

## The Population-Resource Relationship

### How do the views of Thomas Malthus, Ester Boserup and David Harvey differ? by Kate Cowan

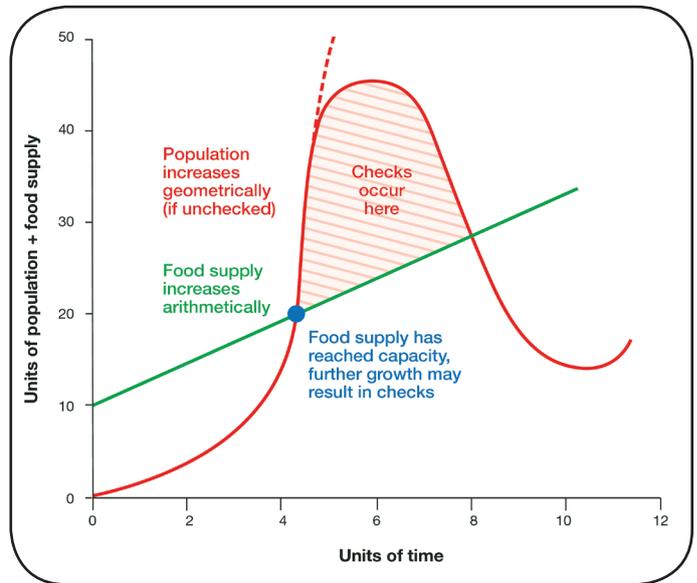
With the world's growing population fast approaching 7.5 billion, consideration of the issues surrounding the relationship between population and resources becomes increasingly important. Survival of the human population necessitates that we consume the Earth's resources. The rate at which resources are consumed is influenced by population growth rates and a particular country or region's level of economic development. Different theoretical views attempt to examine the nature of relationship between population and resources and also the effects this may have on society. Here, the contrasting ideas of Thomas Malthus, Ester Boserup, and David Harvey will be considered. The population-resource relationship will be explored using the example of corn shortages that have affected Brazil, Venezuela, and Zimbabwe in recent years.

#### Malthus

In 1798, **Malthus** put forward his ideas centred on *pessimistic* views, that the availability of food is the main limit to population growth. He considered that, in an area with no technological change or trade, whilst the human population would increase **geometrically** (2, 4, 8, 16, 32, etc.), food supply, limited by the availability of 'new' land to farm, can only increase **arithmetically** (1, 2, 3, 4, 5, etc.). Therefore, the human population, if not controlled, would increase to a level beyond which the land could support it, and there would be an inadequate supply of food. He suggested that this would lead to events, or population '**checks**', such as famine, poverty, disease, and even war, as humans resorted to fighting to gain access to diminishing food supplies. These '**positive checks**' would serve to increase mortality, keeping the population in balance with the resources available. He also highlighted the role of '**preventative checks**': measures involving '**moral restraint**' that reduce fertility through the practice of abstinence and delayed marriage.

On a global scale, the suffering and malnutrition that blights *some* people in *some* developing countries today may reinforce some Malthusian ideas. However, anti-Malthusians criticise the simplicity of Malthus's theory in that food shortages are not the only possible reason why disease, starvation, and war happen.

Malthus also developed his ideas before the arrival of many technological innovations that allow intensive farming to take place and a global food surplus to exist, making some of his thoughts less applicable in today's world.



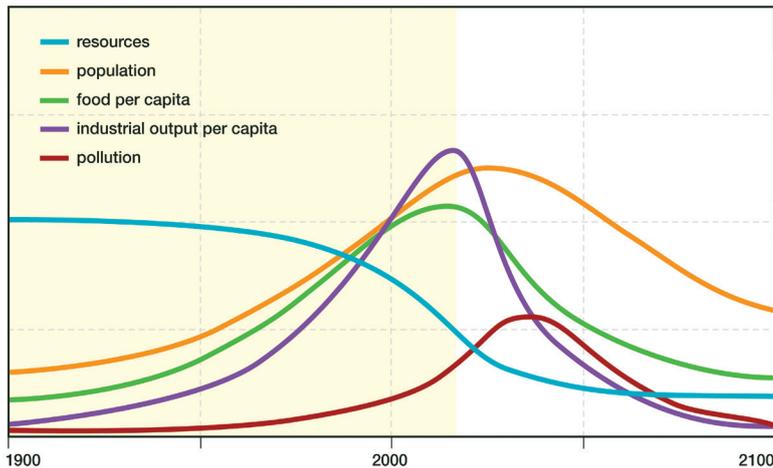
**Figure 1** Malthus' Theories  
(Adapted from Chrispin and Jegede, 1961, pg. 81)

**Neo-Malthusians** update the principles of Malthusian theory and apply them to present-day situations. While acknowledging how agricultural and industrial innovations can support rapidly growing human population, they remain pessimistic in their outlook that natural environments still determine a limit to population numbers.

