

World overpopulation

David Pimentel

Received: 19 December 2011 / Accepted: 23 December 2011
© Springer Science+Business Media B.V. 2011

There are many credible and some optimistic overviews of the world population problem. However, the world faces a serious overpopulation problem, and the effects exist throughout the world, especially in Africa and Asia.

The current rate of population increase is 1.2% (Population Reference Bureau 2011), which means a doubling time of 58 years. Thus, the current world population of 7 billion is projected to double to 14 billion in less than 60 years. I agree with the opinion of many that the world population will not double again in the future for many reasons. A major constraint that is seldom mentioned is growing food shortages. Currently more than 66% of the world population is malnourished according to the World Health Organization (WHO 2000) and the Food and Agriculture Organization (2010) of the UN. The number of malnourished reported in 1950 was only 20% of the world population and now has more than tripled. Malnourishment inhibits the mental development of children, reduces human productivity, and is the prime cause of death in the world today according to the UN and WHO (2000).

Current food production is becoming limited because of shortages of cropland, fresh water, and shortages of fertilizers that depend on fossil energy either for their production (nitrogen) or mining and processing (i.e., phosphates, potassium, micronutrients). These resource shortages are increasing along with the rapid growth in human population numbers throughout the world. The resource shortages and severity of malnutrition are most serious in Africa and Asia where population growth is greatest.

The real problem facing humans is the decline of oil production due to the exhaustion of reserves projected to occur in the next 30–40 years. The resource shortages impacted by the decrease in oil supply and increase in oil prices will impact human health and survival in many ways but especially with the production of food.

The Foundation for the Future projects the world population will decline from the current 7 billion to only 2 billion in the next 100 years when oil, natural gas, and coal

Readers should send their comments on this article to BhaskarNath@aol.com within 3 months of publication of this issue.

D. Pimentel (✉)
College of Agriculture, Cornell University, Ithaca, NY 14853, USA
e-mail: dp18@cornell.edu

disappear. There will be few renewable energy sources to help replace fossil energy sources. These might include biomass such as wood for the production of heat and perhaps electricity, photovoltaics, solar thermal, and wind. The current conversion of food resources such as corn, sugarcane, soybean, and oil palm into biofuels will have to cease very soon, because the use of these crops to produce biofuels is increasing starvation and is producing increased social and political instability in many parts of the world. The conversion of cellulosic biomass into liquid fuels, if achieved, will be limited because of the small amount of solar energy collected annually by our green plants—less than 0.1%!

Now is the time for humans conserve their limited fossil energy resources for vital needs such as food.

The editors of *Environment, Development and Sustainability* would appreciate research contributions on the problems mentioned above.

References

- Food and Agriculture Organization. (2010). *The state of food insecurity in the world 2010*. Rome: Food and Agriculture Organization of the United Nations. <http://www.fao.org/docrep/013/i1683e/i1683e.pdf>.
- Population Reference Bureau. (2011). *Population data sheet 2011*. Washington, DC: Population Reference Bureau. http://www.prb.org/pdf11/2011population-data-sheet_eng.pdf.
- WHO. (2000). *Nutrition for health and development: A global agenda for combating malnutrition*. World Health Organization, Nutrition for Health and Development (NHD), Sustainable Development and Healthy Environments (SDE). http://whqlibdoc.who.int/hq/2000/WHO_NHD_00.6.pdf.