

# MegaCrisis? Overpopulation Is the Problem

By Gioietta Kuo

A succinct and all-embracing article on the state of the world by William Halal and Michael Marien, titled “Global MegaCrisis: Four Scenarios, Two Perspectives,” appeared in *The Futurist* magazine for May-June 2011.<sup>1</sup> It contains the prediction of an impending global crisis, a perfect storm resulting from a congruence of the ills afflicting the world today, including climate change, environmental destruction, water and food scarcity, and poverty, along with such cultural and economic effects as financial meltdown and global recession. The authors explore these phenomena from different angles: Halal takes a more positive view based on the technology that our society has achieved, while Marien adopts a more pessimistic outlook, foreseeing at best a “muddle through” attitude on the part of the majority of the world’s less-informed people.

## Reasons for the MegaCrisis

As much as I admire the erudition of both authors, I would like to point out that they have not put their fingers sufficiently on the one evil that is the mother of all others: world overpopulation. Imagine if the world miraculously lost 20% of its population. Many of the problems described by Halal and Marien would simply disappear.

For example, unemployment is already unacceptably high globally, afflicting both industrialized and developing nations. Most important is unemployment among youth in the 15 to 24 age

group. Youth unemployment is a problem not only in the likes of France (23%), Spain (37%), and Italy (25%), but also in developing countries like Saudi Arabia (28%) and Egypt (24%).<sup>2</sup> What is most horrifying in the developing nations is not that the unemployment figures are high, but that the number of young people continues to increase, even in places where more than 30% of the national population is in the 0-14 age group. Where are these young going? To swell even further the ranks of the 15-24 group of unemployed, creating still more social ills!

On October 31, 2011, the UN celebrated a day on which the latest baby born in the Philippines added the last person needed to raise the total world population to seven billion. Celebrate? This is no cause for celebration, as the world is already overpopulated. I was aghast. Coming from such an influential body as UN, this announcement seems to me the last nail in the coffin. Is it possible that there is no hope for humanity?

In this article, we shall examine the pros and cons of the overpopulation issue. As a scientist, I accept the fact that all known systems have boundaries (with the possible exception of our universe itself). That means we are bounded. We cannot possibly put nine billion people on the planet, as the UN so calmly predicts, because our agriculture and water resources are already insufficient to meet the needs of the present global population of seven billion.<sup>3</sup> More than one billion

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people are already on starvation level.<sup>4</sup> Even more have no access to clean water, and some 2.6 billion lack basic sanitation leading to disease, etc.<sup>5</sup>

## **Malthus and the Principle of Population**

The idea that there are limits to what we can do, such as providing food, water, energy, and other resources to each individual on earth is not new. The great nineteenth-century British economist Thomas Malthus, in his work “An Essay on the Principle of Population,”<sup>6</sup> predicted that increasing population would eventually diminish the world’s ability to feed itself. He based this conclusion on the thesis that population expands in such a way as to overtake the development of sufficient land for crops, and will continue to expand until it is checked by lack of water, food, and other resources essential for survival, and/or until its growth is reduced by disease, predators, and warfare.

Buoyed by optimism in the early days of the industrial revolution, many philosophers, influenced by Jean-Jacques Rousseau and Karl Marx, believed that society would expand naturally towards utopian perfection, and Malthus was much maligned. But toward the end of the twentieth century, with billions of Third World citizens—constituting about 80% of the world’s population—malnourished and many near starvation,<sup>7</sup> more objective observers came to admit that, in many ways, Malthus was right. And yet, even today unfortunately, many still do not appreciate the gravity of the overpopulation problem and consider “Malthusian” a dirty word.

Let us put Malthus’s thesis into simple mathematical terms that all can understand. While population growth over a series of 25-year intervals can occur in a geometric progression—1, 2, 4, 8, 16, 32, 64, etc.—food production at best can increase only linearly. It seems that even the much touted GMO (genetically modified organisms), do not produce yields much above that of tradi-

tional methods.<sup>8</sup>

## **World Population Reduction: Is It Possible?**

So, for our planet to survive, humanity has no choice but to reduce population. A study by a team of scientists led by Mathis Wackernagel aggregated the use of all the Earth’s natural assets—our “ecological footprint.” They concluded that humanity’s collective demands first surpassed the Earth’s regenerative capacity around 1980. By 2007, global demands on the Earth’s natural systems exceeded sustainable yields by 50%. Stated another way, it would take 1.5 Earths to sustain our current consumption. If we use environmental indicators to evaluate our situation, then the global decline of the economy’s natural support systems—the environmental decline that will lead to economic decline and social collapse—is already well under way.<sup>9</sup>

It is obvious that more people require more food, more water, more housing, more employment, more education, more medicine, and even more fresh air. Delegates to the 1994 Conference on Population and Development<sup>10</sup> held in Cairo recognized reproductive health and family planning as fundamental human rights and pledged to invest between \$17 billion/year and \$22 billion/year to reach the goal of universal family planning by 2015. Yet we are now approaching 2015 and much of that investment has not been forthcoming. As a consequence, many in the developing nations still do not have access to family planning, and poverty remains the major cause.

