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Global Environmental Demining Issues

Ian McLean
Rotorua District Council, NZ

Rebecca Sargisson
University of Waikato

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Global Environmental Demining Issues

The environmental impact of any human action cannot be underestimated—even humanitarian demining—given the global repercussions in this era of explosive growth. The authors discuss the consequences of thoughtless action and provide valuable context concerning the vast extent to which human beings impact the environment.

by Ian G. McLean [Rotorua District Council] and Rebecca J. Sargisson

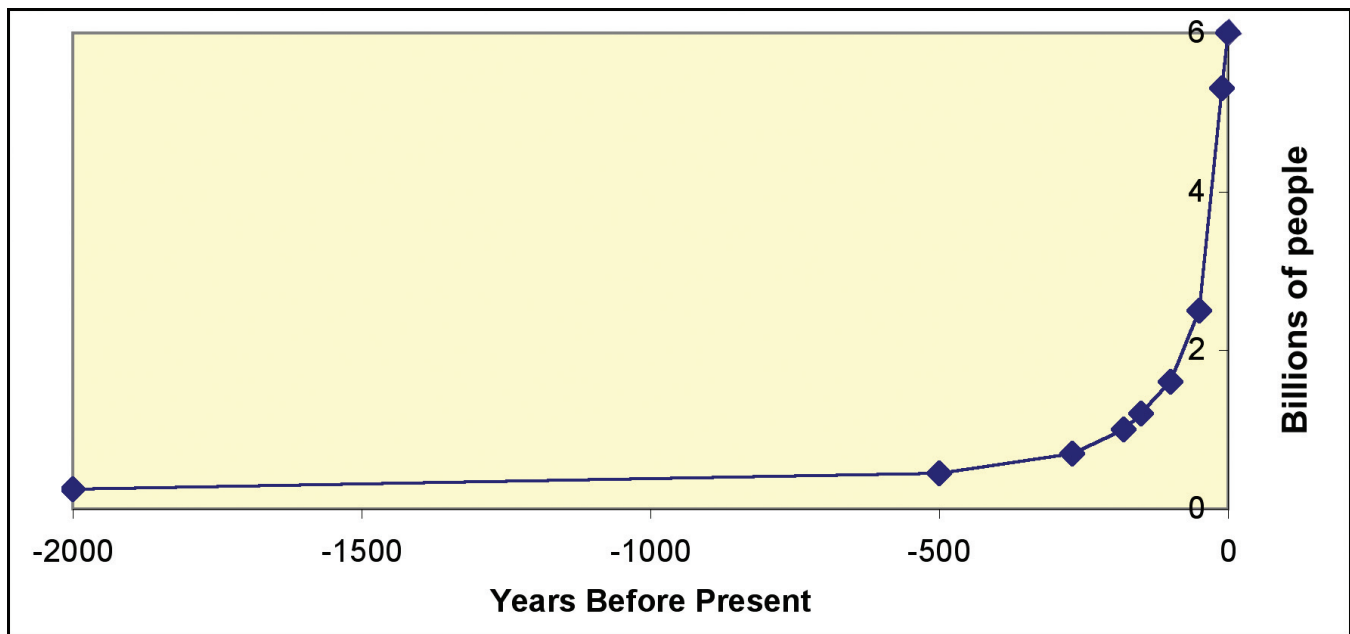


Figure 1: The population growth curve predicted by Malthus nearly 200 years ago.

ALL GRAPHICS COURTESY OF IAN MCLEAN

Nearly 200 years ago, a population demographer named Thomas Robert Malthus predicted an escalating human population that would rapidly overshoot available resources, resulting in a catastrophic failure of food supplies and infrastructure. Poor nutrition, cramped housing, high population densities and inadequate health services would lead to disease pandemics, social breakdown and population collapse.

Malthus, like so many other doomsayers, was mostly ignored by contemporary and subsequent governments; yet his projections had significant influence in the scientific community. For example, his writings helped Charles Darwin understand that a mismatch between breeding productivity and resources would likely result in some individuals surviving, and others not. Who would survive? Presumably, the strongest or fittest or those best adapted to prevailing conditions—and so the notion of “survival of the fittest” was born, along with the principle that a species is adapted to its environment.

