

CHAPTER 6

A Worst Case Scenario for Continuing Business as Usual

Know what's weird? Day by day, nothing seems to change. But pretty soon, everything's different.

Bill Watterson
Calvin and Hobbes

Humankind's insatiable appetite for cheap, abundant, convenient energy in developed countries, such as the United States, is one of humanity's major risk factors. Even countries such as China, which use far less energy per capita energy than the United States, are moving rapidly into development of high energy lifestyles. Despite a present and increasing ecological overshoot, 2 billion additional people are expected to be added to the human population in the 21st century, and the high energy per capita consuming United States expects another 100 million, who presumably will anticipate being part of the high energy lifestyle. The biospheric life support system is threatened because words such as *safe* and *sustainable* are used without robust scientific evidence to support their use. Nuclear power is declared "safe" until a disaster like the one in Fukushima, Japan, occurred in March 2011. The concept of *sustainable growth* on a finite planet is an oxymoron. *Clean coal* is not available at present and is unlikely to be available at an affordable cost in the future. *Clean water* legislation and *clean air* legislation produce neither of their intended goals, and scientific evidence that is contrary to such claims is denigrated. Worse yet, these delusional words suggest a more suitable environment for humans than future generations probably will inherit if "business as usual" (i.e., not living sustainably) continues.

Collapse of the Present Biosphere

The first five, major, biotic extinctions were not caused by human activities, but humans are a significant factor in the sixth, great, biotic extinction now in progress. Each of the previous five extinctions resulted in a new Biosphere consisting of mostly different species that appeared over evolutionary time. Each resulted in quite different environmental conditions from its predecessor. *Homo sapiens* evolved and flourished following the fifth great extinction. A new Biosphere will not likely be favorable to *H. sapiens* since its component species will almost certainly be different from the present Biosphere. Since *H. sapiens* is part of the present Biosphere, its continuance cannot be assured. Human laws, human denials, and human delusions will have no affect on the changes, which are determined by the universal laws of biology, chemistry, and physics. These laws also cannot be avoided with human technology.

Humankind is part of the Biosphere and is dependent upon the biospheric life support system. Political entities from town to nation do not exist in an isolated bubble. The atmosphere is global — climate change is global. The global community is obvious in instances where pesticides and plastics used in a particular locale end up in distant parts of the planet. For approximately 200,000 years, *Homo sapiens* has been a small tribal species spread thinly over the planet. Humans had to be knowledgeable about their habitat or die. Consequently, humankind should become accomplished at nurturing the portion of the Biosphere in which it lives. If every individual would nurture the Biosphere, the terrestrial part of the planet would be less threatened. However, land is only about 29% of Earth's surface. The 71% covered by oceans must also be nurtured. To avoid the entire Biosphere collapsing and being replaced over evolutionary time by a new Biosphere, a global effort will be required. The lack of global action on all eight interactive global crises (Chapter 2 in this volume) indicates a lack of ethical/moral behavior.

A Worst Case Scenario

Humanity is in multiple, intellectual boxes about energy, population, climate change, and other global crises. Any global discourse that has occurred has not resulted in a sense of urgency about addressing the crises. Americans demand an endless supply of cheap, readily available energy. Sadly, assurances are given that these unreasonable demands will be met, even if this generation's children and grandchildren have to suffer

later. The spent fuel pools at earthquake damaged Fukushima Dai-ichi are a major, long-term concern (<http://www.scientificamerican.com/article.cfm?id=nuclear-fuel-fukushima>) that posterity will have to cope with for longer than *Homo sapiens* has existed on Earth. Intergenerational ethics would not permit humankind's unborn descendants being given such a responsibility.

How many Chernobyls and Fukushimas will be needed before humankind begins acting on its responsibility to posterity? How long before humankind realizes that the production of nuclear energy is hazardous to children for many generations? How long before humankind abandons release of carbon dioxide, mercury, and other hazardous substances from coal-fired power plants? How long before humankind realizes that neither absolute confidence nor absolute certainty exist in any part of life, but, rather, only different levels of risk exist. If the answer to any of these questions is "more than a decade," humans should prepare to experience the worst case scenario.

A Less Dismal¹ Worst Case Scenario

"Nature favors those organisms which leave the environment in better shape for their progeny to survive" (Lovelock 1979). How can humankind leave the environment in better shape? One way is to lessen or eliminate all eight interactive global crises.

Regulation of anthropogenic greenhouse gas emissions is very controversial and likely to become more intense when policy decisions are made on whether to limit them by nation or per individual. A report by the Potsdam Institute for Climate Impact Research (PIK Report No. 166) proposes per capita emissions rights. China is now the leading anthropogenic greenhouse gas emitter, with the United States a close second; however, on an individual basis, the United States has far more per capita emissions than China (http://www.nationmaster.com/graph/env_co2_emi_percap-environment-co2-emissions-per). Developing an emissions policy that suits all will be difficult, but living without anthropogenic greenhouse gas emissions control is suicidal.

The PIK report espouses "a global limit on emissions that is consistent with a two degrees Celsius climate target" (which has now been categorized as "dangerous" and going beyond that as "extremely dangerous" [Anderson and Bows 2011]). The rationale is that countries "like the USA and China that do not want to accept national emissions limits" (PIK Report No. 166) might agree to this policy. The basic issue of individual vs national emissions is caused by increased prosperity in developing nations, which makes a high energy lifestyle possible for many millions of additional people. The question must now shift from "what can I afford?" to "what can Earth afford?"

This issue was identified years ago: "We conclude that the concentration of wealth is natural and inevitable, and is periodically alleviated by violent or peaceable partial redistribution. In this view all economic history is the slow heartbeat of the social organism, a vast systole and diastole of concentrating wealth and compulsive recirculation" (Durant and Durant 1968, p. 57). Just because more individuals can afford automobiles does not mean Earth can afford more automobiles, and, therefore, more carbon dioxide emissions. More important, the huge wealth disparity will almost certainly produce massive societal unrest and anarchy, which is not conducive to the goal of sustainable use of the planet. However, now the distribution of financial wealth is extraordinarily wide, with a few percent of the global human population at the top and a huge percent at the bottom.

"For example, Egypt, with 80 million people today, is projected to grow to some 138 million by 2050. Per capita income in Egypt is now about \$5,500, compared with about \$47,000 in the United States and \$30,000 in the European Union. The aspiration gap is even more stunning for sub-Saharan Africa, which is expected to explode from 870 million people to 1.8 billion in the next 40 years. Per capita income there is now \$2,000 and less than a third of the population has access to a toilet" (Ehrlich and Ehrlich 2011). Humans must exhibit intelligence and compassion to a much greater extent if they wish to avoid mass misery.

Pandemic

An *epidemic* is a sudden outbreak that becomes widespread and affects a whole region, a continent, or the world (<http://www.medterms.com>). A *pandemic* affects a substantial portion of the human population. A major consideration at present is a new pattern of antibiotic resistance that is spreading around the globe: "With no new medications in the pipeline capable of dispatching these latest superbugs, we may have to live with the risk of untreatable infections for an uncomfortably long time . . . Looking ahead, researchers envision the emergence of completely resistant strains of gram-negative bacteria, arriving long before the drugs that could treat them" (McKenna 2011). These health concerns may become pandemic since global warming increases the range of both diseases and disease carrying organisms.

¹Inspired by economist Kenneth Boulding's dismal theories.

Poor quality of life and resultant environmental refugees are also major considerations for the global community. Already much of humankind is starving or malnourished, lacks potable water, and lacks the scientific literacy to understand these complex risks. Couple this situation with social unrest and increasing numbers of environmental refugees and the circumstances for a pandemic are ideal. The conflicting social values of the culture that environmental refugees invade plus a paralyzed bureaucracy may be prophetic for the 21st century.

Conclusions

Trends in all eight interactive global crises must be reversed markedly and soon in order to preserve the present Biosphere. However, preservation of the present Biosphere is not enough — it must be nurtured as well. Astonishingly, many people have only a vague idea of the nature of the Biosphere, especially that it is the life support system of all life forms.

The record of inadequate attempts to regulate anthropogenic greenhouse gas emissions by the world's nations shows that they cannot be trusted to protect or nurture the Biosphere. Grassroots-level protection may be superb in some areas and resisted in others, but is probably the most promising approach. Until anthropogenic greenhouse gas emissions are significantly reduced, runaway climate change will not only be possible but probable.

Every time the Biosphere passes a tipping point, irreversible change occurs. Each irreversible change means leaving a different planet for posterity than the planet that the present generation enjoys. Since the changes can only be recognized and evaluated in retrospect, determining their favorable or unfavorable effects upon humankind is not possible; however, some predictive models may be available at sometime in the future. Until then, all biospheric changes should be viewed as involving considerable risk. In the meantime, humankind must be prepared for unexpected disasters. Early warning signals might be provided if sophisticated monitoring systems were put in place and continually funded and staffed. In a complex, interactive system such as the Biosphere, all actions affect other actions, and cause-effect pathways must be included in any monitoring system.

Humans, including me, are in some degree of denial. Perhaps rejection of the worst case scenario for Earth's future is an essential state of mind for today's civilization. However, such denial does not remove its possibility, even probability.

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