Neo-Malthusian Professor **Paul Ehrlich's** ideas put forward in his well-known book '*The Population Bomb*' (1968) warned of the mass-starvation which would stem from overpopulation. Similarly, an organisation known as the '**Club of Rome**', established in 1968 with an aim to investigate and advocate ways of dealing with international issues including the population-resource relationship, predicted in their 1972 report '*The Limits to Growth*' that economic and population decline would occur within one hundred years, suggesting a need for a global population-resource equilibrium to preclude such problems.

They based their predictions on computer-generated models which simulated patterns of global population growth, industrial output, resource depletion, food per capita and pollution. This enabled them to create projections of possible future scenarios which could forecast areas of growth as well as potential limits to growth. Their models led them to conclude that population and economic growth in its present (and ongoing) state would rapidly deplete the world's finite resources.

**Figure 2** *The Limits to Growth*  
(Adapted from Meadows et al, 1972, pg. 136)



In other words, the variables that they modelled would increase exponentially while the ability of technology to allow for increased resource availability is only linear. This places limits on the availability of the resources needed by humans to power industry and survive.

Whilst the Club of Rome and Ehrlich's ideas served to bring the population-resource issue and the problems it may bring to the attention of the masses, they were criticised for their alarmist prophecies that many believe have yet to / will not ring true. Their ideas also maintained the shortcomings of Malthus's original theories by giving insufficient credit to the extent to which human inventiveness might allow for more sustainable production methods to arise.

## Boserüp

**Boserüp's** *optimistic* theories on the population-resource relationship, in contrast to Malthusian and neo-Malthusian beliefs, focus on the idea that '*necessity is the mother of invention*' and *do* consider the role of technology in balancing out population and resources. Boserüp, developing ideas in the 1960s, many years after Malthus, suggested that an increasing population incentivises technological innovation and the introduction of new farming methods, thus intensifying and improving agricultural practices to meet the rising demands placed on resources, stimulating further population growth, and encouraging development.

Many theorists see truth in Boserüp's ideas, considering humans to be the 'ultimate resource' as scientific agricultural development continues to drive increases in food production. On a national scale, many countries have been incentivised by a growing population to expand their resource base to meet growing demands.

## Harvey

Instead of examining population resource relationship based on the limits of resources available that can sustain the population, David Harvey examined the *level of access to resources* within the population.

Building on the ideas of Karl Marx (see page 3, *Marxism*), David Harvey argued that there *continues to be differences* in the level of access to resources by different segments of population due to what he calls the **spatial fix** of capitalism.

A spatial fix will take place when capitalists cannot exploit the labour and natural resources of a particular location anymore to generate profits. This leads to the capitalists moving to a different location to exploit the labour and natural resources of the next location. The occurrences of the spatial fix results in the continuation of the capitalist system and prevents its collapse. It will also lead to the continuation of the differences in the level of access to resources by different segments of population, and is also why a majority of the people continue to be persistently damaged.

## The Green Revolution

The 'Green Revolution' and the arrival of new, intensive farming techniques and 'high yielding variety' crops is believed by many to have reduced the amount of famine and malnutrition which might have otherwise occurred; although this cannot be proven. Genetically modified (GM) crops, another scientific feat, have also become important in food production in the last few decades. However, Green Revolution developments were criticised for shifting production away from traditional subsistence farming in some parts of the developing world, towards export-oriented production, causing the poorest farmers to lose out as land was given over to agri-business and they could not afford to invest in the new technologies and techniques available. Also, although GM crops are considered to be presently contributing towards meeting food demands for many, they are also criticised for the unknown long-term impacts they may have on human health and the environment. Boserüp's ideas are therefore criticised, as she failed to acknowledge that the Earth's land can become degraded when farmed too intensively with unsuitable techniques, limiting its productive capacity.

Overall, despite the great advances made in agricultural production, famine and malnutrition is still a reality in some parts of the world, especially those troubled by extreme weather and political difficulties.

Boserüpian and Malthusian theories have similar limitations in that both did not consider transboundary exchanges such as migration and trade, which is a reality in today's interconnected world. Malthus seems to consider populations as uniform in any suffering that may come about in the process of the population being checked, and Boserüp does not appear to acknowledge that not all societies and people will be able to or have the means to innovate to meet the needs of a growing, hungry population.

## Marxism

Karl Marx's perspectives on population and resource extraction is more nuanced than that of Boserup and Malthus, as he also considers the nature of the resource distribution within the population. He argued that society is not homogenous in its experience of the population resource relationship. He pointed out that due to the way in which societies and economies are organised in a capitalist system, the majority of people lack access to resource and are being persistently disadvantaged.

This is because a capitalist economic system consists of a minority of people ('capitalists') who own the means of production (e.g. factories, machinery) and control the conditions of production (e.g. raw materials like water, land). Capitalists employ the majority of the people ('waged labour') to produce commodities for sale. The capitalists pay wages to workers who produce commodities for sale. In order to continually generate profits, the capitalists have to lower wages and/or exploit workers as well as natural resources.

Marx argued that such a situation is not sustainable in the long-term because of the increasing levels of hardship on the labour and also because the exploited labour will no longer be able afford to purchase the commodities produced. This reduces the profits of the capitalists. Furthermore, there will also be an exhaustion of natural resources as a result of the system. Marx predicted that the capitalist system will eventually collapse over time due to these, among other reasons. He envisioned that the capitalist system will be eventually replaced with a fairer system which he calls a 'co-operative' ownership.

## Case Study: Corn Shortages

**Corn** is a valuable commodity, used as a staple **food** resource for humans, animal fodder, and in the production of the **biofuel** ethanol. In recent years, **corn shortages** have occurred in Brazil, Venezuela, and Zimbabwe. These countries have experienced population growth at rates of 0.9%, 1.3%, and 2.3% respectively in 2015.

**Brazil** is currently suffering, following a series of political crises and recession. The country had increased its corn exports from 1 million tons in 2005 to 29 million in 2015, but Brazil have recently *over-exported*, increasing internal market corn prices and, since abnormally dry weather conditions have adversely affected production, they are now in short supply and have been forced to import from Paraguay, Argentina, and the USA.

**Venezuela's** oil-focused economy lacks diversity, and the country imports the majority of its food. Declining

oil prices, a socialist revolution, and unusual economic systems imposed by the government have meant that Venezuela's domestic production has dwindled, and imports are expensive. The price of corn, a staple of the Venezuelan diet, has increased by 900%. Whilst some hoard, many are forced towards the black market or to illegally cross the border into neighbouring countries in the quest for more supplies. Social unrest is evident, yet so is resourcefulness as Venezuelans seek out alternative food sources, evidenced in part by a rise in urban gardens. Venezuela has also cancelled some of Jamaica's oil debt in return for food. The number of sterilizations in this country is rising as medical supplies, including contraception, are scarce, and people realise the hardships that child-rearing would bring about in the current conditions.

Corn is used to feed both humans and animals in **Zimbabwe**. Poor governance, economic troubles, and unreliable rains meant that Zimbabwe produced only 800,000 of the 2.2 million tons of corn necessary to feed its population in 2014, eventually having to import 150,000 tons of corn from South Africa, whilst the number of Zimbabweans crossing borders into South Africa and Botswana, in the search for better economic opportunities, increased.

## How can Malthusian and Boserupian ideas shed light on the corn shortage situations in Brazil, Venezuela, and Zimbabwe?

These corn shortages could show evidence of the **possible positive** Malthusian checks that may occur as people go hungry and social unrest is abound, and even *preventative* checks in the case of Venezuela's sterilizations. The emergence of innovative ways to increase food production in times of need also gives a nod to Boserup's '*necessity is the mother of invention*' idea. However, the shortcomings of both Malthus and Boserup's ideas are highlighted here as they pay little attention to the role of **trade** and **migration** in seeking out alternative food supplies, and this is what has happened in each of the countries considered. Even given time, it would be impossible to solely attribute any of the causes and consequences of the corn shortages to the demographic changes that each of the countries is experiencing, especially given the influence of adverse weather conditions and the role of troubled social, economic, and political structures in the development of the shortages.

Harvey might suggest that the corn shortages in Brazil, Venezuela, and Zimbabwe have nothing to do with population growth and instead state that they are the product of unjust capitalist systems and poor governmental decisions, with each of the three countries currently or historically suffering from troubled regimes and operating within a capitalist world. Marxists believe that a restructuring of society would ameliorate the problems, blaming social institutions and unjust capitalist systems for the mismatch between population and resources.

Would it be reasonable to attribute *some* blame for the corn shortage to the economic and political systems of the three countries discussed? To what extent could such problems be solved and would a restructuring of socio-political systems be a realistic approach? Are more immediate solutions needed to alleviate the problems of an imbalanced population-resource relationship?

## Conclusion

The population-resource relationship is a complex and increasingly important issue. The theories of Malthus, Boserup, and Harvey allow this relationship to be considered from different perspectives, each contributing towards making sense of the way it influences society and its development today. However, each theory has its limits and should be applied to current population-resource relationship issues with caution.

## Bibliography and Further Reading

1. Castree, N. and Gregory, D. (Eds) (2009) *David Harvey: A Critical Reader* Blackwell
2. Chrispin, J. and Jegede, F. (1996) *Population, Resources and Development* Collins Educational
3. Daniels, P, et al (Eds) (2008) *Human Geography: Issues for the 21<sup>st</sup> Century* (3d Edition) Pearson Education Limited
4. Meadows, D.H. (1972) *The Limits to Growth* Universe Books
5. Witherick, M. (2004) *Population and Migration* Philip Allan

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