Malthus did not consider environmental issues—the notion of ecology was still in its infancy—and the possibility that humans might adjust global ecology was presumably inconceivable at the time. Yet Malthus and Darwin established between them a fundamental principle: species and the environment interact.

Environmental Adaptations

Humans are rather poorly adapted to most environments, a fact that in part explains why early humans spread across the globe so successfully. Being poorly adapted forced human beings to manipulate environmental conditions rather than allowing environmental conditions to determine human habitation patterns. Our ability to adapt environments to our needs ensured that humanity could avoid the doomsday predictions of Malthus and could flourish despite exponential growth.

Let us say that humans and their prototypes have been around for about four million years (the prototypes are mostly known to us by names such as *Homo erectus*, *Australopithecus*, etc.). One hundred thousand years ago there were a few million of us represented by at least two species. Two thousand years ago, one of those species had prevailed and had built up to perhaps 200 million. The numbers continued to grow very slowly until about 1750, when they began to take off (see Figure 1). Why? The main factors were increasing resistance to disease under conditions of crowding

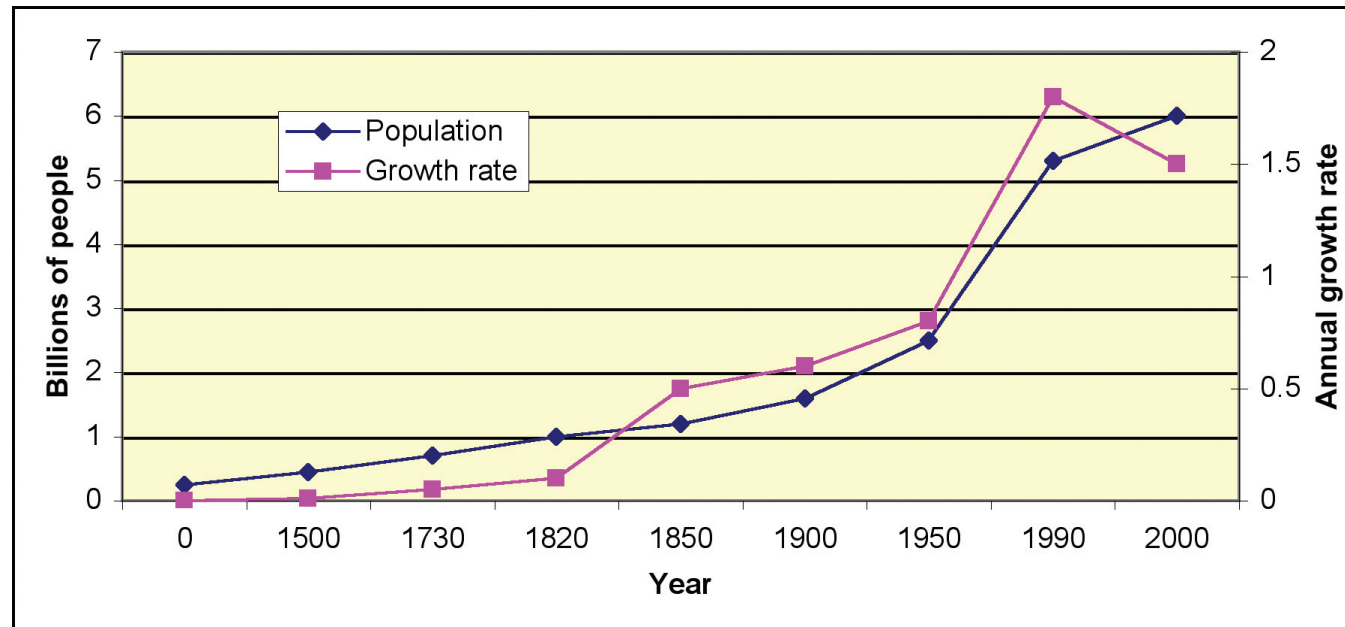


Figure 2: Urbanisation trajectories of human populations through the 20th century.

