

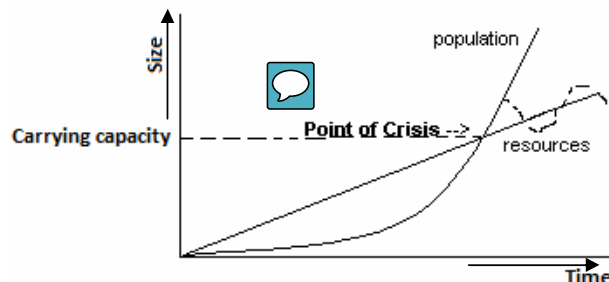
Geography SL  
 Essay on 'The relationship between Population Size and Resource Consumption' 11 ▲LD

Maxime Boekel

### Malthus got it right-we are doomed?

How do you agree with Malthus's statement when discussing the relationship between population size and resource consumption in the 21st century?

In 1789 the Reverend Thomas Robert Malthus produced his 'Essay on the Principle of Population', which were based on two principles: first one being that the food supply would increase arithmetically over time, and the second one being that population would grow geometrically/exponentially. There would be



Malthus' Theory

a finite optimum population size (carrying capacity) in relation to food supply. So if the population would reach beyond this carrying capacity, it would lead to a decline in the standard of living – it would lead to war, famine and diseases.

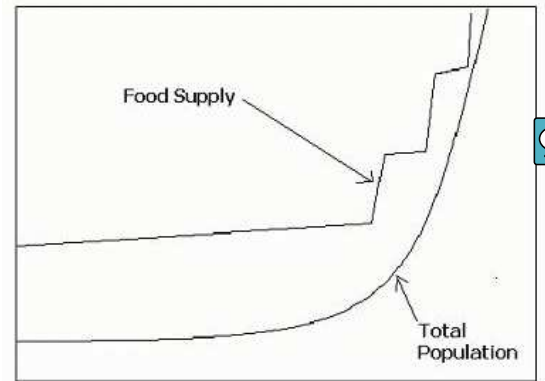
Nowadays, his prediction luckily is not the case. Since the 'Green Revolution' started in 1945, there has been an enormous increase in food supply provided by agricultural markets. The green revolution has enabled food production to keep pace with the increasing global population growth. The Green Revolution has provided some great benefits: "From 1950 to 1984, as the Green Revolution transformed agriculture around the world, grain production increased by over 250%"<sup>1</sup> and "The world population has grown by about four billion since the beginning of the Green Revolution and most believe that, without the Revolution, there would be greater famine and malnutrition than the UN presently documents (approximately 850 million people suffering from chronic malnutrition in 2005)."<sup>2</sup> These two quotes state the positive results of the Green Revolution. We also have genetically modified foods (GMF) now. These are foods that are derived from genetically modified organisms. These genetically modified organisms receive certain changes into their DNA by genetic engineering. These foods were first put on the market in the early 1990s. Basically, since the time of Malthus, we have increased our food production through the following ways, but not limited to: draining marshlands, intensification, extensification, reclaiming land from the sea, cross-breeding of cattle, high-yield varieties of plants, terracing on steep slopes, growing crops in greenhouses, using more sophisticated irrigation techniques, using artificial fertilizers and pesticides, farming native species of crops and animals and fish farming etc.

<sup>1</sup> <http://dieoff.org/page36.htm>  
<sup>2</sup> [http://news.bbc.co.uk/2/hi/in\\_depth/6496585.stm](http://news.bbc.co.uk/2/hi/in_depth/6496585.stm)

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▲ different view to that of Malthus is that of Esther Böserup (1910-1999), who was widely regarded as what's called an anti-Malthusian. She claimed "Necessity is the mother of invention." She said that people have the resources of knowledge and technology to increase food production and that when there is desperate need, we will find solutions to meet our food demands. She suggested that in a pre-industrial society, an increase in population stimulated a change in agricultural techniques, which would allow more food to be produced. Thus population growth would enable agricultural development to occur. ▲another anti-Malthusian is Julian Simon, who produced a book in 1981 called 'The Ultimate Resource'. He claimed that our notions of increasing resource-scarcity ignore the long-term declines in wage-adjusted raw material prices. He also said that increasing wealth and technology make more resources available; although supplies may be limited physically they may be viewed as economically indefinite as old resources are recycled and new alternatives are developed by the market.



Böserup's Theory

▲ Malthusian case study proved Malthusians wrong and Böserup right. In Mauritius the rate of natural increase was very great, and there was a great pressure on the country for resources because of this increasing population. It was then that the government had to intervene. It promoted family planning, restricted early marriage, provided improved health care and looked to improve the status of women. The government also worked on diversifying agriculture, invested in industry and improved trading links. With time, there were changes in general attitude toward family size and people were getting married later. ▲as well, there was an improvement in educational and work opportunities for women. Many transnational companies came to Mauritius because of tax incentives, the Freeport at Port Luis, the large number of educated residents, a considerable amount of cheap labour and the good transportation means present. This would assert to Böserup's theory that "necessity is the mother of invention." Because the population had risen, the government had to take measures to adapt to this growth. It had to improve and diversify agriculture, so proving agricultural intensification and that "population growth causes agricultural growth." It also suggests that a country must improve its technology to be able to support the growing population, and that many technologies will not be taken advantage of if the population is not large enough. Mauritius had to build a Freeport and improve transportation to be able to maintain its population.

There are also neo-Malthusians who believe in Malthus' ideas. The Club of Rome are what's called 'Malthus with a computer'. They published a book called 'Limits to Growth', which argued about a connection between economic growth and the impacts hereof on the environment. The study examined the five basic

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factors that determine and therefore ultimately limit growth on the planet: population, agricultural production, natural resources, industrial production and pollution. Many of these factors claimed to grow at an exponential rate. Because of natural delays in the system, both population and pollution would continue to increase for some time after the peak of industrialization. So population growth is finally halted by a rise in the death rate due to decreased food, water and medical services. They conclude that if the trends continued, the limits to growth would be reached by about 2070. There is also a 'reincarnation' of Malthus himself, called Lester Brown, who's the world's leading modern Malthusian. He argues that the world is entering an era of food scarcity. He says that growing demand for grain from China will soon overwhelm the capacity of all the world's grain-producing countries. As a result of this the grain imports could trigger food price shocks that in turn would cause starvation for hundreds of millions around the world.



But there currently is some evidence for Malthus' prediction. There is enough food being globally produced right now, however, the problem is that it is not being distributed equally over the world's population. And therefore famine still occurs in many less economically developed countries (LEDC's). The true issue is not the risk of global food shortage in maybe the end of this century or the next one, but the real food shortages that specific areas/countries suffer today. The UN reckons that over 800 million people in poor countries are chronically undernourished. In Africa, particularly Ethiopia, there is always famine, when there is war. Because productivity and output is low when there is war.



A Living Planet Report (2008) by the World Wildlife Fund (WWF) warns that two planets are needed by 2030 with our rate of consumption. The UK is 'importing' more than half the water it uses, if you include water used to produce imported goods.



People are using 30% more resources than the earth can replenish each year, which is leading to deforestation, degraded soils, polluted air and water, and dramatic declines in numbers of fish and other species. Sir David King, the British government's former chief scientific adviser, said: "We all need to agree that there's a crisis of understanding, that we're removing the planet's biodiversity resources at a rate which is as fast if not faster than the world's last great extinction."<sup>3</sup>



I believe that if we indeed run out of inexpensive oil and fall short of food, deplete our fossil groundwater and destroy remaining rainforests, and completely empty the oceans and fill the atmosphere with greenhouse gases that tip the earth's climate into a runaway hothouse with rising ocean levels, we might have to confirm the Malthusian prediction. Yet none of this is inevitable. The idea that improved know-how and voluntary fertility reduction can sustain a high, indeed rising, level of incomes for the world remains correct, but only if future technology enables us to economize on natural capital rather than finding ever more clever ways to deplete it more cheaply and rapidly. But with water scarcity highly increasing in the



<sup>3</sup> <http://www.guardian.co.uk/environment/2008/oct/29/climatechange-endangeredhabitats>

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future and the greenhouse gases polluting our earth, causing water levels to rise, I  
have to conclude that I'm basically a Malthusian.

