlas of Food – Who Eats What, Where and Why* (London, Earthscan, 2003).

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'Let them eat spuds', *New Scientist (*2 August, 2008), pp 30–33.

http://www.stratfor.com/memberships/112871/analysis/global_market_brief_food_cost_crises

Images – visuals used in this examination came from the following sources:

Figure 1:	http://static.guim.co.uk/sys-images/Environment/Pix/pictures/2008/03/25/dhaka_bowls_276.jpg
Figure 2:	http://newsimg.bbc.co.uk/media/images/44550000/gif/_44550660_habits_resources_466.gif
Figure 3:	http://filipspagnoli.files.wordpress.com/2008/05/38141059.jpg
Figure 4:	http://www.theglobaleducationproject.org/earth/images/final-images/h-world-map-under-nourished.gif http://www.theglobaleducationproject.org/earth/images/final-images/h-world-map-protein.gif http://www.theglobaleducationproject.org/earth/images/final-images/h-world-map-calories.gif http://www.theglobaleducationproject.org/earth/images/final-images/h-world-map-fat.gif http://www.theglobaleducationproject.org/earth/images/final-images/h-food-key.gif
Figure 5:	http://www.slideshare.net/futuresgroup/future-of-food-for-distribution-presentation
Figure 6:	http://newsimg.bbc.co.uk/media/images/44550000/gif/_44550798_world_pop_grow466psd.gif
Figure 7:	http://www.ldesign.com/Images/Essays/GlobalWarming/Part5/WorldPopulationGrowthDevVSLess2005-2050Areas.jpg
Figure 8:	http://www.ers.usda.gov/AmberWaves/june03/findings/images/finding6-degradationchart250.gif
Figure 9:	http://www.theglobaleducationproject.org/earth/images/final-images/fl-soil-loss.gif
Figure 10:	http://www.theglobaleducationproject.org/earth/images/final-images/g-soil-degradation.gif
Figure 11:	http://www.stratfor.com/memberships/112871/analysis/global_market_brief_food_cost_crises
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Figure 13:	http://newsimg.bbc.co.uk/media/images/44550000/gif/_44550800_us_ethonol_prod466x200.gif
Figure 14:	Left Image: http://elfael.files.wordpress.com/2008/04/biofuels-cartoon.gif Right Image: http://filipspagnoli.files.wordpress.com/2008/05/38208350.jpg
Figure 15:	http://www.nealo.com/blog/wp-content/cartoon051608-small.jpg
Figure 16:	http://luminaria.files.wordpress.com/2008/04/goinghungry.jpg