(due to previous pandemics), technology developments (including healthcare), globalisation of business (improved technology) and most important of all: the harnessing of new energy sources.¹

Of the 80 billion people that have existed over the last four million years, 28 percent were born after 1750, 20 percent were born after 1900, and 13 percent were born after 1950. About 10 percent of the total number of humans and proto-humans that have ever lived are alive today and 20 percent of all human lives were lived in 0.025 percent of human history. Our single species currently represents 5 percent of the total animal biomass on the planet. The only other species with similar biomass is domesticated cattle, which exist primarily to serve the needs of humans.

The Future of Our Planet

Can our planet sustain such an enormous biomass concentrated in a single species? The answer for the moment is yes, although with considerable asymmetry in distribution of resources and with a subsidised food production system. What do we mean by subsidised? Our very high crop yields are maintained through application of fertilisers, which are sourced primarily from a nonrenewable resource (oil products).

There are more subtle influences at work here than just population growth. Associated with the increasing population has been a strong trend of increasing urbanisation. An extreme example is Latin America, which went from 5 percent urbanisation in 1890 to 71 percent urbanisation in 1990 (see Figure 2). The United States went from 35 to 75 percent urbanisation in the same period. All other countries show similar trends, although with different timing. Africa, China and southern Asia were about 30 percent urbanised in 1990, but for these areas the graph is simply offset in time and the trajectory is clear.

The intervening two decades have seen the proliferation of the Internet and increasing global awareness of the standard of living enjoyed in developed countries. The consequence is daunting: people living in less-developed countries know how developed nations are living, and they want the same. The data points in Figure 2 for Africa, China and southern Asia in 1990 represent about three billion people. Between 1990 and 2090, about 1.5 billion of them will shift from subsistence agriculture to an urbanised lifestyle, with its anticipated improvement in standard of living and associated environmental impact. We are already seeing that shift in the massive industrialisation of southern China, and the correlative resource exploitation, pollution and lost agricultural land.

Since the 1930s, economists have assured us that the solution to increasing human resource use is economic growth; unfortunately, models used by those economists tend to assume the planet supplies infinite resources. The reality is—if you project the resource needs of eight billion people, of which 75 percent are urbanised—you will need several planets the size of this one to sustain them at current efficiencies in food production and resource exploitation.

Fortunately, economists have the solution to that problem: new technology. Demand creates innovation, which leads to supply, and the spiral can continue indefinitely as it has done in the past. Perhaps so, but the time has come to consider the possibility that the economists have over-simplified the link between technology development and resource availability. In particular, our food-production system depends on a very small number of species (maize, rice, wheat), a nonrenewable resource (fertilizer produced from oil and farming practices using oil-driven machines) and limited capacity for expansion (availability of arable land). Together, these factors suggest that food production is already approaching the limits of sustainability. Urbanised humans produce goods and services, but they do not produce food or provide water. Meeting the needs of another 1.5 billion of them is a daunting prospect indeed.

The notion of sustainability as a rational human objective first hit the international scene with publication of *Our Common Future: The World Commission on Environment and Development*, commonly referred to as the Brundtland Report of 1987.² This U.N.-sponsored analysis focussed on environmental impact by establishing the notion of **sustainable development**, defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”² Governments of developed countries have subsequently viewed the concept with suspicion, but the process of integrating it into national legislation has at least begun. The notion that development should proceed at all costs finally is being questioned.

The Brundtland Report led to the *U.N. Conference on Environment and Development* (the Rio summit of 1992),³ a defining moment in the history of environmental awareness. It was here that governments began committing to the notion of sustainability by agreeing to the 27 principles of Agenda 21.⁴ Those principles laid out an ambitious framework designed to both limit excessive (read: unsustainable) environmental impact and spread environmental resources more equitably.

In the 20 years since the Brundtland Report, the notion of sustainable development has taken on several levels of meaning. For example, **sustainable management** is a weak and limited term, which proposes that negative environmental impacts can be traded. An example is the idea that when you fly in a plane, you can manage the carbon footprint (as fuel burned) of that flight by paying an additional amount for trees to be planted somewhere on the planet (because trees take carbon directly from the atmosphere). Carbon trading on the stock market is now feasible and will be implemented in the near future. The possibility that somebody might chop down your tree and use it for firewood (thereby releasing its carbon again) is just one reason why this is a rather weak form of sustainability.

Some notions of sustainability put protection of the environment ahead of the exploitation rights of humans. However, Agenda 21 did not. Principle 1 states, “Human beings are at the centre of concerns for sustainable development.” On the other hand, Principle 1 goes on to state that “humans are entitled to a healthy and productive life in harmony with nature.” We propose that to be in harmony with nature, one should allow it to function sustainably.

The Future for Humanitarian Demining

Humanitarian demining is now a structured industry, subject to rules, regulations and standards; and run primarily by professionals with extensive experience. HD no longer exists in isolated pockets on the fringes of human enterprise. Post-conflict clearance activities may represent recovery from human-induced destructive forces, but they are also a form of development.⁵ As such, they are (or should be) subject to the principles of Agenda 21. For example, Principle 4 states: “In order to achieve sustainable development,

environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.” Agenda 21 was a United Nations’ initiative and was adopted by almost 180 governments. It is likely, therefore, that whoever pays the bills of a demining agency will also have signed the agreement. It seems that environmental sustainability principles should have been a charter requirement for demining agencies at least since 1992.

Previously in the *Journal of Mine Action*, we gave specific examples of the environmental impact of demining.⁶ The key question that needs to be asked by any demining agency is, “Are our practices environmentally sustainable?” It is not appropriate for a professionally run industry, with multiple tools in its toolbox, to support unsustainable practices using the argument that the benefits of humanitarian aid justify any environmental cost.

Darwin focussed on the principle that environments adjusted species and coined the term “adaptation” to describe that process. Humans, perhaps uniquely, have made adaptation cyclical: as well as adapting to their environment, humans adapt the environment to themselves. The imposition of sustainability principles on all human enterprise is a direct response to the enormous pressure imposed on our planet by six billion humans (and their one billion cows!). The key characteristic of humans that explains our success—ingenuity—has given us the “dominion over the fish of the sea and over the birds of the air and over every living thing that moves upon the earth” promised in “Genesis.”⁷ But that dominion entails a responsibility to manage wisely, at all levels—be it responding to global climate change or clearing a field of explosive remnants of war. ♦

See Endnotes, page 111



Ian G. McLean is an Environmental Planner for Rotorua District Council in Rotorua, New Zealand. He has taught environmental policy and wildlife management at the University of Otago in New Zealand. Previously he worked at the Geneva International Centre for Humanitarian Demining, conducting research on landmine-clearance systems and studying the environmental influences on demining and developing the Remote Explosive Scent Tracing system.

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 Ian McLean
 Environmental Planner
 Rotorua District Council
 1061 Haupapa St
 Private Bag 3029, Rotorua Mail Centre
 Rotorua 3046 / New Zealand
 Tel: +64 7 3484199 x 8045
 Fax: +64 7 3463143
 Mob: +64 21 547556
 E-mail: ian.mclean@rdc.govt.nz
 Web site: http://www.rdc.govt.nz



After completing a Ph.D. in psychology, Rebecca J. Sargisson was a Research Fellow at the GICHD for three years working on many aspects of the use of dogs in demining. She moved on to studying animal memory at the University of Otago before taking a break from research to focus her psychological skills on child rearing.

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 Rebecca Sargisson
 11 Taurus Place
 Kawaha Point, Rotorua / New Zealand
 Mob: +64 21 1154745
 E-mail: r_sargisson@yahoo.co.uk

News Brief

Teacher of the Year Also Landmine Activist

Wal-Mart Teacher of the Year for Colorado Christine Sundberg was recently recognized for her activism against landmines in addition to her exemplary educational skills. The junior- and senior-level teacher at Hinkley High School, part of Aurora Public Schools in Colorado, teaches several International Baccalaureate world history courses, an African studies course, and a U.S. history class.

In addition to her teaching responsibilities, Sundberg was recognized for organizing the Landmine Task Force, which has raised more than \$31,000 for the United Nations Landmine Initiative through the Adopt-a-Minefield campaign.