To illustrate how thorny the problem of limiting population is, we need go no further than China. Thanks to its unique government structure, this is the only country in the world where it has proved possible to mandate a draconian one-child-per-family policy. Yet even here, while this policy works in large cities where the government has more or less strict control, it has proven

difficult to regulate the birthrate in rural areas where 70% of China's population lives. As a consequence, China's population is still rising: 81 million people will be added between 2010 and 2015.<sup>11</sup> In countries that lack a comprehensive pension system, people tend to want more children as insurance for their old age.

## World History and Our Future

Many look back on the world's history and conclude that, since we have survived disasters of all kinds—wars, disease, famine, etc.—we will overcome whatever evils the impending Mega-Crisis will bring us. But this argument contains a fallacy. Today's malaise is of a different kind because we have changed our environment in an *irreversible* way.

We have let the genie out of the bottle; how do we put it back? How does one reduce the earth's temperature, extract CO<sub>2</sub> and methane from the atmosphere, prevent sea level rise, re-freeze tundra, reduce world desertification, stop the melting of glaciers, restore tropical forests, *and* reduce world population all at the same time?<sup>12</sup>

In our hearts, we know that we are on an unsustainable path. We are taking resources out of the Earth so fast that we can no longer hope to maintain existing supplies. Sooner or later, we will encounter the limits to what our planet can provide us.

What is different from previous history is that the world has never had to cope with seven billion people before. Overpopulation has brought with it the many specific stresses listed below. Of these, the chief concern is undoubtedly climate change. Following this are some other semi-irreversible phenomena that appear to be here to stay and to be progressing at an ever faster rate.

Yet even admitting that we can see no way out at the moment, there is nothing to be gained by despair. Facing hard facts and *still* remaining optimistic offers the best chance we have left to overcome the hurdles confronting our future. Let

us now examine what the history of past civilizations has taught us.

- Climate change is the most serious phenomenon confronting us. As the world population has increased, ever-greater fossil fuel use has demonstrably resulted in global warming. Today the global average temperature has risen 0.7°C since 1900, and is forecast by the IPCC to rise a total of 1.5°C by 2030<sup>13</sup> The number-one effect of global warming is the melting of glaciers and icecaps, and this is leading to widespread water scarcity worldwide.<sup>14</sup> Following this comes, naturally, food scarcity. Thus, even now, we are beginning to experience global scarcity of the two most essential elements of human existence: food and water.

According to the UN, more than 11 million people have died from drought since 1900.<sup>15</sup> Already 1.1 billion people lack access to safe drinking water, and 2.6 billion lack adequate sanitation.<sup>16</sup> Almost one billion people are already going hungry world wide today.<sup>17</sup> Hunger is most pervasive in less-developed countries where population is dense. Work by the UN and various foundations is providing some relief. But endemic poverty is the main cause, and remains largely unchecked.<sup>18</sup>

- Warming in the equatorial regions has already intensified drought conditions to some 30 degrees latitude north and south, helping expand desert regions in Australia, the American Southwest, North Africa, the Middle East, and the Mediterranean region.<sup>19</sup> Already we are seeing the scorching effect of the drought in the American corn belt and the agriculture lands of Croatia. The result has been to force agriculture to higher latitudes and to decrease yields in arid areas.<sup>20</sup>

To support an additional two billion people by 2050, the world would need access to a new growing area the size of Brazil. By 2050, 80% of world's population will live in urban areas.<sup>21</sup> Limited water and growing space will increasingly turn agriculture indoors—toward greenhouses and vertical farming. There also will be new meth-

ods of irrigation—aerophonics, hydroponics, and drip irrigation. Unfortunately much energy in the form of lighting and water will still be necessary. There will likely be huge demographic changes, too, with people and agriculture moving toward the higher latitudes in Canada, the Arctic, Alaska, Siberia, and even Greenland.

It is very interesting that Greenland was populated and cultivated for nearly 500 years—from AD 984 to the 1400s—by Viking settlers who willingly left a rich European civilization behind to create and maintain their new homeland, Norse Greenland.<sup>22</sup> They depended on domestic livestock and hunting for living. The most likely reason for the eventual failure of these Viking settlements is that the climate grew steadily colder over time. However, the Inuit peoples managed to survive there simultaneously and continue to do so to this day.

There may be a lesson here for humanity's future. The low-tech, low-population Inuit community was able to adapt to changing climate conditions because of its simple lifestyle of fishing and hunting. But the European-derived Viking culture proved unable, or unwilling, to give up its reliance on imported materials (such as lumber and iron), clung to the European concept of "growth" as its measure of success, and continued to see greater nobility in trying to defy and triumph over nature than in closely observing nature and altering its lifestyle to remain in harmony with the changing environment.

- Family planning is the only way to control global overpopulation. Even to mention this reality tends to make some people throw up their arms in despair that this could ever be accomplished. Yet such a reaction is actually unjustified, for much has been achieved in the past few decades. Here are some shining examples to follow. Japan managed to cut its birthrate by one-fourth in just seven years between 1951 and 1958.<sup>23</sup> And countries like Taiwan and South Korea, while struggling to achieve First World living standards,

actually managed to lift themselves out of poverty by following Japan's example.<sup>24</sup> It is the underdeveloped failed states with relatively uneducated populations that have maintained high birthrates.

The recent history of Iran shows what can be done even in a Muslim country if the government is motivated to reduce population.<sup>25</sup> When Ayatollah Khomeini first came to power in 1979, he dismantled the Shah's family-planning clinics in the belief that more people brought strength in numbers especially when it came to the Iraq-Iran war. However, the added stresses that population growth brought about unemployment, overcrowding, and environmental degradation, and made him realize that much can be gained by achieving a stable sustainable population.

So in 1989, the country turned an about-face and implemented an aggressive family planning program, combining clinics with universal primary schools and public sex education. Through government propaganda and incentives, Khomeini was able to reduce the rate of population growth from an explosion to a very low level in a space of 10 years.<sup>26</sup> This is by no means an endorsement of Iran's treatment of women in its society. It is simply an instance of how population control can be achieved even in cultures where, traditionally, unlimited reproduction has been accepted as inevitable and even desirable.

Furthermore, the cost of pursuing a zero growth population is not prohibitive. As mentioned earlier, delegates to the International Conference on Population and Development in Cairo in 1994 pledged to fully stabilize world population by 2015.<sup>27</sup> So far the First World countries have fallen short of the goal by half. But their failure has been due to a lack of will, not a lack of possibility. And so, NGOs like the Bill & Melinda Gates Foundation have taken up the task.

Lastly, whereas finding effective vaccines is an arduous task that involves years of research, sometimes with no guarantee of ever developing

a viable final product, a program of family planning to reduce population growth is sure to succeed because there are precedents. Furthermore, significant results can often be achieved in a short space of time—as little as 5 to 10 years.

- World desertification now affects 74% of the land in North America and Africa.<sup>28</sup> The habitat of around a billion people has been affected. The major cause is population pressure leading to over-cultivation and over-grazing of land. Deforestation also allows erosion and the loss of topsoil. According to the World Wide Fund for Nature, the Earth lost 30% of its natural wealth between 1970 and 1995. This is a fast and irretrievable process that is devouring our agricultural land and our cities. The Gobi Desert is moving south at three kilometers a year, and sand dunes are forming just 70 kilometers from Beijing.<sup>29</sup> But China has initiated a vast reforestation program to reverse the advance of desertification, and it appears to be achieving great success.<sup>30</sup>

- Due to population pressure, some two gigatons of carbon are released every year into the atmosphere. Much of this is caused by the deforestation of our tropical rainforests, the lungs of our planet. The UN, together with countries that contain tropical forests, like Brazil and Indonesia, are very aware of these dangers and have initiated large-scale reforestation programs to reverse forest loss.

But the ultimate success of such efforts will require significant changes in global demand for slow-growth forest products, as well as an end to the financial incentives that now encourage large-scale deforestation. Paying farmers not to clear land for new plantings, taxing or even prohibiting the trade in slow-growth forest products, and, perhaps best of all, widespread promotion of more sustainable lifestyles (e.g., making bamboo and cork flooring more fashionable than hardwood) may have still greater impact in the long run.

- Aquifers were created during the ice age. Depleting aquifers to meet water needs can cause

dangerous ground subsidence. For example, over 50 cities in the North China Plain are even now experiencing destruction of the surface infrastructure due to the subsidence of depleted underground aquifers.<sup>31</sup> Even though the total effect is small, industrialized nations should nevertheless be wary of depleting aquifers for golf courses, private swimming pools, and other nonessential luxury uses—particularly in arid regions of the United States. At present there is no way to reverse this depletion. The only way to avoid subsidence is to stop pumping from aquifers.

- The burgeoning middle class in countries like China and India has recently installed many air conditioners.<sup>32</sup> The chemical coolant CFC was banned by the Montreal Protocol to protect the ozone layer. But the new HFC coolant, called 410a and labeled “environmentally friendly” because it spares the ozone, has been found to have 2,100 times the warming effect of carbon dioxide. We need urgently to find a different coolant chemical—as we earlier abandoned CFC—if we hope to reduce the warming effect of the present system.

- As mentioned earlier, sea level has been rising at an accelerating rate of three millimeters a year since 1990.<sup>33</sup> Already countries like the Netherlands, the Maldives, and Indonesia are experiencing inundation. It is possible that sometime in the future, major coastal cities like New York, London, and Shanghai will all be submerged. Massive efforts should be started now to move people from these cities to higher ground.

At the same time, work is in progress in London and East Anglia to build dams to protect historical buildings like Westminster Abbey from inundation by the Thames. To alleviate water shortage, one can recycle waste water. Also, desalination of sea water is currently being used in Australia and the Middle East. Already in Australia desalination plants are producing 150 billion liters of fresh drinking water for Melbourne and other cities.<sup>34</sup> Eventually cities on the coast of

China or India may use nuclear reactors with co-generation to combine energy production with desalination.

- There is no doubt that present-day lifestyles will change, but not necessarily for the worse. For example, food should be produced locally to reduce transport costs. Diet will become more vegetarian because it takes 2,000-16,000 liters of water to produce one kilogram of beef, while one kilogram of wheat needs only 800-4,000 liters.<sup>35</sup> Overpopulation is partly responsible for the waste of water in polluted rivers. The lack of sewers in underdeveloped countries is a major cause. Another is the careless or unnecessary use of pesticides and petroleum-related products that lead to uncontrolled wastewater runoff in developed countries. Both of these might be eliminated by improved infrastructure and more effective regulation and enforcement of environmental controls.

It is important to realize that we are using up our resources—metals, materials, etc.—in a wasteful and unsustainable way. Yet there is much we can do, such as recycling. As the cost of scarce materials rises, efficiency and conservation will be naturally phased in.<sup>36</sup> These changes will be realized in areas such as passive house design, lighting, mass transport, and many other spheres. As for how to cope with shortages of materials, a good example is that China is now mining rare earth metals not hitherto used for the essential CPU (central processing unit) of electronic components.<sup>37</sup> It now holds a near monopoly of these metals and is able to dictate the market.

It is true that the world is not short of energy per se, although more and more of it (currently 65% of the energy we use) comes from fossil fuels. However, the use of these fossil fuels leads to further greenhouse emission and global warming—hence ever greater water and food scarcity. Thus we are in a vicious circle. The more energy we use, the more global warming occurs. If we are to have any hope of dealing with this problem, we must

exploit all available alternative energy sources. This means that, in addition to developing renewable wind, solar, biofuel, hydro, geothermal, and newer and safer designs for nuclear reactors, we must take advantage of technology advances in new methods for extracting energy (e.g., obtaining natural gas from shale—although this, too, has environmental drawbacks).

## Beyond the MegaCrisis

Halal and Marien do not really offer solutions to the MegaCrisis, other than hoping that humanity's phenomenal technology progress, in such areas as information technology, artificial intelligence, and others may lead in time to better governance and world culture. Sadly, "muddling up or down" may buy us some time, but it is no solution.

However, concomitant to the cultural/economic problems posed by the MegaCrisis, there is another problem that no one addresses: the capitalist system itself. I am not speaking of abolishing free markets. For all its obvious flaws, capitalism as practiced today is still the best economic system there is. But it is based on the impossible goal of continuous economic growth. For growth, we need to use more and more energy, more and more resources, and to continually expand markets—not only by breeding more and more potential customers, but also persuading them that they need more and more possessions and services. And yet we are in a bounded system. At some stage that growth has to level off. And it looks as though right now we are very near the limit set by natural systems and resources.

## The Lesson of Easter Island

In his book *Collapse*,<sup>38</sup> the great anthropologist Jared Diamond pointed out two groups of civilizations: those like Easter Island and the Maya, which eventually failed, and those like Japan and Iceland, which managed to survive for thousands

of years. Where do the societies of the present day belong?

For contemporary civilization to survive, we must work on two fronts: We must maintain a sustainable environment and keep population low enough that Earth's environment can support it. At present, we are not achieving either.

Take the history of Easter Island as an example of a failed civilization. Easter Island's nearest neighbors are a thousand miles away. When any disaster strikes, they can look for no help from outside. Theirs is a bounded system. Similarly, our planet is a bounded system. When we have ravaged our environment, we cannot expect the Martians to come rescue us.

All societies consist of human beings who possess the same familiar contradictory traits of aggression, cruelty, and treachery together with compassion, generosity, and love. It therefore comes as no surprise that, in general, the collapse of failed civilizations in the past—including that of Easter Island—all seem to have followed the same familiar pattern.

First comes an assault on the environment, beginning with deforestation to provide for human habitation and create more arable land. As the population continues to increase, still more forest has to be cleared. This is inevitably followed by soil erosion.<sup>39</sup> Then, within society there emerges a governing elite, whose members consume a disproportionately high amount of the available resources while the rest of the population remain essentially paupers. The clans of this elite vie with each other for wealth and grandeur, erecting bigger and bigger monuments—such as those long-eared statues whose ruins make Easter Island famous to this day.

Human nature being what it is, most people tend to focus mainly on short-term goals of enriching themselves and experiencing pleasure rather than safeguarding the environment over the long term. The societies that fail do so because they are set on a non-sustainable course, and over-

exploit their available resources. Eventually, competition for these diminishing resources leads to warfare and civil strife, sometimes culminating in a scarcity of food so great that it leads to cannibalism<sup>40</sup> and the destruction of everything that civilization had hitherto achieved.

There is an eerie resemblance of the predicted MegaCrisis of our society to the history of Easter Island. Are we on the same path to self-destruction? Just look at the impact of population pressure on the Amazon basin—about 78 million acres of our tropical forests disappear each year. Already more than 20% have gone.<sup>41</sup>

At this point in our history, we stand at a crossroads. We can ask ourselves, are we going to be overwhelmed as a failed society like Easter Island? Or are we going to flourish like Iceland and Japan? The choice is ours. Already we are at the danger point. And there is little time left. The Earth is warming fast.

The world has experienced water and food scarcity in its history before. The question facing us today is just how much scarcity can we endure, given the clamoring of 7 billion mouths? If we allow our present climate change and the resulting deterioration in food, water, weather, and physical infrastructure to continue unchecked, then, carried to its logical extreme, we must reckon with the ultimate consequences.

Will we really become so short of food that we have to face cannibalism one day? CNN founder Ted Turner reached precisely this conclusion in his interview with Charlie Rose in 2008.<sup>42</sup> Turner predicted “mass cannibalism” by 2040 when crops will have been destroyed by global warming. So perhaps we shall all end up eating each other? Only, being the richest country in the world, we Americans may be the last cannibals on earth!

## Epitaph

If our civilization does vanish—and I say *if*—it will be because we have so overcrowded and

damaged our planet that it becomes uninhabitable. It is our responsibility not to let this happen. As James Lovelock, the distinguished environmentalist, put it:

We are the intelligent elite among animal life on earth and whatever our mistakes, [Earth] needs us. This may seem an odd statement after all that I have said about the way 20th century humans became almost a planetary disease organism. But it has taken [Earth] 2.5 billion years to evolve an animal that can think and communicate its thoughts. If we become extinct she has little chance of evolving another.<sup>43</sup>

Suppose however, that the worst occurred, and humans were wiped out. And suppose further that, after perhaps a million years, our planet did manage to recover sufficiently from the ravages inflicted on it that another race—not necessarily similar to our own—sprang up and developed their own science. Imagine how their paleontologists and archaeologists might interpret whatever relics might survive from human civilization, and how they might speculate on what caused us to vanish, just as we speculate about Easter Island today.

They might compose an epitaph for us along the following lines: “Here there once existed a very clever race. They developed incredible technology—even went to the moon and changed the planet’s climate. But they allowed their population to grow unchecked and consequently assaulted their environment in an unsustainable way, and in the process, brought about their own destruction.”

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