



**Promoting Sustainability through Political and
Economic Freedom**

Second Edition
September 2007

At the 1992 Earth Summit in Rio de Janeiro, the United Nations put forward a comprehensive plan for its version of sustainable development called "Agenda 21." Specific goals for implementing Agenda 21 were set forth at the U.N. World Summit on Sustainable Development in Johannesburg, South Africa in August, 2002, and according to its authors, Agenda 21 is designed to be a roadmap for the world in the 21st Century.

In response to this ambitious, yet fundamentally flawed, approach to tackling the important issues of environment and development, the Freedom 21 coalition was launched to promote a more robust concept of sustainable development based on the principles of freedom, sound science, and genuine free markets.

What follows is the alternative to "Agenda 21" that is being put forward by the Freedom 21 coalition. It is a bold program that has received extensive review from many scientists and experts around the world.

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www.freedom21agenda.org

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Executive Summary

The Freedom 21 Agenda for Prosperity: Promoting Sustainability through Political and Economic Freedom

Since the early 1970s, environmental protection has become a priority at both the national and international level. In response, the global community in general and the United Nations specifically, have developed a global policy termed “sustainable development.” Sustainable development was defined by the United Nations Commission on Global Governance in their 1987 report *Our Common Future* as: “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” During the 1990s the concept of sustainable development was expanded to include the goal of reducing poverty in the world.

The action plan to implement sustainable development was published in a forty-chapter policy document entitled *Agenda 21*, which was signed by 178 nations in 1992 during the United Nations Conference on the Environment and Development in Rio de Janeiro, Brazil. The basic premise behind *Agenda 21* is the management of human population, activities and development through a series of environmental treaties administered by the United Nations under “global governance.” Central to that effort is the belief that government should serve as the principle agent to protect the environment and bring prosperity to the people by aggressively regulating private property rights and commerce. The 2002 World Summit on Sustainable Development in Johannesburg, South Africa, reaffirmed and energized the *Agenda 21* action plan.

While the goals for *Agenda 21* are noble, a growing number of people and organizations share a concern that *Agenda 21*'s action plan will not or cannot fulfill its objectives. Several of these organizations and individuals have come together to create *The Freedom 21 Agenda for Prosperity*, which is based on extensive research and proven concepts that foster freedom and genuine free markets. *The Freedom 21 Agenda for Prosperity* (hereafter called *Freedom 21*) reviews most of the poverty and environmental concerns expressed in *Agenda 21* and offers constructive recommendations that are typically based on reducing corruption, strengthening private property rights and liberating controlled markets. *These* are based on extensive research that is divided into five categories:

V. *Human Population and Poverty*

More people mean more minds to produce innovations; not simply more mouths to feed. Even so, the United Nations itself maintains that population will

peak at about 9 billion people around the year 2050. And, contrary to popular belief, there is no correlation between population density and poverty. There exists, however, high correlations between denser populations and human prosperity. Poverty is also correlated with nations having corrupt governments or governments that over-regulate the marketplace and entrepreneurship. Where economic improvement has occurred, it is almost always preceded by a reduction of corruption, increased political and economic freedom, and stability within their borders.

In his compelling research discussed in *The Mystery of Capital*, Hernando de Soto identifies that the true pillar of wealth centers on property rights that are fully transferable and secured by a legal system which is free of corruption and over-regulation. De Soto demonstrates that efforts to introduce capitalism into developing and former communist nations have failed because legally protected private property rights were not introduced. Former World Bank Vice President and Nobel laureate Joseph Stiglitz arrived at a similar conclusion.

In summary, a vibrant genuine free market economy, not more numerous government programs designed to limit population and property rights, reduces poverty.

II. *Land Issues and Property Rights*

Freedom 21 illustrates that the United Nations bases its concept of sustainable development on the misguided belief that the state should be the principle agent to both safeguard the environment and reduce poverty by managing property rights and the marketplace. Tragically, this belief is fatally flawed. Numerous studies in the twenty-first century reveal that wealth creation is dependent on well defined, legal private property rights enforced with minimal corruption.

Property rights of landowners actually enhance true sustained development while common ownership or excessive regulation diminishes it. There exists a positive correlation between the wealth of a nation's people, and its ability to protect the environment. Likewise, property rights provide landowners an incentive not to harm their land. By doing so, property rights preserve and enhance people's dignity and standard of living year after year. Property rights allow landowners to be creative in finding new ways to use limited resources, while simultaneously protecting the environment. The wide diversity of societal goals within a free market, in conjunction with scientifically-

based natural resource management practices, invariably results in a good cross section of biodiversity and thus sustainability of natural resources as well as human dignity and progress. Protection of private property rights is therefore a sacrosanct duty of government.

United Nations-style sustainable development practices, however, call for vast tracts of wildlands and tightly managed human activity. Yet, these drastic actions are necessary only in rare instances, and can actually be harmful and counterproductive in most circumstances. There is no basis for creating vast tracts of interconnecting wildlands as most current sustainable development practices recommend. Biodiversity and habitat health can be optimized using existing scientifically proven management practices. Research clearly shows that application of time-tested scientific management practices enhance biodiversity and habitat health. Natural resource uses that provide maximum benefits to national economies, local communities, and human dignity/justice, limited only by the historically proven common law principle of harm and nuisance, should be the emphasized goal.

III. Air and Water Issues

Although a modest degree of Global warming is occurring, contrary to assertions by the United Nations, European Union and U.S. Environmental Protection Agency, *Freedom 21* demonstrates that it is unlikely that man is the principle agent behind it. Instead, the warming more likely represents a recovery from the Little Ice Age in the 1700s and is natural in origin.

Similarly, claims made by United Nations officials that there is consensus among knowledgeable scientists that man is principally responsible for the current warming is completely untrue. Over 17,000 scientists in the United States, two-thirds having advanced research degrees (masters or Ph.D.) in the hard sciences, have signed a petition challenging this assertion. The process of climate change is poorly understood and these scientists strongly caution against implementing policy that may do more harm than good. If the Kyoto Protocol is fully implemented, studies show it would have devastating impacts on the economies of developed nations, with no, or minimal reduction in global temperature. This perhaps explains why most signatory nations to the Kyoto Protocol have not met their stated goals in carbon dioxide reductions.

Similarly, chlorofluorocarbons may not be the primary cause of ozone depletion. Natural phenomenon, like volcanoes and evaporation from the sea, appear to play a much larger role. Additionally, ozone thickness is consistently thinnest at the equator, gets much thicker at a pole during its winter. Ozone thickness during a polar winter when thinning occurs is already over 50 percent

thicker than that of the equator. Consequently, thinning has minimal impact. Also, because the ozone layer is always thinnest at the equator, the same magnitude of increased UV-B radiation caused by the thinning at mid-latitudes during late winter is experienced by merely moving 200 km (124 miles) towards the equator.

In yet another area of concern, there is a simple explanation for many forms of air and water pollution. Common ownership over resources such as the air or water provides no incentives to care for them. There is every incentive, however, to dump waste into them. This “tragedy of the commons” explains why the dumping of waste into publicly-owned lands occurs far too often.

Through technology, most forms of air and water pollution have been reduced by 50 to 98 percent, depending on the pollutant. Without further advances in technology, most additional improvements will be made only at extremely high cost. In turn, advances in technology require incentives based on private property rights and genuine free markets, not the arbitrarily regulated markets that exist today. While laws and regulations are necessary to minimize harm by pollution, laws and regulations must be based on sound science balanced with cost-benefit analyses. Governments must prioritize the benefits to society and the environment with limited financial resources.

Finally, there is no water shortage in the world—but rather a lack of proper water management. More than 96 percent of all nations presently have sufficient fresh water resources. Corrupt, centrally controlled governments, or the lack of real private property rights, are the greatest contributor to inadequate fresh water accessibility.

IV. Chemicals and Management of Waste

Contrary to general perception, chemicals are not inherently bad. Everything is composed of chemicals. Some man-made chemicals are indeed harmful, but so are many *natural* chemicals. “Natural” does not necessarily mean better or safer. How a chemical is used determines whether it harms or helps people and the environment. Hence, not all hazards contain the same risk under all circumstances. Therefore, regulating chemicals is very complex and subject to politicization.

It is generally accepted that industry is biased by their own self-interest. On the other hand, the internal politics and agendas of agencies, bureaucrats, outside pressure groups and the media often politicize the science used in developing regulations for a specific law. Additionally, government agencies tend to lump real and potential chemical hazards into one group for *their* ease of administration, or to increase regulatory power, funding, or notoriety. Although there is no perfect mechanism for determining risk, it can still be estimated and prioritized.

Appropriate solutions can be found. Resources are always limited, demanding the prioritization of potential problems and solutions. Billions of dollars can, and are, being spent on perceived problems that have little impact on people and/or the environment compared to other, less publicized problems.

There is also more than adequate space for solid waste disposal, even in the densely populated areas of the world. *Freedom 21* illustrates the problem is largely political, not economic, and often centers on NIMBY (Not In My Back Yard) concerns. Genuine free market solutions are usually better than regulatory ones in resolving such disputes. Likewise, hazardous waste problems often can be met with creative use of markets and reformulation rather than stifling, expensive regulations. Nuclear waste can be safely contained, but strict protocols must protect neighboring communities. Reprocessing spent fuel could eliminate much of the waste currently needing storage.

The wealthier a developing nation becomes, the more waste it will produce. At the same time, however, the wealthier the nation, the more environmental protection it can afford, including how it treats its waste. Thus, wealth creation still remains the highest priority to advance environmental protection.

V. Meeting Essential Human Needs

Studies from FAO, USDA and others all reveal there is no agricultural crisis or scarcity of food. Everything points to cheaper, more plentiful food production and consumption, especially if nations of the world cautiously continue to increase their use of proven biotechnology. All in all, never has the future for mankind *and* the earth's environment been brighter.

Freedom 21 has determined that the key to unlocking this bright future is the fostering of individual freedom, property rights, curtailing of corruption, and the expansion of genuine free markets. The greatest obstacles to further increasing the yields and productivity of developing nations are poverty, war, corruption, restrictive societies that stifle creativity and initiative, and an absence of private property rights and the legal institutions that enable and encourage entrepreneurship.

Overall the energy outlook for the U.S. and the world is very good. While it is estimated that there only remains a 40-year supply of oil, 60-year supply of natural gas, and a 230-year supply of coal from known reserves economically available today, geologists are finding new supplies of oil on a steady basis. With current technology, the supply of oil and natural gas could be increased 50 percent if oil prices continue to

remain at 2005-2007 levels. With more efficient technology, or at stable oil prices which remain high, a 5,000-year supply of shale oil starts to become economically available. It is probable that once this source becomes commercially viable, gains in efficiency will bring the price down for consumers. Likewise, there is a 230-year supply of economically available coal. Coal alone could be an economically cheap source of electricity for a long time to come.

As with fossil fuels, there is enough U-235 to last for 100 years, though this source of power is about twice as expensive as fossil fuel due to excessive regulations and political delays. Technologically, nuclear power has overcome its major obstacles surrounding safety and waste (long-term storage). The biggest problems remaining for nuclear power are those surrounding public perceptions and pressure group politics.

The reverse is true for renewable forms of energy. The use of renewable energy may never amount to a significant source without major breakthroughs in technology that increase their energy output, reduce their costs, resolve their reliability problems, and curtail their adverse environmental impacts on the land and wildlife.

Serious, unavoidable limitations also exist for hydro, biomass, geothermal, wind and solar power that will confine their use to areas where the costs of conventional forms of energy are uniquely high. In any event, sufficient energy sources exist to give humanity the time needed to develop cost-effective alternatives, and/or the ability to cleanly use fossil fuels.

In conclusion, sustainable development as outlined in the United Nations *Agenda 21* claims that environmental problems are so overwhelming that only an international solution can make the world sustainable. As detailed in *Freedom 21*, however, every one of these problems are either greatly exaggerated or can be solved most effectively at the local or national level by eliminating corruption and instituting legally protected private property rights and genuine free markets. The powerful, unaccountable form of global governance proposed in *Agenda 21* by the United Nations and international NGOs opens the door to inefficiency, corruption and abuse of people's rights.

Sustainable development as outlined in the United Nations compromises people's most basic human rights in furtherance of a narrow political agenda. In doing so, it is highly probable that such governance will cause deterioration in the condition of both mankind and the environment. We have a choice, *Agenda 21* or *Freedom 21*. The choice is ours.

Introduction

Over the past thirty years, protecting the environment has become a national and international priority. Few would challenge the need for protecting the environment so that future generations can enjoy productive and fulfilled lives. These efforts, ideally, strive for two goals: To safeguard the environment so that future generations can enjoy productive and fulfilled lives and to use natural resources wisely to provide jobs and security for the world's population. These two goals are encompassed by the term "sustainability." The authors of this document, called Freedom 21, draw attention to the need to rely upon the principles of individual liberty, property rights, and genuine free markets to ensure true sustainability.

The United Nations established its Environmental Program (UNEP) in 1972, following the first "Earth Summit" in Stockholm, Sweden (also called the United Nations Conference on Human Environment). After numerous international environmental meetings, the United Nations hosted another Earth Summit (the Conference on Environment and Development) in 1992 in Rio de Janeiro. This Earth Summit saw the introduction of numerous international environmental agreements and treaties. Key among those was Agenda 21, a sweeping forty-chapter plan with the stated purpose of advancing humanity while protecting the earth's environment. Several additional international meetings were held in the wake of the 1992 Earth Summit, culminating in the United Nations World Summit on Sustainable Development (WSSD) in 2002. The primary purpose of the WSSD was to protect the environment and reduce human poverty by implementing the principles of Agenda 21.

No one can deny that many of these environmental laws and international treaties have contributed in some measure to improving the environment in America and the world. The question remains, however, whether these mechanisms are the best approach to protect *both* the environment and people. All of these environmental laws and treaties use a regulatory approach to environmental protection. History reveals, however, this approach often deprives citizens of their private property and wealth-producing capability, leads to corruption, and impedes economic growth. Ironically, it also often denies or reduces poor people's ability to improve their economic status and society's ability to protect the very environment it is supposed to safeguard.

The United Nations' Agenda 21 elevates this failed form of governance to the global level. In his 1997 Track II Reforming the United Nations document,

Secretary General Kofi Annan recommended restructuring the UN Trusteeship Council from its original responsibility of global decolonization into a supranational EPA. This overarching authority would allow "Member states [nations] [to] exercise their collective trusteeship for the integrity of the global environment and common areas such as the oceans, atmosphere and outer space."¹

The United Nations and the international environmental community call their concept of protecting the environment "sustainable development." Sustainable development means different things to different people, but the most frequently quoted definition is from the 1987 report *Our Common Future* (also known as the Brundtland Report): "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." It goes beyond just protecting the environment, and attempts to govern the economic and social development of the entire world. It encompasses changing policy and practice at all levels, from the individual to the international corporation.²

Among other things, Agenda 21 promotes widespread income redistribution to eliminate poverty, defines how to use earth's resources and environment, and outlines how each citizen should live in a "sustainable" manner. Signed by President George H.W. Bush and the leaders of most other nations at the 1992 Earth Summit in Rio de Janeiro, this effort has major flaws that will prevent it from achieving success. Although Agenda 21 ostensibly pushes decision-making to the local level, in fact it limits those choices to a few pre-approved options through what the United Nations has come to call, in its own words, "global governance." In other words, it represents a top-down, planned approach to the management of society; decreasing personal freedom but doing little to curb opportunities for corruption. It is diametrically opposed to the proven principles of the United States Constitution, and ultimately to freedom and wealth creation for the world's poor. It annuls the creative, economic, environmental and other benefits that liberty brings.

Lest it be imagined that extensive governmental control leads to a better environment, one need look no further than the former USSR. The Soviet government had absolute authority, yet presided over abysmal environmental degradation not only in Russia, but in East Germany, Hungary, Czechoslovakia, and many other Soviet Satellites. By contrast, the

cleanest are the U.S., Canada, and a few European nations, precisely because their free economies generated the needed prosperity that fueled demand for environmental protection and provided the resources to do so.

Among many in developing nations, Agenda 21 has come to be labeled as “eco-imperialism:” the imposition of politically correct developed-world priorities, standards and principles on poor countries. That these poverty-stricken nations are still beset by health, economic and infrastructure problems which developed countries solved decades ago is tragic, but has seemed to elicit insufficient attention from many in the international environmental community. Gar Smith, editor of *The Edge*, the newsletter of the Earth Island Institute, which publishes much environmental literature, said at the WSSD:

The idea that people are poor doesn't mean that they are not living good lives. I don't think a lot of electricity is a good thing.... I have seen villages in Africa that had vibrant cultures and great communities that were disrupted and destroyed by the introduction of electricity.... African villagers used to spend their days and evenings sewing clothing for their neighbors, on foot-peddle-powered sewing machines. Once they get electricity, they spend too much time watching television and listening to the radio. If there is going to be electricity, I'd like it to be decentralized, small and solar-powered.²

African villagers may well object to Gar Smith's desires for them to have very limited, unreliable electricity. Lacking a good energy source, the women

carry bundles of wood or animal dung from distant sources to use for cooking. The air quality within their huts is appallingly unhealthy. Mr. Smith would consign Africans to subsistence living, short life expectancy, and disease.

Certainly not all international environmentalists espouse Gar Smith's beliefs. Yet, many First World demands prevent less developed countries from addressing their critical disease, energy, employment, sanitation and trade needs. The easily foreseeable result is that millions of potentially productive parents and children get sick and die every year. These same people would live much better lives if their poor countries could utilize the same methods that today's rich nations employed on their way to prosperity, nutrition, health, and environmental quality. Eco-imperialism prevents these impoverished countries from taking their rightful place among the Earth's prosperous nations. It is a human rights violation unprecedented in its scope and in the degree to which it is justified by appeals to vague promises of sustainability, the “public good,” “social responsibility,” and environmental purity.

There is a positive alternative to Agenda 21 called Freedom 21. Freedom 21 protects the environment using the principles of individual liberty, property rights and genuine free markets. Unlike Agenda 21, and even perverted capitalism as is often practiced in many parts of the world, Freedom 21 helps impoverished nations by giving their citizens the liberty and the tools needed to use their creative abilities, so that they can participate in wealth creation. Only a free and wealthy people can protect the environment without the loss of liberty.

Contrast Between Freedom 21 and Agenda 21 In Attaining Sustainable Development

	Freedom 21	Agenda 21
Principles	Based on the principles of John Locke and individual rights that form the basis of the U.S. Constitution and private property rights. Focuses on self-government where “all men are created equal” and have equal opportunity. Administered by a minimum of government.	Based on the principles of Jean Jacques Rousseau and the “general will” (public good) as determined by a nation’s governing leaders. All people, in principle share more equally in the wealth. Administered by strong government regulation that ultimately harms people <i>and</i> the environment.
	Power to make decisions rests primarily in the hands of the people thereby encouraging risk-taking. Laws are principally crafted to enforce common law, which are limited to those laws which prohibit individuals from conducting activities that harm another person or their property. Creativity to find new and better ways of doing things is encouraged by minimal regulatory structure.	Power to make most decisions resides primarily in the hands of government and unelected officials. Corruption and arbitrary and capricious enforcement of ever expanding regulations is a constant problem. Stifles creativity to find new and better ways to do things because production and activities are limited by one-size fits all regulation.
	Establishes and protects private property rights, which allows the creation of needed capital for impoverished nations and provides the <i>best</i> proven way to eliminate poverty. It is why genuine capitalism works in Western nations and doesn’t within centrally managed ones.	Minimizes property rights to only those favored by state regulations to reduce risk of possibly harming the environment. It places nature’s perceived needs ahead of man’s real needs. By limiting property rights there is little ability to generate the capital needed to reduce or eliminate poverty.
	Encourages protection of asset value of privately owned property because of pride of ownership and the need to maintain environmental health for continued production or use. Private property rights have generally helped, not harmed the environment in Western nations. It is primarily those environmental features that are owned in common (air, rivers, public lands, etc.) that have been harmed by pollution or misuse.	Invokes the Law of the Commons where property is held in common by the state through deed or regulation. No one person, family or organization has a vested interest in protecting the property for the benefits it can provide. Unless specific regulation mandates compliance with ever expanding laws to protect the environment, damage to the environment results because there is no incentive to protect it.
	Depends on free enterprise with minimum of regulations to create incentives to maximize efficiencies of production through creativity and entrepreneurship.	Depends on government regulated markets to achieve predetermined social and environmental goals based on the precautionary principle.
People	As citizens are allowed to own the value in property for production and collateral purposes, their previously hidden wealth will provides the basis for future wealth and permits them prosper.	Corporate investments from developed nations may slowly increase the wealth of the nation, but in general those in greatest poverty will <i>not</i> benefit since most corporate profits go to corporate headquarters in the West and the wealthiest class within the nation.
	Human population will likely limit itself to a maximum of 9-10 billion people and then will decline to 6-7 billion as increasing wealth in impoverished nations creates an incentive for smaller families.	Human population will rapidly increase to 10-11 billion people or more because poverty cannot be eliminated. The only means of population control will be by government programs to compel fewer children.
Land Use Land	Land use by citizens of any nation necessarily changes biodiversity. Change in biodiversity, however, does not make land use bad. It changes the mix of age classes, species and structural components of biodiversity, but not in a way that necessarily harms ecosystem health. Biodiversity typically benefits from man-caused disturbance utilizing scientifically proven management techniques. Many European nations have intensively managed their biodiversity for centuries without overall detrimental effects.	Any type of land use except that which follows “natural patterns” is viewed as potentially detrimental to biodiversity and ecosystems. The Convention on Biological Diversity calls for government to withdraw large blocks of land into wilderness reserves, surrounded by buffer zones to protect the wilderness reserves. The UN funded Global Biodiversity Assessment calls for as much as 30 to 50% of the land area to be so protected. This requires huge areas be taken out of production for human use, further reducing the ability for those in poverty to ever improve themselves.

	Freedom 21	Agenda 21
Use (con't)	Having a multitude of private property owners who have a range of different land use objects creates biodiversity – not perfectly, but usually adequately. Very few species have become extinct due to land use activities by people. The greater the wealth that is generated, the better the land will be managed and protected. Furthermore, protecting land from human use creates monotypes which decreases biodiversity and increases fire hazards.	Heavy government regulation of land use is necessary to protect biodiversity, ecosystems and adequate housing for the poor. The loss of creativity and productivity resulting from such regulations is an acceptable loss. The need to set aside large areas of land into wilderness to protect some aspects of biological diversity is greater than the loss in biodiversity as protected reserves gradually mature into monotypes.
Air & Water	There is little evidence of catastrophic human-induced global warming. Most alleged warming comes from land-based data contaminated by the urban “heat island” effect and inaccurate climate models. Increasing CO ₂ levels have a proven “fertilizer effect” and could increase crop production by up to 50 percent, greatly benefiting food availability to developing nations at no cost to them. The wise course of action is to determine the causes of, and costs and benefits of mitigation vs. adaptation to, global warming before harming the economic base of the world.	The <i>possibility</i> of man-caused global warming warrants immediate international action based on the precautionary principle (better safe than sorry). The goal is to stabilize or reduce CO ₂ emissions without harming the poor. The danger is so serious that the potentially huge increases in global food production possible with increased CO ₂ emissions must be forgone. Likewise, the UN’s admission that the Kyoto Protocol does <i>nothing</i> to stop or reverse CO ₂ emissions is an acceptable pretense; needed to demonstrate that the world is committed to taking any steps to reduce CO ₂ emissions.
	Except in a few localized areas, safe water is available for human use. There are problems associated with the proper water management – and poverty. Both problems are best addressed with proper application of property rights for citizens, free enterprise, minimal bureaucratic red tape and the mitigation of hostilities between peoples and nations.	The UN claims water is the number one problem in the 21 st century and is developing a huge government program to “solve” this problem. Although property rights and business activities will be heavily regulated, stifling the very capital and creativity that is needed to provide solutions to this problem, the loss is acceptable in order to guarantee adequate water.
Toxic Chemicals	There have been a host of false chemical scare stories and demands to limit or eliminate all man-made chemical use. While hazardous chemicals should always be treated with respect and proper precautions, toxic chemicals do not always present a high risk if handled appropriately. <i>All</i> things of nature are made of chemicals. There are far more <i>natural</i> pesticides in plants than in synthetic pesticides used by farmers. About the same percentage of these <i>natural</i> pesticides are carcinogenic as is found in man-made pesticides. The use of pesticides, if eliminated, would likely cause 26,000 additional cancer deaths in the U.S., while saving fewer than 20 lives. Investing health care and residential, occupational or transportation safety is known to save lives at a tiny fraction of the cost of saving the same lives from environmental risks. It becomes a matter of how we spend limited resources.	The reduction, and in some cases the elimination, of the use of all man-made chemicals must occur to remove the threat of deteriorating health of humans and the environment. It is the natural conclusion to the precautionary principle (better safe than sorry). Mankind must learn to use “natural” mechanisms to meet the needs of mankind while ensuring the safety of human health and the environment; even though it is admitted that such an approach would cut food production by half and eliminate many modern conveniences.
Summary	Property rights and genuine free markets provide incentives to find better ways to meet challenges. Property rights also provide critical capital to get the poor out of poverty by giving them ownership and pride. Without property rights, laborers cannot invest in their own wealth-building capital projects and are therefore condemned to perpetual poverty. Freedom 21 offers the best hope to meet the needs of people and the environment.	Land cannot be treated as an ordinary asset, controlled by individuals. Public ownership or effective control of land and industry in the public interest is the single most important means of protecting the environment and achieving a more equitable distribution of the benefits of development. The provision of decent dwellings and healthy conditions for the people and the environment can only be achieved if land is used in the interests of society as a whole. Public control of land use for the common good is therefore indispensable.

I. Population and Poverty

Overview

Population

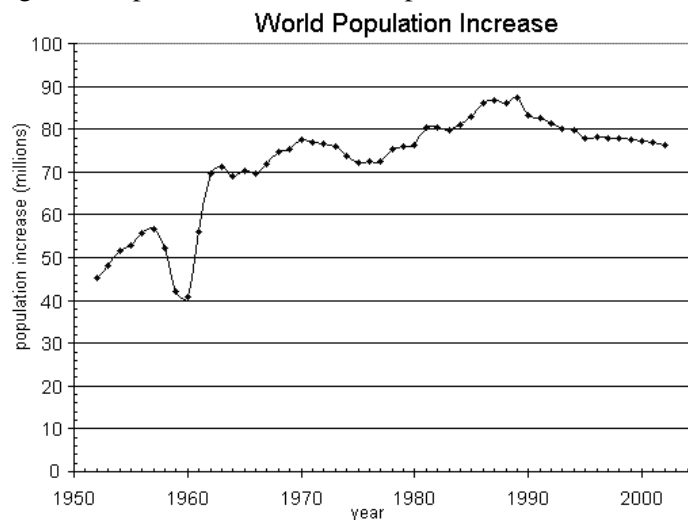
The rapid rise of human population is often cited as a reason for poverty, environmental damage, and resource depletion. Terrifying stories of world population reaching 20, 30, or even 50 billion people were forecast in the latter half of the twentieth century. In alarming language, for instance, President Carter's 1981 *Global 2000* report warned that the "staggering growth of human population, and ever-increasing human demands, the possibilities of further stress and permanent damage to the planet's resource base are very real."³ The fact that the proclamation made by Thomas Malthus that overpopulation will cause destitution never occurred since he made his first pessimistic forecast 200 years ago, has not discouraged modern-day pessimism.

World population reached 6.5 billion in 2005. When compared to a population level of 2.5 billion in 1950, this indeed looks sinister. A little linear math shows that at this rate of growth, world population would be 15 billion by 2050 and nearly 40 billion by 2100. Yet the United Nations projects a global population of

only 8.9 billion in 2050, peaking at around 9 billion in 2075 and then declining.⁴

Why is the expected future population so low? It stems from declining global fertility rates. The fertility rate—which is the number of children per fertile woman—for the world has dropped from 5.01 in 1950, to 2.83 children per woman in 2000. (Table 1, next page) By 2005 it had dropped to 2.65. The UN projects it to drop to 2.02 by 2050, the accepted replacement level in which there is neither growth nor loss.⁵ However, these numbers by themselves are deceiving. In the more developed nations the fertility rate plunged to 1.50 and is only projected to struggle back to 1.92 by 2050, which is still below replacement levels. On the other hand, the fertility rate of the least developed nations will drop from 6.64 to an expected 2.47, which is only slightly above the replacement rate. By 2050 the UN's "2002

Revision projects that 3 out of every 4 countries in the less developed regions will be experiencing below-replacement fertility."⁶



source: U.S. Bureau of the Census, International Data Base (via GeoHive)

Table 1. Fertility rates, the number of children born per woman, for the world and three development classes. Population is in balance with 2.1 children per woman.

Year	World	More Developed	Less Developed	Least Developed
1950	5.01	2.84	6.16	6.64
2000	2.83	1.56	2.92	5.13
2050	2.02	1.85	2.04	2.47

Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2002 Revision and World Urbanization Prospects*, March 3, 2004.

Thus, not only have population growth rates been falling in virtually all middle-income and advanced countries, but, paradoxically, in many poor countries as well—especially those that show economic growth.

The apparent anomaly is easily explained: in very poor countries, with little or no economic growth, there is low population growth because of high mortality, especially infant mortality. In the early stages of economic development population growth rates rise, not because there is more procreation (fertility), but because of less death, especially amongst infants. Population growth (in poor countries) is not a problem, as suggested, but a solution—a solution to the problem of death.

As populations get richer fewer people die, thanks to health care, food and water. Fertility rates start falling for social reasons to the point where population growth rates fall even though people are living longer. Ultimately, in the world’s richest countries, there is zero population growth. The solution for those concerned about “overpopulation” is therefore simple: high rates of economic growth.

In the United States, fertility rates dropped from 3.45 to 2.05 during the period 1950 to 2000, and are projected to continue to drop to 1.85 by 2050.⁷ In Europe, the fertility rate has plunged from 2.66 to 1.37 today. According to some observers, under population growth represents the number one problem in nations like Spain (1.19), Czech Republic (1.18), Italy (1.21), Hong Kong (1.1), Russia (1.25) and many others as they attempt to staff their existing production infrastructure.⁸ One thing stands out in this maze of numbers: wealthier countries have fewer children per family than poor ones. This will become important later.

Although population growth rates are falling, there are still concerns about whether the world’s “carrying capacity” can sustain existing and anticipated “population pressure” in the environment. Claims by certain NGO’s and authors that the world is running out of natural resources due to population and economic growth also turn out to be false and exaggerated. Global

statistician Dr Bjorn Lomborg provides analysis after analysis contradicting the evidence of alleged resource depletion and environmental degradation purported by groups like the Worldwatch Institute.⁹ Lomborg is a self-described former left-wing Greenpeace member who initially set out to disprove economist Julian Simon’s (University of Maryland) assertions that the litany of environmental rhetoric is “based on preconceptions and poor statistics.”¹⁰ As an associate professor of statistics at the University of Aarhus, Denmark, Lomborg spent years investigating Simons claims only to discover that Simon was right and his own popular beliefs were wrong.

In his best-selling book, *The Skeptical Environmentalist*, Lomborg offers this astonishing conclusion: “Our consumption of the essential resources such as food, forests, water, raw materials and energy seem to have such characteristics that it will leave the coming generations not with fewer options, but rather with *ever more* options. Our future society will probably be able to produce much more food per capita, while not threatening the forests.... Our energy consumption is not limited, in either the short run or the long run.”¹¹

Simply stated, the planet is not experiencing an overpopulation problem or resource scarcity. The World Bank defines sustainable development as “development that lasts.”¹² In this respect, global society certainly seems to be sustainable.

The Real World

That population density doesn’t cause poverty or environmental degradation can be demonstrated in various ways. The most obvious is that people create wealth. Given the right policies and institutions, more people create more wealth, especially in advanced societies having extreme degrees of specialization. Anti-population activists are entitled to their own theories, but not their own facts, and the facts are against them. One fact is that there is no statistically significant correlation between population density on one hand, and poverty on the other. There are many ways to illustrate this fact. Europe’s population density (56 people per sq km) is well above the world’s continental average (46), whereas Africa is well below it (28). Asia (170) is the world’s most densely populated continent. It is famous for having the world’s biggest collection of high-growth economies, the “Asian Tigers,” *and* some of its most backward countries.

Individual countries are more instructive. The world’s most “overpopulated” countries are Monaco

(16,549) and Singapore (6,800), yet they are two of the world's wealthiest. Bangladesh (1,055) and India (358) are celebrated examples of impoverished densely populated countries. The success of some mini-states is often attributed to their small size. However, Japan (340) and the Netherlands (482) are rich, densely populated small countries. Conversely, the world's most impoverished countries are often amongst its most sparsely populated—nations like Chad (7.58), Gabon (5.26) and the Central African Republic (6.01) are examples of these.

Standing in sharp contrast to these developing countries are the prosperous, yet sparsely populated Australia (2.61), Iceland (2.93) and Canada (3.57). With population densities of 482, 342, 340, 250 and 236 people per sq. km., the Netherlands, Belgium, Japan, United Kingdom and Germany have population densities similar to India, Rwanda, Haiti, Burundi and Pakistan with 358, 319, 278, 243 and 204 people per sq. km—yet they have five of the highest living standards in the world compared to five of the lowest.¹³

These anecdotal examples reflect statistical reality accurately. The 20 most and least “overpopulated” countries had similar growth rates, despite being at opposite ends of the population spectrum (3% and 3.6% respectively in 2004), but divergent per-capita incomes (US \$18,860 and US \$10,300), which means that more densely populated countries were 80 percent richer and grew 20 percent slower, which is typical of the difference between growth rates in rich and poor countries with similar economic policies.

The argument that poor countries are overpopulated in that they have lower “carrying capacities” is a form of circular logic. It amounts to saying poor countries are poor because they are poor. It's a vacuous tautology. In reality, data reveals that such factors as the number of people, population density, country size or resource endowment are close to irrelevant. What ultimately matters is a country's domestic policies and institutions. People flourish (or languish) anywhere, from the world's most densely populated square mile (Monaco), to an island without resources off the African coast (Mauritius); from one of the biggest countries (USA) to an arctic tundra (Iceland).

The fallacy of overpopulation being linked to poverty is made even more obvious when looking at lower levels such as high- and low-density regions or cities within countries, or suburbs within cities. In almost every country, incomes in densely populated urban areas are higher than in rural areas and big cities have higher living standards (by standard definition) than small ones. This not surprising; it explains why people flock to cities. Some densely populated suburbs, like some countries, are rich and some are poor. Densely populated big cities tend to generate more wealth and jobs, and use less resources, per capita than anywhere else in a country.¹⁴

No matter how one analyzes the numbers, the notion that “overpopulation” causes poverty or resource depletion and environmental degradation is simply without merit.

Poverty

There is the common assumption that overpopulation causes poverty and poverty breeds discontent and insurrection. We repeat the point, since it bears repeating, that the term “overpopulation” is seldom defined coherently. When used as a real reference to people, it tends to be used in two senses: the first implying excessive population *densities*; the second implying *aggregates*; that there are simply too many people on earth for the earth's ability to provide everyone with high living standards, thus locking the third world in the “poverty trap.”

A casual glance at countries ranked by population, population density, population growth rates, surface area and natural resources makes it immediately obvious that such factors are not determinants of each other, prosperity or virtually

anything else of relevance. The top twenty population density countries, to which we have referred, are a motley bunch of disparate countries such as Hong Kong, Bangladesh, Bahrain, Taiwan, Barbados, South Korea, the Netherlands and San Marino. The bottom twenty are equally disparate including Russia, Bolivia, Guyana, Mauritania, Namibia, Australia and Libya.

Half way down the population list one finds Ghana, Spain, Egypt, Cambodia, Qatar, Malaysia and Bulgaria. The first conception of overpopulation is clearly meaningless. What about the second? Quite apart from the fact that population growth rates are declining rapidly and the world's population is set to peak and decline during the lives of today's teenagers,

there are other senses in which the second conception is also of no significance, though not as obviously so.

An enormous shift in demographics is also expected. In 1950, 70 percent of the population in the world lived in rural areas. This has fallen to 51 percent in 2005, and is expected to drop to only 39.7 percent by 2030.¹⁵ It is as low zero in rich mini-states like Monaco and Singapore, and below five percent in large, high-income countries. Since almost all of the population growth expected in the next thirty years will be in urban areas, rural areas will remain free to grow food and there should be plenty of space and wealth to protect the environment. At the same time the percentage of the total land area in rural verses urban areas will shift only slightly.¹⁶

People also create productive rural land by ocean and delta reclamation (up to one third of Holland), drainage of swamps (western France), and forest clearance (much of Europe and New England). It is seldom appreciated that multistory buildings amount to man-made urban land. There are so few people that the entire world's population could be housed in the state of Texas, with enough space for infrastructure and parks, living on regular urban plots. So, objectively, there is enough land to accommodate many times the anticipated population comfortably. But are there enough resources? Again, there is no need for panic.

Bjorn Lomborg also notes that by the end of the 20th Century some 3-4 billion of the world's people had experienced substantial improvements in their standard of living, and about 4-5 billion now have access to basic education and health care.¹⁷ Even the United Nations has acknowledged, "In the past 50 years poverty has fallen more than in the previous 500."¹⁸ Much of that improvement was because of international trade with developed nations—and population growth has not hindered it.

Still, poverty remains extreme around the world. While 15 nations whose combined populations exceed 1.6 billion halved the proportion of their citizens living in extreme poverty in just two decades, many others remain desperately poor. UN Secretary Kofi Annan stated in the UN Millennium Report, which was accepted by consensus by over 150 heads of state at the UN Millennium Summit on September 8, 2000, "Nearly half the world's population still has to make do on less than \$2 per day. Approximately 1.2 billion people—500 million in South Asia and 300 million in Africa—struggle on less than \$1."¹⁹ Secretary General Annan continued, "Of a total world labor force of some 3 billion, 140 million workers are out of work altogether, and a quarter to a third are under-

employed." What Annan said must be done is to give these countries the "resources and support to help them," including "wiping off their books all official debts...."²⁰

Unfortunately, debt forgiveness, like aid, is no answer. Annan's approach, and that of the G8 under pressure from well-meaning, but mistaken people, is more likely to exacerbate poverty than alleviate it. Aid and debt relief directly reward the world's worst governments for being oppressors at home and beggars abroad. Totalitarian, corrupt and centrally controlled governments curtail or do not allow freedom and property rights, causing poverty.

Many developing nations have such corrupt governments, dictatorships or moribund bureaucracies that they will remain poor unless they have significant reform. Some nations have aggressively taken action to reduce graft and corruption and compete on the global market for the sale of their goods. They reduced poverty substantially during the past 50 years. Some of the world's poorest countries became its highest growth countries by adopting sound policies. Although the United Nations gives lip service to the reduction of corruption and liberalizing markets within nations, there is no plan to force nations to do so—nor can there be unless the United Nations were given authority to impinge on national sovereignty. Such heavy-handed authority, however, is something that would create its own set of problems and thus should not be pursued.

Property Rights are Crucial

Contrary to good policy, the entire premise on which the UN operates, and which forms the basis of Agenda 21 and "sustainable development," is the erosion of individual property rights, ostensibly for the collective benefit of all. In his deeply compelling book, *The Mystery of Capital*, Hernando de Soto identifies property rights (broadly defined as everything people own, the single most important asset being land) as the key to reducing poverty. Capitalism has not worked in the former Soviet Union, the East Block nations and the developing nations, he notes, because they have tried everything *but* property rights:

The poor inhabitants of these nations—the overwhelming majority—do have things, but they lack the process to represent their property and create capital. They have houses but not titles; crops but not deeds; businesses but not statutes of incorporation. It is the unavailability of these essential representations that explains why people

who have adapted every other Western invention, from the paper clip to the nuclear reactor, have not been able to produce sufficient capital to make their domestic capitalism work.²¹

In other words, the developing and former communist nations are not really employing true capitalism. The foundation for true capitalism and free enterprise is private property rights. With formalized strong property rights, legal title to use property represents equity. In turn, this equity can become collateral to create the capital needed to start, expand or buy into a business, which then yields income and wealth. The amount of equity can be stunning,

even in the United States. The average net worth of home-owning Americans is \$132,100 versus \$4,200 for American renters—30 times less! True, other factors also play into these numbers, but property remains the key factor in creating wealth.²²

For instance, research done at the Fraser Institute of Canada and others around the world provides an “Economic Freedom Index” that uses thirty-eight variables to determine the relative economic freedom of any nation in the world. Several of them concern the legal security of private property rights. This data shows that property rights play at least one very significant role in per capita Gross Domestic Product (GDP) in countries around the world (Figure 1). Impoverished Third World nations having limited property rights have less than \$8,000 per capita income, while those having little to no property rights fall below \$1,000. Conversely, Western nations having legal property rights have incomes of greater than \$12,000, usually greater than \$20,000.²³ There is a 74 percent correlation between the Fraser Institute’s property rights index and per capita gross domestic product of 126 nations.

Other factors obviously contribute to the per capita gross domestic product besides property rights. For instance, the property rights index for the United States is 7.9 while that of South Africa is 7.1.

Although there is not much difference in the index of legal property rights between the two nations, the difference in the per capita GDP is huge, \$42,000 and \$12,100 respectively. Some analysts surmise that this disparity may well stem from apartheid, a former

system that has partly skewed the data from South Africa because it kept the black population from enjoying the same property rights as whites until the early 1990s. If true, the South Africa example would appear to validate the argument that artificial limitations to the rights of every citizen have serious ramifications on the economic prosperity of an entire nation. It would obviously also take decades to erase such disparity. One thing is clear; nations moving in the direction

of greater economic freedom, including property rights, generally prosper, while those moving in the opposite direction stagnate. They lose out on the rich rewards freedom and property rights offer.

When legally protected property rights do not exist, as is the case in all the Third World and formerly communist nations, property has equity but no collateral value. Hernando de Soto calls this dead capital. This dead capital could be available for investing in manufacturing products as well as reducing dependence on multinational corporations.

De Soto has shown that the total value of this kind of extralegal property within developing nations and former communist countries is at least \$9.3 trillion! This is ninety-three times as much as all development assistance to the developing nations from all advanced countries during the past thirty years.²⁴

There would be *no need for development assistance* if these poverty-stricken people could have access to the asset value of their property that is presently dead capital. Yet, the United Nations and the international community are presently putting together a series of international treaties in the name of “sustainable development” that systematically prevents citizens in the third world nations from ever attaining the formal property rights that will give them wealth and liberty.

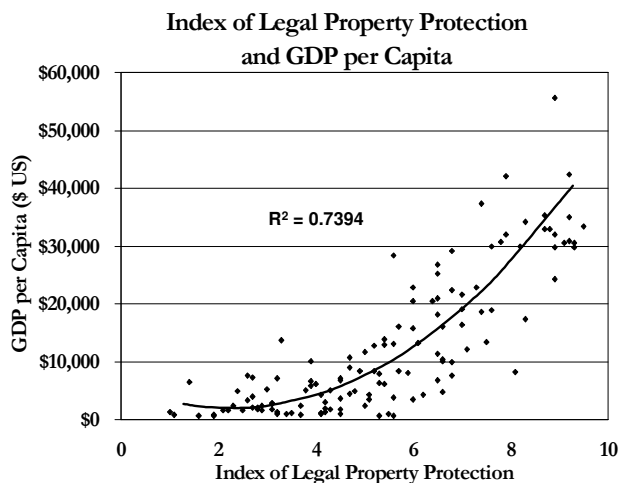


Figure 1. There is a high correlation between the relative index of legal property rights and per capita Gross Domestic Product between nations. Source: Adapted from James Gwartney and Robert Lawson. *Economic Freedom of the World – 2005 Annual Report*. Fraser Institute, 2005. <http://www.fraserinstitute.ca/shared/readmore.asp?sNav=pb&id=789>. Per Capita Data from the CIA World Fact Book. <http://www.cia.gov/cia/publications/factbook/rankorder/2004rank.html>

Unnecessary regulation kills the asset value of property as effectively as a lack of title, deed or contract. The UN vision of sustainable development centers on state control of private property rights, effectively killing the very mechanism that will actually get the impoverished people of the world out of poverty! As the balance of Freedom 21's alternative to Agenda 21 demonstrates, property rights and free enterprise not only will help nations to get out of poverty, but are the key to protecting the environment as well. There is just no demonstrable reason for the government-centered, bureaucratized structure demanded by the UN and Agenda 21. The world simply must not proceed down that very damaging road.

Corruption and Financial Imperialism

In *Globalization and Its Discontents*, economics Nobel Laureate and former Senior Vice President of the World Bank, Joseph Stiglitz, blames the IMF's (International Monetary Fund) policies for creating the Asian economic meltdown in 1997 as well as other global economic crises. While at the World Bank, he concluded that "many of the policies the IMF pushed, in particular, premature capital market liberalization, contributed to global instability."²⁵ Because of the unfavorable conditions imposed on a nation receiving IMF funds, the funds not only failed to stabilize the situation, but in many cases made matters worse, especially for the poor.²⁶ As part of its policy, the IMF requires impoverished countries to open their markets to First World investment and products without instituting banking and property rights laws to allow local businesses and citizens to participate in economic growth and protect from exploitation. At the same time IMF policy does not pressure developed countries to open their own markets to the products of the borrowing Third World countries.²⁷

It is not all the IMF's fault, however. Poor countries typically have higher trade barriers than rich countries. International comparisons show that freer trade, especially for developing countries, coincides with higher economic growth.²⁸ All these factors work together to perpetuate and even worsen poverty.

Poor countries do not have to borrow from rich ones through agencies like the IMF. The third world countries are responsible for third world debt and poverty. The problem with the IMF is that it finances their bad habits, like lending money to alcohol and drug addicts to finance their addiction while instituting policies that can exploit them. Worse, such international agencies encourage third world aid

addicts to follow policies that are likely to aggravate withdrawal systems if they try to cure themselves.

Stiglitz understands that a genuine free market system "requires clearly established property rights and the courts to enforce them."²⁹ However, the IMF merely creates the perception of property rights, without requiring the legal structure that protects them in an equitable manner. According to Stiglitz, the IMF expects the legal structure needed to protect private property rights to appear magically.³⁰ Of course, that never happens.

If the IMF, and proponents of third world aid and debt relief are serious about making poverty history they should encourage poor countries to do what rich countries did when they were poor in order to become rich, and what newly industrialized countries did and are doing to escape the poverty trap. Global comparisons show that poor countries with high growth are those that, first and foremost, improved the integrity of their legal systems (property rights, the rule of law, independent courts, due process etc.), and, secondly, liberalized and privatized their economies. There is no evidence that doing so slowly is better than quickly, but it is important to implement all core ingredients of economic liberalism simultaneously.

It should never be forgotten that the world's rich countries did not have other rich countries giving them "aid" and bad advice. Mindful of the facile response to this point that Europe, especially Germany, recovered under the Marshall Plan, it should be noted that (a) if it were true it would be the exception proving the general rule, (b) Germany's "economic miracle" (*wirtschaftswunder*) occurred after the Marshall Plan under the radical "social market" liberalization policy of Ludwig Erhard, and (c) Germany got less than Britain and France, both of which performed poorly under post-war *dirigisme*.³¹

There are two further crucial points about the Asian crisis. Firstly, it affected some countries but not others, and, secondly, most of the world's countries, which are poor, should look upon the crisis with envy, for it was a small price to pay for the staggering growth and prosperity in the countries concerned prior to and after the crisis. Prosperity with a crisis is better than poverty without one.

In accordance with the Stiglitz analysis, many in the developing world correctly view IMF policies as a new form of hidden colonialism under the guise of free market capitalism. No wonder property rights, capitalism and free market policies in general, and the United States in particular, have such a bad name in the developing world. However, these tragedies are

not the result of property rights, genuine free markets, or even the United States, but the global international community perpetuating an economic advantage over poor countries—ironically in the name of helping them.

In such a system, it should surprise no one that under the IMF's policies the very wealthy do "far better for themselves behind closed doors, bargaining special favors and privileges."³² Benefits to the developing nation primarily "accrue to the well-off, and especially the very well-off—the top 10 percent—while poverty" remains high or increases.³³ This is exactly what happened in Russia following the collapse of the Soviet Union and the rise of the Russian Oligarchs.

Under the current system, transnational corporations make investments, hire local workers with cheaper labor costs, and then skim the profits off and take them out of the country. While it is true that the citizens of these poor nations are often glad to have the work and are far better off than without it, Hernando de Soto found in a massive global study that together these impoverished citizens have \$9.3 trillion dollars in dead capital!³⁴ Dead capital is property that has potential value for equity purposes, but is worthless for collateral purposes or second mortgages because there is no legal structure to secure it for lending institutions.

If people in such impoverished nations had access to this dead capital, not only would local citizens directly benefit by investing in their own resource development, but also much of the profits would stay in their own nation for reinvestment! As the nation's wealth increases, wages increase, thereby creating more demand for international (including US) products and goods. US businesses would benefit. More important, the hemorrhage of American jobs offshore would gradually diminish as the advantage of cheap labor evaporates. In the long term, everyone benefits. Yet, IMF policies often frustrate such measures.

While establishing formalized property rights in the developing world will not happen overnight, the fact that the IMF and its supporters do not even make it a condition of getting loans is very revealing. Without the wealth-creation ability of formalized private property, coupled with the effects of IMF policies and UN style sustainable development, there is little hope that these nations will ever get out of poverty. It must be further noted that the welfare concepts advanced by the UN also do not work. At best they will merely put a band-aid on the corruption and property rights failures of many nations.

In the United States, for instance, it is commonly assumed that welfare programs have taken millions of people off the poverty rolls. Again, this is incorrect. In 1966, the first full year following the passage of President Johnson's Great Society legislation, the percentage of all Americans below the poverty level was 15 percent. While it dropped to 11.1 in 1973—alleged proof that government welfare worked—it increased back to 15 percent in 1982-83 and again in 1992-93.³⁵ In 2000 it was again 11.3 percent.³⁶ Since Johnson instituted his Great Society, the percentage of Americans below the poverty level has varied from 11.1 percent to 15 percent several times. What brought the poverty level down in each case were not government welfare programs, but an improving economy.

The Primacy of the Rule of Law

Distressingly, the campaign to "make poverty history" is informed by policies that have been tried and failed. Debt relief and aid will perpetuate the history of poverty by rewarding bankrupt dictators who cause the world's worst poverty, and demand that they adopt environmental policies of the kind that would have kept rich countries poor had they been applied there. How to alleviate poverty is no mystery. It has been done in many countries, and there are increasing numbers of poor countries with high economic growth rates. What the characteristics of winners and losers respectively are is a simple statistical question. Various studies have found that freer markets out-perform less free markets.

Research during recent years the Free Market Foundation established the determinants of prosperity and poverty alleviation to the point where there is no longer room for debate.³⁷ The foundation uses five major subject areas to develop its economic freedom index: (1) size of government; (2) legal structure and security of property rights; (3) access to sound money; (4) freedom to trade internationally; and (5) regulation of credit, labor and business.³⁸ The foundation's research reveals that the smaller the government and the greater the legal protection for private property and free market enterprise, the greater the economic freedom and wealth of any nation.

As explained by Hernando de Soto, one of the cornerstones of prosperity is property rights, which exist where there is freedom to own and exchange all forms of property. Other crucial policies needed for robust economies: low levels of government ownership, fiscal and monetary integrity, freedom from exchange control, and flexible labor markets

(actually forms of property rights), to which we return below.

The single most important policy variable is the integrity of the legal system. Countries with the least poverty, corruption, and unemployment are those where property rights, genuine free markets and rule of law coincide. The rule of law has become a popular development cliché. Everyone says it's necessary, but few know what it means in practice—including national leaders. The term is used as if it is merely a synonym for whatever the user espouses. Saddam Hussein and Robert Mugabe claim to have operated in accordance with the rule of law. Few critics could say how, precisely, they violated it.

The “rule of law” is the absence of the “rule of man.” It defines rights and obligations by objective laws of general application, made, implemented and adjudicated in accordance with the separation of powers. Where rights and obligations are not known with certainty in advance, where they are determined by arbitrary discretion or retroactively, there is no rule of law and poor economic performance with high levels of corruption are inevitable.

Natural Resources—Key to Wealth if utilized efficiently

Lomborg notes that “rural regions by far dominate the problem of global poverty. Towns and cities on the other hand, are power centers which provide greater economic growth. Urban areas in developing countries produce 60 percent of GDP (Gross Domestic Product) with just one third of the population.”³⁹ The ratio is even more dramatic in the United States. Out of a GDP of \$9.22 trillion in 2000, only 2.8 percent was in agriculture, forestry, fishing and mining.⁴⁰

Nevertheless, it is important to note that while the rural economy is seemingly unimportant to overall economic health, this perception is misleading and can have dire consequences to any nation that ignores its rural citizens. The raw material for *every* product used by urban citizens throughout the world originally comes from agriculture, forestry or mining in rural areas. Natural resource development and rural communities are like the hidden foundation of a skyscraper. Without its unseen foundation the strongest skyscraper will collapse. Likewise, without the contribution of rural GDP, the strength of the national GDP is weakened. Rural economic health is critically important to the health of the overall national and global economy. Yet, rural citizens typically have the lowest incomes and often suffer the greatest abuse or

neglect by their central governments, which is known as the “urban bias.”

In most cases, urbanites do not even know their home computers originated in the ground, or that some of the clothes they wear come from trees. Even if they did, the vast majority do not fully appreciate what it takes for rural citizens to produce the raw materials used in products which are taken for granted every day. Therefore, many citizens can be misled into believing they are protecting the environment by voting to impose huge marketing, pricing, disproportionately heavy taxes and other regulatory structures on those living in rural areas, and especially on mining. In fact, they are unnecessarily denying their rural cousins the means to sustain their livelihoods. This forms the heart of a type of eco-imperialism applied to rural America that is similar to that experienced by poverty-stricken Third world nations. The *Wall Street Journal* labeled this “rural cleansing”⁴¹ because rural citizens are being put out of work by big government interference and urban ignorance.



Figure 2. Less than 5 percent of the US is classified as urban (depicted in dark gray) by the US Bureau of Census.⁴² Yet, 77 percent of all US citizens live in urban areas and politically control their rural cousins by unknowingly heaping stifling and unneeded regulations on how they make a living. In the end, everyone loses. (The US Bureau of Census defines an urban area as being over 1,000 people per square mile).

One of the most pernicious impacts on rural communities is labor regulation, whereby the cost and risk of employing urban workers are kept well above market-clearing levels, which means populations, especially in the third world, are driven disproportionately into rural areas, where they compete for scarce jobs and other resources. Despite such costly policies that discourage urbanization, and diversion of wealth-generating resources to wealth-consuming “rural development,” there is continual migration to cities, where people in shanty towns improve their

quality of life by escaping the worst impacts of over-regulation in the underground economy.

Resolute resistance to natural and ultimately desirable urbanization means that rural development resources are not invested where they should be, in urban areas to create favorable infrastructure and institutional environments. In the end everybody loses.

The most devastating modern intervention against rural peasants and commercial farmers is regulation informed by Agenda 21 and related documents. Rural citizens in developing nations, where such measures are often very damaging, accept eco-imperialism as a way of life because they have never experienced anything different from strident government interference or neglect. Rural Americans, on the other hand, are experiencing eco-imperialism for the first time. They are angry and are fighting back. Most urbanites don't know or understand why.

The 2000 US presidential election was one of the most, if not the most, contentious and divisive in American history. The election revealed the stark ugliness of the cultural war between urban and rural America in ways that can no longer be ignored. Although candidate Al Gore got a slight majority of the total US vote, George W. Bush won an overwhelming 2,436 mostly rural counties, compared to 676 for Gore. In pure land area, Bush won in 2.4 million square miles of land area, while Gore won in only 0.6 million.⁴³

This was because of the respective rural and urban biases that distinguished their policies.

The US Constitution gives regional and local governments (states and municipalities) power over the federal government. According to Article 1, Section 3, "The Senate shall be composed of two Senators from each State, chosen by the Legislature thereof, for six years; and each Senator shall have one vote." Since the individual state legislatures elected their US Senators, the interests of each state were represented in the US Congress. This made it less likely that Congress would pass laws that would serve the interests of individual populous states.

This concept of states rights was enshrined in the Tenth Amendment of the US Constitution, "The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people." The founders designed the Tenth Amendment, among other things, to prevent an urban majority from being manipulated into unknowingly passing laws that discriminate against rural states. This was lost with the passage of the Sixteenth and Seventeenth Amendments that gave unlimited power of the federal government to tax and spend, and denied state legislatures the right to select Senators to represent the state and defend state's rights. Consequently, the ability of states and local governments to protect themselves from the whims of the more populous states and urban areas has greatly diminished.

The Answer to Reducing Population and Eradicating Poverty

How then do nations and rural areas get out of poverty? Dozens of studies and our analysis above show that increasing population does not cause poverty. If anything, there is a slight *positive* correlation. There is, however, strong evidence that the higher the personal income of a family the fewer the children they will have. This is strikingly apparent in the plunging fertility rates of developed nations. The reason centers on human nature. In a wealthy economy children are no longer an asset to their parents in old age, but a liability. Economist Dr. Jacqueline Kasun notes that in developed countries, "Children do not work; they require long, expensive education, bearing and raising them means large losses of earnings by their mothers; and social security retirement income depends on the parent's earnings, not on their children."⁴⁴ Hence, while children can still be a

blessing and deeply loved, there is no longer any *economic* incentive to have a large family.

Wealth creation is the answer to the population and poverty question—as well as to almost every issue discussed in the remainder of this document. Rarely is more government control the answer. The proliferation of socialist programs in Argentina brought that once proud, stable nation to near bankruptcy in the early 2000s. Burgeoning government merely slows or strangles economic growth. Dr. Kasun states, "it is not population growth, nor the behavior of private business that pose the big threat to environmental quality. It is the government, with its bottomless tax funds and its incentives to enlarge its activities no matter what the benefit-cost relationships."⁴⁵ Simply stated, the surest way to reduce population growth and protect the

environment of a country is to increase the prosperity of its citizens.

What is necessary to improve the economic condition of a society is large-scale investment in people and physical capital. Machinery is critical because it increases per capita productivity, while education is key to knowing how to run the machinery and conduct business. In addition to this, it is necessary to have a corruption-free, open economy in order to facilitate international trade, investment and economic freedom. Stability, both economic and political, is required for the security of property rights.⁴⁶ To this must be added the freedom to be creative and to freely conduct business and trade. “Economic freedom—the right to property and choice—is observed to have a strong positive correlation with growth.”⁴⁷

We mentioned above that Hernando de Soto identifies the true pillars of capitalism as being essential for any nation seeking to improve the health, welfare, prosperity and environmental quality of its citizens. They build primarily on property rights, fully transferable and secured by legal system that is free of corruption and over-regulation—enabling hard-working citizens to preserve, build upon and bequeath the fruits of their labors; utilize their wealth and property and intellectual creativity as collateral for loans; and give them other incentives to build, create and innovate. In reviewing de Soto’s work, the World Bank notes that:

While the concept seems simple, very few property owners actually hold official government-licensed titles outside the United States, Canada, Australia, Western Europe, and Japan. De Soto estimates that nearly five billion people are legally and economically disenfranchised by their own governments. Since these people do not have access to a comprehensive legal property system, they cannot leverage their assets to produce additional wealth. They are left with what De Soto calls “dead capital”.⁴⁸

De Soto asserts that much of the wealth needed in the third world already exists in the form of \$9.3 trillion worth of dead capital. This is nearly as much as the total value of all the companies listed on the main stock exchanges of the world’s twenty most developed countries. It is more than twenty times the total direct foreign investment into all Third World and former communist nations in the ten years after

1989, and forty-six times as much as all the World Bank loans of the past three decades. Finally, it is ninety-three times as much as all development assistance to the developing nations from all advanced countries during the past thirty years.⁴⁹ There would be *no need for development assistance* and UN socialist income redistribution schemes if these poverty-stricken people could have access to the asset value of their dead capital.

Therefore capital, education, economic/political stability, property rights, economic freedom and the rule of law are all keys to economic growth, population stabilization and environmental protection. Genuine free markets, not government dominated markets, are the *only* approach that lifts impoverished nations from their poverty in the real world, and gives them the incentive to have smaller families. There has been enough food to feed the world for the past fifty or more years. The problem has not been the failure of the market to produce enough for all, but of governments preventing markets from distributing food to those who need it, and curtailing the natural aptitude of the poor to enrich themselves through production creation and trade.

Starvation and poverty are not caused by the unbalanced exploitation of resources by the developed nations as frequently charged, but by corrupt governments, lack of infrastructure, government interference, socialist redistribution of all forms of property, insurrection and war. All of these discourage capital investment, innovation, creativity, pride of ownership and *an incentive to properly take care of private property* so the owner can continue to generate income year after year—perhaps for generations to come. This is true sustainable development that leads to sustainable communities.

“No famine has ever taken place in the history of the world in a functioning democracy” wrote Nobel Laureate Amartya Sen in his most memorable quotation.⁵⁰ His native country, India, has been suggested as the exception which proves the general rule.⁵¹ But even there, where there was real hunger during extreme drought conditions, actual starvation was averted. It is not voting *per se* that prevents famine, nor is it adverse weather alone that causes it. Sen’s thesis is that, with sound policies implemented by democratic governments dependent on the popular vote in countries with a free press, famines are avoided regardless of weather conditions. Ultimately, given enough wealth produced in efficient economies, food and other needs can be imported.

Principles

Population growth does not necessarily deplete resources, and there are currently no shortages of food, raw materials or energy. Nor is there anything to prevent increased production. People are human capital.

Overpopulation in the world is not a problem. The United Nations itself shows that population will peak at about 9 billion people around the year 2050. More people means more minds to produce innovations; not simply more mouths to feed.

High population densities do not cause poverty. There is no correlation between population density and poverty. There are, however, high correlations between denser populations and prosperous human specializations.

A vibrant genuine free market economy, not more numerous government programs, reduces poverty. Hernando de Soto identifies the true pillars of wealth, which center on property rights that are fully transferable and secured by a legal system that is free of corruption and over-regulation. The World Bank estimates nearly five billion people are legally and economically disenfranchised by their own governments.

Government corruption and/or government over-regulation create poverty. There is a high correlation between poverty and nations having corrupt governments or governments that over-regulate the marketplace and citizen initiative. Where economic improvement has occurred, it was *always* preceded by a lessening of corruption in their respective governments and increased political and economic freedom and stability within their borders.

Population growth is either not related to, or has a slight positive correlation with, economic growth.

Greater population growth rates often translate into economic growth.

Per capita income is positively correlated with environmental protection. The better the economy, the greater the ability of a society to afford environmental protection and sustainability.

Money alone does not reduce poverty. While there is still extreme poverty in the world, enormous progress has been made in its reduction. Although trillions of dollars have been spent in the United States on poverty reduction, dollars have *not* measurably lowered the poverty level. Large government programs have in fact harmed millions of Americans by making their survival dependent upon the largess of federal government.

The greatest poverty will be in rural areas. While rural prosperity seems to play only an insignificant role in the overall GDP of a nation, without rural prosperity urban prosperity cannot be maintained in perpetuity. It is not sustainable. Nor is the poverty in the developing nations caused by the wealthy developed nations.

Planned societies and centralized government discourages initiative, genuine free markets and creativity. Government planning stifles economic growth. Overly bureaucratized societies dampen creativity and cause factions and instability. Centralized government does not help people, it discourages them.

Economic growth is not destroying the earth as proclaimed in the headlines, rather the contrary.⁵² We will look more specifically at environmental concerns below.

Policy Recommendations

1. **Nations should maintain open markets with proper legal structures to protect nations and their people from unscrupulous opportunists at both the national and international level.**

Nations do not produce. Individuals produce, and the proper legal checks and balances must be in place to protect people from corrupt governments, international institutions and unscrupulous competitors.

2. **The international community should discontinue support of coercive population control programs.** Provide for wealth creation so there is increasing wealth, and citizens will voluntarily reduce family size.

3. **Environmental law should be promulgated and enforced at the state and local level.**

National and international administration and enforcement of environmental law reduces effectiveness and too easily becomes corrupt and abusive—especially to rural citizens. This recommendation would allow local governments to have the power to find the best solutions for environmental protection while providing greater accountability to its citizens. At the same time, nation states could provide the incentives for economic prosperity to their rural citizens.

4. **Require transparency, accountability and liability for all representatives, governmental or non-governmental.** Maintain the consent of the governed by avoiding any type of governance that is not accountable to the people governed.

II. Land Issues and Property

Overview

Historical Approach

One of the key factors incorporated in the adoption of sustainable development principles in Agenda 21 is the control of land use practices. In addition, Agenda 21 incorrectly asserts that people cause environmental destruction, loss of critical habitat and the threat of possible widespread ecosystem collapse. The Convention on Biological Diversity is an attempt to address these two assertions. For instance, Article 8 of the Convention on Biological Diversity (Biodiversity Treaty) calls for the establishment of “a system of protected areas or areas where special measures need to be taken to conserve biological diversity.”⁵³ It also calls for the promotion of “environmentally sound and sustainable development in areas adjacent to protected areas with a view to furthering protection of these areas.” This rather simplistic language obscures the real cost of protection demanded by the treaty.

By contrast, Freedom 21 holds that land use practices are best addressed through incentives for private property owners, not government reserves. Similarly, overpopulation is a meaningless term that lies entirely in the eye of those beholding others. Chapter 1 of Freedom 21 shows that human population levels are not the problem claimed by some.

A companion to Agenda 21 and the Biodiversity Treaty is the United Nations-funded *Global Biodiversity Assessment* (GBA). The United Nations contracted the World Resources Institute to write the GBA to provide the justification and implementation strategies for the

Biodiversity Treaty. To protect biodiversity, claims the GBA:

Representative areas of all major ecosystems in a region need to be reserved, that [reserved] blocks should be as large as possible, that buffer zones should be established around core areas and that corridors should connect these areas. This basic design is central to the Wildlands Project in the United States (Noss, 1992), a controversial ... strategy ... to expand natural habitats and corridors to cover as much as 30% of the U.S. land area.⁵⁴

The reference to Noss, in turn, states that the Wildlands Project requires that:

One half of the land area of the 48 conterminous [United] States be encompassed in core [wilderness] reserves and inner corridor zones (essentially extensions of core reserves) within the next few decades... Half of a region in wilderness is a reasonable guess of what it will take to restore ... natural disturbance regimes, assuming that most of the other 50 percent is managed intelligently as buffer zone.... Eventually, a wilderness network would dominate a region and thus would itself constitute the matrix, with human habitations being the islands.⁵⁵

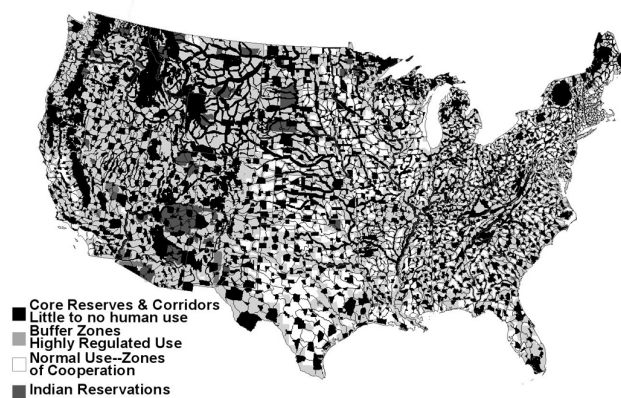


Figure 3. A depiction of what the Wildlands Project might have required if the Convention on Biological Diversity was fully implemented according to recommendations by the UN funded Global Biodiversity Assessment. The black areas are wilderness reserves and corridors and the gray areas buffer zones. An earlier version of this map was used to stop the ratification of the Convention on Biological Diversity in the U.S. Senate. (Used by permission from Environmental Perspectives Incorporated, Bangor Maine)

Protection of biodiversity and the environment within the framework of the Biodiversity Treaty and the precepts of The Wildlands Project would require setting aside between 40 and 50 percent of a landscape into core wilderness reserves and interconnecting corridors, all surrounded by buffer zones that are heavily regulated to further protect the wilderness reserves. To be “sustainable” by using this approach would require cramming people into islands of human habitation surrounded by seas of wilderness. Also, concurrent with this vision of sustainable development, there must be no urban sprawl, and the ideal solution would be for all people to work, shop and recreate within walking distance of their residence. The plan would require abandoning natural resource management and use in the “reserves.” The national wealth and human rights would be reduced accordingly.

Such an approach drastically reduces the land area within which humanity could live, prosper and utilize sustainable natural resources to grow food, create wood products, or even benefit from water resources. Consequently, the United Nations-funded GBA states that, “Population growth has exceeded the capacity of the biosphere.” The GBA goes on to say that it is “estimated that an ‘agricultural world’ in which most human beings are peasants should be able to support 5 to 7 billion people.... In contrast, a reasonable estimate for an industrialised world society at the present North American material standard of living would be *1 billion*.”⁵⁶ Since the human population of the earth is now estimated to be around 6.5 billion people, this approach would require that citizens of developed nations reduce their standard of living to the level of subsistence farmers, or reduce the human population by nearly 85 percent—or something in between. Neither this rationale nor these conclusions are reasonable or acceptable.

As discussed in Chapter 1, there is no “overpopulation crisis.” Likewise, the Biodiversity Treaty requirement of setting aside nearly one half of a nation in wilderness is not a wise or popular policy option. A better alternative would be to create policies that promote private ownership of land by people who live on, or benefit from, its sustained use. Worse, the Biodiversity Treaty would actually spawn ecological damage by implementing “hands-off,” non-management regimes resulting in fires, deteriorating health, wasted resources, foregone national growth, and unrealized benefits to property owners.

Denial of Property Rights

The approach encompassed by the Convention on Biological Diversity requires either denying people a

fulfilling and healthy life or forcing a radical reduction in human population, or both. Since there is little public support for this approach in the United States or local communities worldwide, those advocating it are advancing the notion that government must have the authority to allocate property rights. Such authority would allow government to forcibly require individuals to comply with the governing authorities’ own version of the “public good,” as opposed to the “will of the people.” This is objectionable to a citizenry well acquainted with freedom and protected rights.

Agenda 21, the Biodiversity Treaty, and the GBA bestow equal rights to the environment and human beings. Since humans no longer have rights superior to those of nature, a strong central government is needed to confer rights equally. This concept is central to the goals set forth during the United Nations Conference on Human Settlements (Habitat I), held in Vancouver on May 31 to June 11, 1976. The United Nations model of land policy and property rights was officially articulated in Agenda Item 10 of the Conference Report, in which the Preamble states:

Land cannot be treated as an ordinary asset, controlled by individuals and subject to the pressures and inefficiencies of the market. Private land ownership is also a principal instrument of accumulation and concentration of wealth and therefore contributes to social injustice; if unchecked, it may become a major obstacle in the planning and implementation of development schemes. The provision of decent dwellings and healthy conditions for the people can only be achieved if land is used in the interests of society as a whole. Public control of land use is therefore indispensable....⁵⁷

The United Nations report goes on to say that, “Public ownership or effective control of land in the public interest is the single most important means of ...achieving a more equitable distribution of the benefits of development.... Governments must maintain full jurisdiction and exercise complete sovereignty over such land.... Change in the use of land ...should be subject to public control and regulation...of the common good.”⁵⁸ This vision of property rights is diametrically opposed to that which Hernando de Soto (see Chapter 1) found to be required to attain national prosperity. It is also counter to the American experience. Government must nurture property rights and the self-interest of citizens. In the process of protecting these things, government should craft incentives designed to encourage property owners to sustain natural systems. Such resource management is

in the individual *and* national interest.

Policies designed to strike a proper balance can often be financed by licensing and permitting on current multiple use public lands, and by licensing and taxes based on the principle that the user pays the owner. One need only look to the past 100-year history throughout the United States on both public and private land of hunting, fishing, trapping, grazing, logging, and other such resource use and management to see the wisdom and successful history of such an approach.

Damaging the Environment to Protect It?

Many in the United States believe that public land is highly desirable because it ostensibly provides public benefits. What most do not realize is that the federal government already owns or oversees 33 percent of the American landscape. State and local governments own nearly 10 percent, for a total government ownership of over 40 percent. Increasingly, such public lands are being shut down and management programs dismantled in favor of misguided *nature knows best* policies. It is also becoming obvious to many that government has effectively become the worst manager of land in the United States as well as other parts of the world. Because of the recent quasi-religious belief that “nature knows best” and that human natural resource uses such as logging are intrinsically “bad,” millions of acres of federal forest lands in the West have accumulated

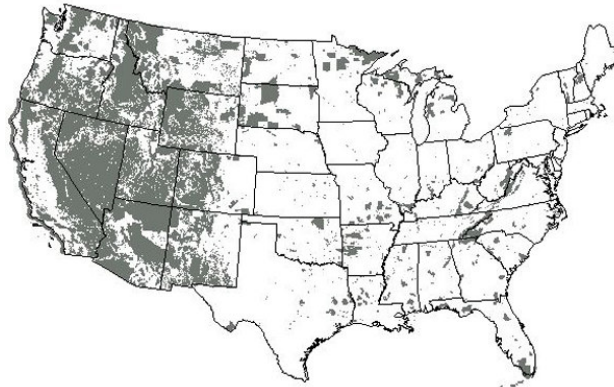


Figure 4. The federal government already owns or controls 33 percent of the United States, most of it in the Western states. States and counties own another 9 percent. America does not need more public land.

enormous fuel loads. In 1988, the spectacular Yellowstone National Park fires burned 36 percent of the park at such high temperatures that they seriously and adversely affected the replacement succession of plants.⁵⁹

Fourteen firefighters died on Storm King Mountain, Colorado in 1994. In 2000 Americans witnessed the incineration of 6.6 million acres of forestlands on television in blazing color. While the forest burned, U.S. Forest Service biologists argued and dithered over whether they could permit fire lines and fire retardant slurry drops to contain the fire. Four firefighters died in Washington the following year as biologists once again prevented desperately needed slurry drops. What delayed them? These biologists argued for hours whether the fire retardant slurry might harm the endangered bull trout. Meanwhile, the fires vaporized

those streams and boiled the trout. By 2002, over 6 million acres burned taking 14 lives. The 2003 California fires alone claimed over 20 lives. A record 9.5 million acres were burned by wildfires in 2006.⁶⁰

In spite of the billions of dollars spent to advance these preservationist schemes to protect the “ecosystems” of the earth, they are not working. In his book, *Playing God in Yellowstone*, environmentalist Alston Chase found that instead of creating healthy ecosystems, the preservationist approach utilized in the Wildlands Project and Convention on Biological Diversity was, in fact, destroying them. “I fully expected,” reflects Chase, “to find that [ecosystem management] did indeed preserve natural values. Instead I discovered that Yellowstone was losing critical vegetation and wildlife, and that the cause of this decline was precisely the ‘environmental’ philosophy itself....”⁶¹ Chase then states what caused the failure of ecosystem management, “By 1987...the ‘hands-off’ form of preservation was unofficial U.S. policy, wreaking havoc on a host of plants and animals”⁶² that require grassy, brushy and young forest habitats that follow man-caused disturbances.

This *nature knows best* philosophy almost caused the extinction of species such as the California condor ranging from Santa Barbara, California to the Sierra Nevada Mountains. Every possible effort was made to save the species. Since it was reputedly a very shy animal

(since disproved), wilderness areas were created to keep human activity away from the birds. Without disturbance such as grazing and ranching, however, the grass and low brush grew into tall brush and scrub oak, eliminating the very habitat that was critical to the condors. By 1965 the wild population of condors had dropped to 80 - 120 birds. By the spring of 1986 only six remained, with just one breeding pair.

By “seeking to ‘preserve habitat,’ conservationists created ‘wilderness’ or ‘wildlands’ conditions that diminished and even eliminated the early plant successional stages—open meadow and savannas—on which the bird was dependent.”⁶³ The only thing that saved the condor from certain extinction was a captive breeding program launched in the 1980s with the last wild bird taken captive in 1987. The breeding program

has been very successful and by 2004 there were 214 birds, with 90 released back into the wild—20 of which are in Arizona and 5 in Baja California. By 2004 another 24 awaited release.⁶⁴ Today, the National Park

Service touts how curious and fond of people the condors are in Grand Canyon National Park tourist sites.

A Better Way

There is a better way to attain sustainability of both natural resources and human dignity than the *nature knows best* concept of ecosystem management. Ecosystem management increasingly oppresses communities by strengthening a remote central government. Contrary to the popular belief that property rights cause ecological harm, all evidence suggests that property rights can enhance sustained development. The reason is obvious. If land is too expensive to replace, and landowners depend on such land year after year to generate a living, they will naturally take care of that land to ensure that it will continuously produce a living. Even if a landowner plans to sell his land, he will desire to maximize the selling price by making sure that the land is in the best possible condition and producing at a maximum rate.

A free press and an educated citizenry can help remedy ignorance. An educated and free people who guard and defend their rights avoid corrupt government. Private property rights protected by ownership and sustainable use minimize cheap (and therefore misused) land. The role of government is to protect and encourage these rights that benefit the common good. People in the world are becoming increasingly educated. UNESCO estimates that illiteracy in the developing world has fallen from about 75 percent in the early part of the 1900s to below 20 percent among the youth of today.⁶⁵ Farmers and land managers in developing nations can be taught how to manage their land to minimize ecological damage with minimal bureaucracy and cost.

The second reason for past damage to the environment—cheap and readily available land—is now a thing of the past. Land is becoming too expensive to treat with callous disregard—except, it seems, when it comes to use of public land. Almost all environmental damage during the past fifty years is not from misuse of private land, but from government infringements of private property rights and expansion of public property rights in things such as timber or pasturage or wildlife that are held in trust by government for the benefit of all citizens.

Some blame the greed and self-interest of property owners for causing environmental harm to America's air and water. That accusation is not only inaccurate, it is purposely misleading. Ironically, it was because no

one *owned* the air or waterways that they were polluted. It was because no one *owned* the land that America's public lands were grossly mismanaged over a hundred years ago. It was the natural consequence of the Tragedy of the Commons, in which no one owns anything. Theoretically, according to the theory of the Tragedy of the Commons, everyone owns the commons. But since there was no ownership interest, there was no motivation to care for or optimize property that was held in common with the millions of other citizens. There was no reward for doing a better job or being more creative, so there was no incentive to do a better job. Everyone sinks to the lowest common denominator, the economic structure stagnates, and the infrastructure collapses.

The Tragedy of the Commons also explains to a large degree why communism and Marxism have been such dismal failures, especially regarding the environment.⁶⁶ In communism, there is no motivation to protect the environment—as was evidenced by the environmental devastation found in Eastern Europe and Russia once the Iron Curtain and the Soviet Union collapsed in the early 1990s.

Condemning the Poor to Poverty

Without the guaranteed right of private, transferable, unencumbered, legally protected property, a person cannot have liberty, build wealth, leave something for his children, get bank loans using land or property as collateral, or build real prosperity. It has been argued that there can be no true freedom for anyone if people are dependent upon the state for food, shelter, and other basic needs. When the state and not individuals own the fruits of the citizens' labors, nothing is safe from being taken by either a democratic majority or a tyrant. This is neither just nor wise. As noted in the book, *Saviors of the Earth*, "individuals, as government dependents, are ultimately powerless to oppose any infringement on their rights...due to the absolute government control over the fruits of their labor."⁶⁷

Nowhere was this more apparent than in the former Soviet Union, where all property belonged to the state. No one could speak out against the government for fear of their family being evicted, or their job taken away by the local communist commissar. The founding fathers

of America recognized this fundamental principle when John Adams said, “The moment that the idea is admitted into society that *property is not as sacred as the laws of God*, and that there is not a force of law and public justice to protect it, *anarchy and tyranny commence. Property must be sacred or liberty cannot exist*”⁶⁸ (Italics added for emphasis). Noah Webster may have said it best:

Let the people have property, and they *will* have power—a power that will for ever be exerted to prevent a restriction of the press, and abolition of trial by jury, or the abridgement of any other privilege.... Wherever we cast our eyes, we see this truth, that *property* is the basis of *power*; and this, being established as a cardinal point, directs us to the means of preserving our freedom⁶⁹ (Italics added).

That does not mean that no restrictions should be placed on the use of property. Since the Magna Charta was penned in England, common law has always restricted land use that causes harm or nuisance to another person or the community. Such laws enhance the power of private property rights rather than infringing on them. In that way, the law is administered equally to all property owners.

For people in developing nations, legally protected private property rights is a prerequisite to having political power. Sustainable development precepts as envisioned by Agenda 21 and the UN would deny property rights. Government control of property rights shifts all power into the hands of UN bureaucrats, strong central governments, and their NGO partners. Without property rights, the world’s poor will forever be impoverished, diseased, miserable, dying early, and powerless to do anything to improve their lives.

James Madison, one of the framers of the United States Constitution, addressed this principle when he said that “Government is instituted to protect property of every sort; as well as that which lies in the various rights of individuals....this being the end of government, that alone is a just government, which impartially secures, to every man, whatever is his own.”⁷⁰ When the first Ten Amendments to the United States Constitution were ratified, the Fifth Amendment was included to guarantee protection of private property: “...nor shall private property be taken for public use, without just compensation.”

Inalienable property rights are historically the bedrock of the American system of government. The government could take private property through eminent domain for a public *use*, but it had to pay for it. Instead of protecting citizens, however, environmental

regulations are used to systematically strip landowners of their right to use their property without payment of any compensation—often with enormous loss of property value to the owner. Agenda 21 proposes doing so for unused land. This approach is exemplified in the United States by the Endangered Species Act (ESA). The ESA implements CITES (Convention on the International Trade of Endangered Species) and four other UN treaties that became “the law of the land” when signed and ratified by the United States. This lesson alone has caused great distress in the United States and accounts for the enormous skepticism Americans feel when the subject of any new UN conventions or treaties are broached or even rumored. Today, such UN proposals are viewed as intrinsically flawed by many Americans.

The freedom to own property and develop it for the benefit of its owner is a key reason for the societal prosperity and economic strength of the United States. The right of private property allows creativity, innovation and risk-taking to find a better way to do or make something in a manner that is not possible in a heavily regulated society operating under heavy government mandates.

Conversely, in a tightly controlled society, a misguided yet politically active and powerful minority who do not like urban sprawl, or property owners, or who believe certain human activities overload the ecological system, or who oppose all animal use or animal ownership, can force the passage of laws to implement their vision of the “public good.” These laws deny landowners who happen to have the last remaining open space the right to develop their land to its full economic potential. As a result, these landowners unjustly bear the total cost of what the rest of society demands in the heat of the moment or imagined imperative.

If society seeks to attain a public good, such as preventing urban sprawl, or protecting the environment from the cumulative effects society has created, society should be made to justify its actions and provide the financing for it. If society cannot afford to pay for the public good, it merely indicates that society places a lower priority on it than on something else it is willing to pay for. Never should the responsibility for acquiring public goods be borne on the backs of a few hapless landowners.

Protecting “Ecosystems”

At the heart of Agenda 21’s “sustainable development” is the concept of biological diversity. Advocates of this concept argue that in order to maintain biodiversity, government must employ sustainable practices. Conversely, to attain sustainability,

biodiversity must be maintained or enhanced. From that circular logic comes the incorrect assumption that urban sprawl, increased population pressure, and other human activities result in the destruction of biodiversity. This destruction, in turn, imperils the sustainability of ecosystems and therefore the earth.

As noted in the discussion of poverty above, Germany and England have some of the highest population densities per square kilometer in the world, yet have healthy, non-natural habitats. The reason for this phenomenon? Healthy environments do not have to be “natural” or pristine, they should be diverse in their species composition and resilient in the variety of successional plant stages available to animals as sustainable uses are accomplished throughout any natural system. Variety, not monolithic systems, is the key to biodiversity.

Four primary features above and below the ground comprise biodiversity: 1) all species present and their ever-changing abundance and distribution, 2) horizontal organization of species abundance and distribution, 3) vertical structure of species abundance and distribution, and 4) the mixture of these three features over any broad landscape at a given time. Plant species define the horizontal and vertical components that then in turn provide the habitat and niches for other plant, animal and fungi species. Therefore, an ancient forest is not always necessary to produce the habitat needed for many species that are found in ancient forests.⁷¹ Other forest conditions may often duplicate the horizontal and vertical structure needed by such species to live.

Another anomaly in the “increase” and “maintain” biodiversity argument is the hostility toward, and failure to accept, the movement, arrival, and departure of plant and animal species in our world. As conditions of climate and human activity evolve and transportation vectors increase, “non-native” or “invasive” species appear with greater frequency. They, more often than not, “increase bio-diversity” and environmental resiliency. Only when they are exceptionally harmful should they be controlled by large-scale programs, as would be the case with harmful native species such as brown recluse spiders or poison ivy. In all other cases, local communities should weigh their harmful and beneficial aspects and apply control regimes or restrictions if needed.

Supporters of Agenda 21 and the Biodiversity Treaty unjustifiably and repeatedly use species extinction to justify state regulation of land, property, and human activities to achieve their vision of sustainable development. Predictions of the extinction of 40,000 species a year are found in many key United States and United Nations documents. Yet Norman

Myers picked that number out of thin air in his book *The Sinking Ark: A New Look at the Problem of Disappearing Species*:

...Let us suppose that, as a consequence of this man-handling of natural environments [the clearing of tropical forests], the final one-quarter of this century witnesses the elimination of 1 million species—a far from unlikely prospect. This would work out during the course of 25 years, at an average extinction rate of 40,000 species per year, or rather over 100 species per day.⁷²

It is obvious that Myers picked 40,000 species per year merely as a propaganda ploy. There is no evidence to support such a claim. None.

On the other hand, the International Union for the Conservation of Nature (IUCN) has determined that prior to 1600, the background extinction rate was estimated to be about two species per decade. This increased to thirteen to twenty per decade from 1600 to 1850, then skyrocketed to over 100 per decade from 1850 to 1950. Inexplicable to those proposing radical solutions today, it then plummeted in the last half of the twentieth century to just over a dozen per decade and then down to three per decade after 1980.⁷³

The decline in extinction after 1950 came before the Endangered Species Act in the U.S. and appears to have been driven by a public becoming increasingly educated and concerned about the importance of species status and abundance. Today, while diligence must be maintained, the threat to endangered species is a problem that is more manageable than at any time in history.

Rather than 40,000 extinctions annually, the true figure is perhaps closer to 3-5 per decade. Yet, the United States continues to impose a very harsh Endangered Species Act that is used to arbitrarily deny people the use of their property without any compensation from the society that created the problem in the first place. The same is true world-wide, where developed nations and UN bureaucracies seek to impose “solutions” to the natural resource issues of lesser developed sovereign nations.

Nations do not need such harsh laws to protect biodiversity. As long as the *mosaic* of different habitats is found over an entire landscape, most species will continue to flourish. Neither biodiversity nor sustainability is threatened.⁷⁴ Whether a forest is harvested using the much-maligned clearcutting harvesting technique or selective cutting based on age or species, biodiversity and sustainability are not necessarily harmed with the knowledge we have

available today. In the midst of this reality, a formerly extinct species of giant woodpecker was recently “rediscovered” in 2005 after 60 years of benign neglect in the southern United States bottomland forests. These forests have been logged and farmed and hunted and grazed during and long before the woodpeckers’ reputed demise. The natural forests of an area, for instance, may have had less than 5 percent in open grassland or meadows, more in coniferous forests and the majority in hardwood forests upon settlement. As people farmed and pastured the area, grasslands began to occupy the majority of the landscape, while hardwood and conifer woodlots made up the balance. The percentages and the species living in them have changed dramatically, but the various habitats found within the mosaic that is the entire landscape still exist and are still healthy.

Within cities, ornamental trees and shrubs in landscaped residential areas provide an amazing amount of diverse habitat. City parks and golf courses provide even more. Golf courses are becoming increasingly important as managers devise regimes to minimize water, fertilizer, and pesticide use while providing increased vertical and horizontal diversity between fairways. This sort of vertical and horizontal habitat structure often cannot be produced in city parks because of human safety concerns. Since urban and developed areas occupy only 6 percent of the United States landscape, urban sprawl has had minimal impact on ecosystems nationally. Documented impacts are invariably local concerns amenable to local solutions

arrived at by local communities.

Whether so-called “natural processes” are occurring, or whether there is “old growth” in these stands has little to do with optimizing diversity and sustainability. In fact, research has demonstrated that valuable and potentially threatened species requiring grassy or brushy fields can be lost or diminished because natural processes leading to old-growth is allowed to occur.⁷⁵ Human disturbance can actually enhance biodiversity and, as a result, sustainability. Generally, the greater the disturbance of a landscape the better the diversity—especially when a mosaic of a variety of habitats or plant successional stages persists over time.

Holistic Resource Management has produced spectacular results in arid habitats. Often, management plans recommend an *increase* in the number of cattle or level of timber harvesting in order to improve habitat health or to benefit certain desirable species or discourage harmful species.⁷⁶ If the preservationist “solutions” called for in the Convention on Biological Diversity had been applied (see above) in those situations, ecological decline and the diminishment of local economies and communities would have resulted.⁷⁷

In summary, dissemination of and support for the principles of property rights and free enterprise for the preservation of biodiversity through sustainable resource uses and the fostering of human dignity are the only rightful role and concern of the UN and central governments worldwide.

Principles

Current solutions contained in various international treaties and United Nations goals are often based on misguided biological principles and will generally threaten, rather than help, species and environmental health. This is because they depend upon a highly bureaucratic system of protection and management diametrically opposed to time-proven application of private property rights and the historical experience of American success.

Sustainable development practices calling for vast tracts of wilderness and a reduction in human activity are necessary only in rare instances, and can actually be harmful and counterproductive in most circumstances. There is no basis for creating vast tracts of interconnecting wilderness as most current sustainable development practices recommend. Biodiversity and habitat health can be optimized using existing

scientifically proven management practices. Research clearly shows that application of time-tested scientific management practices on forest and range habitats enhance biodiversity and habitat health. In fact, sustainable natural resource uses providing maximum benefits to local and national economies, local communities, and human dignity and human justice should be the emphasized goal.

Property rights of landowners actually enhance sustained development while common ownership or controls through regulation diminish it. As thoroughly discussed in Chapter 1, Hernando de Soto and Joseph Stiglitz understood that full and protected property rights are the cornerstone of wealth creation, freedom and liberty. They also provide landowners an incentive not to harm their land so they can preserve and enhance their dignity and standard of living year

after year. Property rights allow such property owners to be creative in finding new ways to use land while simultaneously sustaining the environment. The wide diversity of societal goals and natural resource management practices utilized by landowners invariably results in a good cross section of biodiversity and thus sustainability of natural resources as well as human dignity and progress.

Conversely, public ownership of land or its excessive oversight through regulation often invokes the Tragedy of the Commons in which no one is responsible for, or benefits from, good management. Thus minimum or aberrant management is applied, resulting in environmental damage and loss to local and national interests. This, unfortunately, is the preferred solution being advanced by the UN. These “one-size-fits-all” laws, however, provide no incentive to produce either a better product from the land or protect the environment more effectively and cheaply.

Urban sprawl is not a threat to sustained development—especially in the US. Urban and developed areas occupy only 6 percent of the United States. This can be verified by anyone flying across the U.S. and indeed most other parts of the world. While some may not like the appearance and driving requirements that urban sprawl can create, residential

areas offer a rich diversity of habitat conditions that provides more diversity than is generally assumed. Most urban areas are surrounded by rural or semi-rural land that complements the biodiversity mosaic in any given region, even in the more highly populated nations.

Environmental laws should be based on and enforce the historic common law principle of “harm and nuisance,” whereby a person cannot pollute or throw trash on their neighbor’s land. Simply, no person can harm another’s land, river or air. To do so has always been a violation of common law.

Less, not more, land should be made public. Over 40 percent of the United States and a variable amount in other parts of the world is commonly owned or controlled by government. Except for relatively modest land areas specifically targeted for unique environmental purposes, history has demonstrated time and again that publicly managed land and water is often poorly cared for, resulting in environmental harm.

Overpopulation is not a problem, it is the challenge. Human population is the hope of future generations and the challenge for government whose primary responsibility is to protect the natural rights of their citizens.

Policy Recommendations

1. **Review and rewrite existing environmental law** to establish scientifically defensible (using the scientific method), demonstrable and measurable standards to measure and compare environmental conditions and changes under various scenarios of management and use. In the United States, the new Data Quality Act helps address this issue and provides a reasonable model. Axiomatically, all rule-making should be based on cost-benefit analyses.
2. **The burden of proof of environmental damage should be upon the government.**
 - a. **Environmental laws must no longer require citizens to prove negatives.** The precautionary principle should not be used to justify limitations placed on land-use.
 - b. **Within the United States, all laws must be enforceable within the traditional, legal parameters of the U.S. Constitution. The elimination of individual rights and freedoms like the growth of Federal powers at the expense of States and individuals should not be allowed.** The appeals processes available to individuals, communities, or States should be separate from the government agency promulgating, administering and enforcing the regulations.
 - c. **Within the United States, a national review of all ratified international treaties should be initiated to determine if implementation is, or can be, accomplished within the original constraints of the U.S. Constitution.** If not, the United States should begin to either negotiate amendments to or withdraw from such treaties.
3. **Natural resource use management for sustainable uses, not establishment of “no-**

management, no-use” preservation enclaves, should be the goal of all publicly owned lands.

Public management of resources and land should either benefit all the people as in national parks or limited wilderness areas, or it has no worth as a public pursuit. Imagined intrinsic worth of inaccessible and abandoned land does not justify either public ownership or excuse the imposition of

excessive government intervention.

4. **Protection of private property rights is a sacrosanct duty of government,** therefore environmental maintenance and provision should be built on, not used to tear down, this important cornerstone of human dignity, justice and a free society.

III - Air and Water Issues

Overview

Global Warming

As most people now know, the greenhouse effect is a phenomenon by which incoming solar radiation passes through our atmosphere, is absorbed by the earth, and then re-emitted as heat which is trapped by what are called “greenhouse gases.” In fact, the survival of all life depends on this phenomenon. Without it, the earth would be far too cold to support life.

Greenhouse gases include water vapor, carbon dioxide (CO₂), methane (CH₄), and several very minor gases such as nitrous oxide (N₂O), various fluorinated compounds like chlorofluorocarbons (CFCs), perfluorocarbon (PFC), hydrofluorocarbons (HFCs) and sulfur hexafluoride (SF₆) and others. Of the total, nearly 97 percent is water vapor and only 1.9 percent is carbon dioxide (CO₂).⁷⁸ Experts generally acknowledge that there has been increasing concentrations of CO₂ during the industrial age, and especially since World War II. The importance of this, however, rests on one important question. When CO₂ makes up only 1.9 percent of the greenhouse gases, just how important can it be compared to water vapor which makes up 97 percent of the total primary gases and is constantly fluctuating?

The Science of Climate Change

Most scientists recognize that we have had increasing temperatures for the past 150 years or

more. Yet, in spite of UN and EPA proclamations to the contrary, there is no evidence supporting any of the catastrophic consequences that are supposed to accompany global warming, such as increased number and strength of hurricanes, unusually hot summers, and Antarctic icecap melting. For instance, the US National Hurricane Center states that “during the forty year period 1961-2000 both the number and

intensity of land falling U.S. hurricanes decreased sharply!”⁷⁹ The same is true of hurricane intensity. As can be seen from Figure 6 (next page), hurricane frequency and intensity in the Atlantic Ocean follow cycles, some of them longer than others. After nearly 50 years of declining frequency and intensity, an increase is long overdue. The downward trend may be reversing with the 2005 hurricane season. Even with the huge hurricanes of Katrina and Rita, however, Figure 6 (next page) shows

that 2005 still has a long way to go to even get to the average of 5-6 major hurricanes in a season as was experienced in the 1940s and 1950s. The hurricane season of 2005 is likely an aberration since the 2006 season was very much below normal. The same is true of hurricane intensity.⁸⁰

Many activists, past and present politicians, and media personalities in the US have linked Hurricanes Katrina and Rita in 2005 to global warming. Asked if Hurricane Katrina was caused by global warming, Dr. William Gray, professor of atmospheric science and head of the Tropical Meteorology Project at Colorado

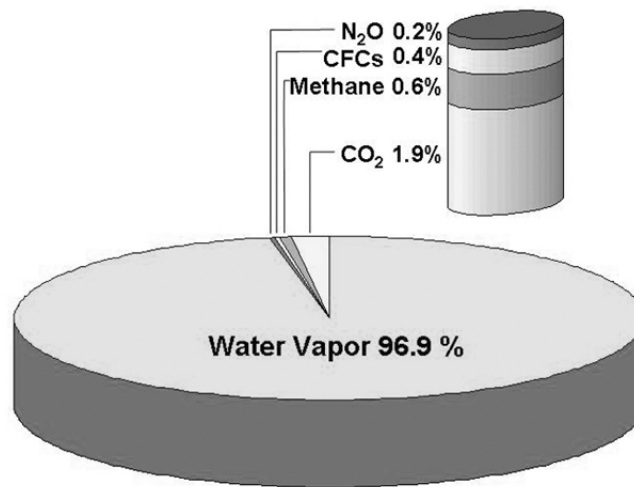


Figure 5. The amount of water vapor in the air constitutes 97% of all primary greenhouse gases.

State University, replied “I am very confident that it’s not.... if we go back from 1970 through the middle ‘90s, that 25 year period – even though the globe was warming slightly, the number of major storms was down, quite a bit down.”⁸¹ Continuing his answer, Dr. Gray blasted those scientists who try to link the frequency and intensity of hurricanes to global

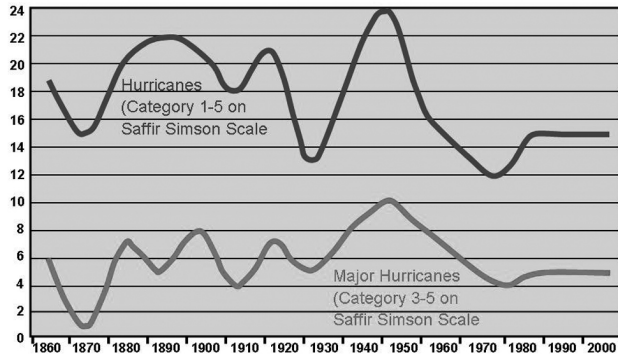


Figure 6. The number and intensity of hurricanes striking the United States has declined from a peak in the 1930s-1950s through 2004. Not shown on this graph is an upward trend of hurricanes since 1995 when all North Atlantic hurricanes are considered. Source: NOAA, National Hurricane Center Tropical Prediction Center 2005. <http://www.nhc.noaa.gov/pastdec.shtml>

warming. “They would like to have the possibility open that global warming will make for more and intense storms because there’s a lot of money to be made on this,” he warns. “If you want to get federal funding, you better not come out and say human-induced global warming is a hoax because you stand the chance of not getting funded.”⁸²

The number of hurricanes (cyclones) and their intensity is similar world wide as well. Dr. Patrick Michaels, research professor of environmental sciences at the University of Virginia and Cato Institute Senior Fellow in Environmental Studies, states that “In other parts of the world...such as in the Western and Eastern Pacific, and in the Southern Hemisphere oceans, tropical cyclone frequency has declined since the early 1990s. Such variable behavior in the trends of storm frequency from around the world led researchers to conclude that:

In summary, careful analysis of global hurricane data shows that, against a background of increasing SST (Sea Surface Temperature), no global trend has yet emerged in the number of tropical storms and hurricanes. Only one region, the North Atlantic, shows a statistically significant increase, which commenced in 1995. However, a simple attribution of the increase in numbers of storms to a warming SST environment is not supported, because of

the lack of a comparable correlation in other ocean basins where SST is also increasing.⁸³

Michaels and Robert Balling also show that there is no warming trend in the U.S. summer temperatures over the last 80 years.⁸⁴ Balling is director of the Office of Climatology at Arizona State University. Rather than warming as previously thought, portions of Antarctica have been dramatically cooling by 1.2°F per decade for the past 20 years⁸⁵ and there exists “strong evidence of ice-sheet growth.”⁸⁶ Some scientists also argue that the amount of water the Antarctic ice-sheet holds should increase over the course of the next 100 years, producing a sea level drop of 3.54 inches.⁸⁷ Certainly, there are those that disagree with these assertions. The key point is that the debate over whether the Antarctic ice-sheet will melt or grow continues within the scientific community.

Obviously, peer-reviewed science shows that global warming is *not* having the predicted effects. Hurricanes and other storms are not becoming more numerous or violent, summers are not becoming hotter, and the Antarctic ice cap may not be melting. Therefore apocalyptic warnings of flooding coastal cities and Pacific Islands are likely more rhetoric than reality. The science on the issue of climate change is not settled as many politicians and activists would have people believe. The question then becomes, if there is so much uncertainty within the scientific community, why are the United Nations, some politicians and activists so set on creating costly policy to solve a problem that may not exist?

All-in-all, global climate is not showing signs of impending catastrophe. Further, even if man is causing slight warming, NASA reports that “the rate of growth of greenhouse gas emissions has slowed since its peak in 1980.” Although the NASA authors cite the control of CFCs as explaining much of the reduction, the good news is that “The climate warming projected by the Goddard Institute study is about half as large as typical increases cited by the report of the Intergovernmental Panel on Climate Change (IPCC).”⁸⁸ Even so, a large number of scientists do not believe there is even sufficient evidence to show that what little warming is occurring is caused by man-caused increases in CO₂. Seventeen thousand scientists in the United States have signed a petition stating:

We urge the United States government to reject the global warming agreement that was written in Kyoto, Japan in December, 1997, and any other similar proposals. The proposed limits on

greenhouse gases would harm the environment, hinder the advance of science and technology, and damage the health and welfare of mankind.

There is no convincing scientific evidence that human release of carbon dioxide, methane, or other greenhouse gasses is causing or will, in the foreseeable future, cause catastrophic heating of the Earth's atmosphere and disruption of the Earth's climate. Moreover, there is substantial scientific evidence that increases in atmospheric carbon dioxide produce many beneficial effects upon the natural plant and animal environments of the Earth.⁸⁹

Of the seventeen thousand who have signed the petition, over two-thirds have advanced degrees. They include 2,660 physicists, geophysicists, climatologists, meteorologists, oceanographers, and environmental scientists who are especially well qualified to evaluate the effects of carbon dioxide on the Earth's atmosphere and climate.

While the disagreement comes from hundreds of different and often-conflicting research studies, the controversy focused on two sets of data until 2005: ground-based measured temperatures and satellite measured temperatures. The ground-based data include thousands of temperature sources recorded in meteorological stations around the world—mostly at airports. The ground-based data show a somewhat larger increase in global temperatures than the satellite data. The satellite data originate

from geostationary satellites that have been in orbit since 1979 and show a slightly lower warming trend than the ground-based data. (Figure 7).

Until August of 2005, the satellite data showed very little warming; 0.09°C/decade for the satellite data compared to 0.20°C/decade for the ground-based measurements. However, Drs. C.A. Mears and F.J.

Wentz from Remote Sensing Systems found a mathematical error in the satellite data due to decaying orbits of the satellites.⁹⁰ After correction, Mears and Wentz determined the satellite data show a warming of 0.19°C/decade—almost exactly what the ground-based measurements showed. The media and global warming proponents hailed this as proof there is indeed global warming. However, the team of scientists led by Dr. Roy Spencer of the National Space Science & Technology Center, who are responsible for the satellite data, applied drift corrections, and determined a 0.12°C/decade increase. This is greater than the 0.09°C previously determined,⁹¹ but less than the 0.19°C/decade increase determined by Mears and Wentz (Figure 7).

Why the discrepancy? Dr. Spencer believes it to be due to the way in which successive satellites in the long satellite time series are intercalibrated. Spencer goes on to say, “Nevertheless, all measurements systems have errors (especially for climate trends), and researchers differ in their views of what kinds of errors exist, and how they should be corrected.”⁹² It will take time for other scientists to scrutinize the data

before solid conclusions can be made—if ever.

Ground-based temperature measurements, for instance, are subject to a host of errors, most of which are of a random nature that would be expected to cancel out in a large data pool. All except one. It's called the “heat island effect.” Most meteorological stations were constructed at airports when they were in the country, outside the city they served. Since then the cities have grown up around the measuring stations.

What were once green fields and forests surrounding the measuring stations are now paved roads, black asphalt roofs, furnaces, air conditioners and automobiles. Because of this, ambient temperatures can increase by several degrees, creating a large error in the long-term temperature trend line. When United States data are adjusted for this error using *best-guess* estimates, the ground and

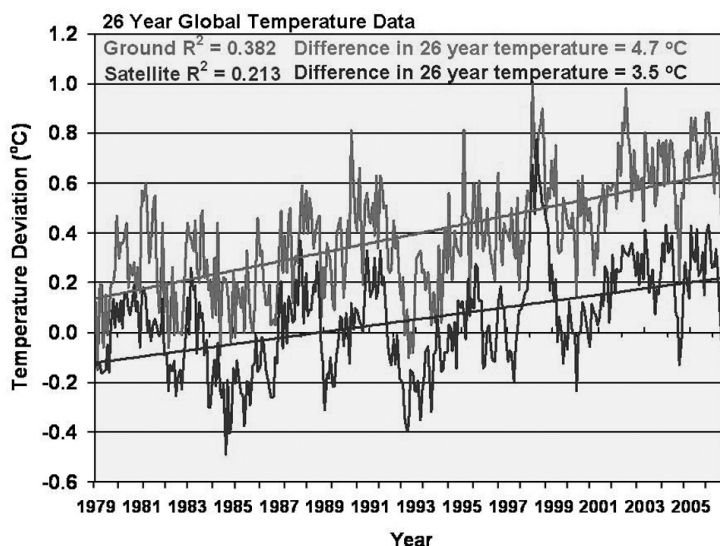


Figure 7. Ground-based (above and in gray) and corrected satellite (below and in black) measured global temperatures. Straight lines are trend lines for each data set. Source: Ground data, GISS Surface Temperature Analysis <http://data.giss.nasa.gov/gistemp/taledata/GLB.Ts.txt>; Satellite, The National Space Science & Technology Center. http://vortex.nsstc.uah.edu/data/msu/t2lt/tiltghlmmam_5.2

satellite data nearly merge, with the ground data showing only a slightly higher warming trend than the satellite data.⁹³

The other primary “proof” of man-caused global warming comes from a number of climate change models. Even though these models are very complex and run on super computers, they still cannot accurately reflect past climate change. Consequently, a cloud of skepticism surrounds their future scenarios. Climate expert Dr. Fred Singer of the Science and Environmental Policy Project says the temperature adjustments are “not a big deal.” