







CHAPTER 23

THE ULTIMATE TIPPING POINT: DESTRUCTION OF THE PRESENT BIOSPHERE

 **“THE DOOR IS CLOSING, . . . I AM VERY WORRIED — IF WE DON’T CHANGE DIRECTION NOW ON HOW WE USE ENERGY; WE WILL END UP BEYOND WHAT SCIENTISTS TELL US IS THE MINIMUM [FOR SAFETY]. THE DOOR WILL BE CLOSED FOREVER” (Fatih Birol, chief economist at the International Energy Agency).¹**

-  *“The world is likely to build so many fossil-fuelled power stations, energy-guzzling factories and inefficient buildings in the next five years that it will become impossible to hold global warming to safe levels, and the last chance of combating dangerous climate change will be “lost forever” . . .”¹*
-  *“Anything built from now on that produces carbon will do so for decades, and this “lock-in” effect will be the single factor most likely to produce irreversible climate change, . . .”¹*
-  *“Yet, despite intensifying warnings from scientists over the past two decades, the new infrastructure now being built is constructed along the same lines as the old, . . .”¹*
-  The clear path forward is more investment in alternative energy, but much political opposition exists to this transition.



HOW DID *HOMO SAPIENS* DEVELOP A SOCIETY THAT USES FOSSIL FUEL SO CARELESSLY AS TO BECOME A THREAT TO THE BIOSPHERE — THE PLANET'S LIFE SUPPORT SYSTEM AND THE SOURCE OF RENEWABLE RESOURCES ESSENTIAL TO THE HUMAN ECONOMY?





- 🌍 **A major, well financed campaign to cast doubt on science, the best source of information on risks to human health and the Biosphere, has been in existence since the tobacco wars that began over three decades ago and is still continuing on issues such as climate change.²**
- 🌍 **Many people believe that technology and economic growth can eliminate any problem.**
- 🌍 **Humanity is not moving up on the learning curve about climate change, overpopulation, resource depletion, and other global problems.**
- 🌍 **Neither the general public nor policy makers displays any sense of urgency about any global crisis except the financial crisis.**
- 🌍 **Since the Agricultural Revolution, global climate has been relatively stable, so visualizing abrupt change is difficult for most people.**



HOMO SAPIENS HAS LIVED ON EARTH FOR APPROXIMATELY 200,000 YEARS, AND SEVEN OTHER SPECIES OF THE GENUS *HOMO* EXISTED FOR ABOUT 4 MILLION YEARS. WHY IS HUMANKIND IN TROUBLE NOW?

- 🌐 Petroleum has been used for thousands of years (http://en.wikipedia.org/wiki/History_of_petroleum), but only in the last 200 years has it been used in huge quantities.
- 🌐 Petroleum and coal have given humans a tremendous amount of energy compared to other species.
- 🌐 This increased energy consumption and the technology it has made possible have given humans a huge advantage over other species. However, this advantage is only temporary if the supply is finite.
- 🌐 *“Any technical improvement can only relieve misery for a while, for so long as misery is the only check on population, the [technical] improvement will enable populations to grow, and will soon enable more people to live in misery than before.”³*

IN 1927, THE GLOBAL HUMAN POPULATION REACHED 2 BILLION — A MAJOR TIPPING POINT FOR BOTH HUMANS AND THE BIOSPHERE.





-  **Earth's first ecological overshoot day occurred in December 1987.**
-  **The era between 1927 and 1987 was unique because of the overconsumption of Earth's resources, although starvation and misery existed during that period.**
-  **At present, with eight, interactive, worsening, global crises, calculations of carrying capacity are meaningless until a biospheric dynamic steady state is reached.**
-  **The long-term human population might be much less than 7 billion, and it will be determined by the universal laws of biology, chemistry, and physics rather than a consortium of nations.**






THE DANGER OF RESOURCE WARS IS VERY REAL SINCE RESOURCE DEMAND IS MUCH GREATER THAN SUPPLY AND CLIMATE CHANGE EFFECTS ARE DAMAGING RESOURCE REGENERATION.


- 🌍 **Wars deplete resources and damage the Biosphere.**
- 🌍 **Wars also damage infrastructure.**
- 🌍 **Wars increase national debt, although the actual financial burden is often difficult to determine.**
- 🌍 **The worst aspect of war is the loss of time — all of one's time if a life is taken; much family togetherness time is lost; and educations are interrupted.**
- 🌍 **At the end of a war, both the “winner” and the “loser” are impoverished.**
- 🌍 **Biospheric refugees are displaced from their impoverished homeland, and their “host” area must divert scarce resources for the refugees.**



A DAMAGED BIOSPHERE WILL GENERATE FEWER RENEWABLE RESOURCES, AND THE DELIVERY WILL BE MORE ERRATIC AND LESS RELIABLE.


-  **Most, probably all, changes that occur after passing a tipping point are irreversible.**
-  **All global crises are interactive⁴ — population affects climate and climate affects population.**
-  **A badly damaged Biosphere could collapse at any time — tipping points are only clearly evident in retrospect.**
-  **No number of global conferences can develop policies to repair irreversible damage.**




ALL GROWTH, INCLUDING ECONOMIC GROWTH, REQUIRES RESOURCES, AND EXCESSIVE GROWTH CAUSES ECOLOGICAL OVERSHOOT/DEBT, WHICH IS DAMAGING EARTH'S BIOSPHERE.

-  "... *'growth' is not synonymous with 'betterment.'*"⁵
-  Although both the words *ecology* and *economics* are derived from the Greek word *oikos*, the term *carrying capacity* is used commonly in ecological publications, but rarely in economic publications. However the term *carrying capacity* recognizes limits to growth for a household or a population.
-  All growth requires resources, and all resources are limited on a finite planet — even renewable resources are limited by the regenerative capacity of the Biosphere.

 ***“ENVIRONMENTAL DEGRADATION IS AN IATROGENIC DISEASE INDUCED BY THE ECONOMIC PHYSICIANS WHO ATTEMPT TO TREAT THE BASIC SICKNESS OF UNLIMITED WANTS BY PRESCRIBING UNLIMITED PRODUCTION. WE DO NOT CURE A TREATMENT-INDUCED DISEASE BY INCREASING THE TREATMENT DOSAGE!”⁵***

-  **If humanity cannot escape its addiction to growth, the universal laws of biology, chemistry, and physics will “solve” the problem by starvation, disease, and death, just as they do for all other species that exceed carrying capacity.**
-  **Global, interactive crises are still worsening, but no substantive remedial action at the global level is evident.**

 **SINCE NO ROBUST EFFORTS ARE EVIDENT TO PROTECT AND NURTURE THE BIOSPHERE, THEN OTHER MEASURES, SUCH AS “HAIL MARY” APPROACHES, ARE NEEDED TO PREVENT RUNAWAY CLIMATE CHANGE.**




-  **Even if successful, “Hail Mary” geoengineering techniques to reduce atmospheric carbon dioxide cannot repair irreversible damage to the Biosphere.**
-  **The effort and expense of adapting to markedly changed global conditions after runaway climate change will undoubtedly be greater than the effort to avoid runaway climate change.**
-  **Denial can be very expensive, even fatal.**








AVOIDING THE ULTIMATE TIPPING POINT FACES SERIOUS OPPOSITION.

- 🌍 **Scientific evidence on climate change has increased dramatically, but has not reduced the fervor of climate deniers.**
- 🌍 ***“The [climate change] deniers did not decide that climate change is a left-wing conspiracy by uncovering some covert socialist plot. They arrived at this analysis by taking a hard look at what it would take to lower global emissions as drastically and as rapidly as climate science demands. They concluded that this can be done only by radically reordering our economic and political systems in ways antithetical to their “free market” belief system.”⁶***
- 🌍 **The pain of living within limits appears greater than the pain of climate change catastrophes.**

THE NEWS MEDIA AND CLIMATE CHANGE DENIERS ARE TREATING THE MARKED DIFFERENCES OF OPINION AS AN IDEOLOGICAL BATTLE.

-  **This situation explains why huge amounts of new scientific evidence is received with indifference by deniers and policy makers.**
-  **It also explains why, when a prominent climate change skeptic becomes an ex-skeptic, the news media pays a lot of attention and policy makers are not impressed.⁷**
-  **How regrettable that scientists and the scientific process are so badly misunderstood at this defining moment in human history!**

 ***HOMO SAPIENS* IS FACING AN UNPRECEDENTED SERIES OF CRISES, INCLUDING OVERPOPULATION AND CLIMATE CHANGE, WITHOUT THE BENEFIT OF SCIENTIFIC EVIDENCE WHEN MAKING POLICY DECISIONS.**

-  A huge body of scientific evidence demonstrates climate change is real and influenced by human practices (i.e., burning fossil fuel).
-  Discourse on exponential human population growth is taboo.
-  The universal laws of biology, chemistry, and physics remain unaffected by human policies and rhetoric.
-  The ultimate tipping point, the destruction of the present Biosphere, is probably nearer than most humans think it is.

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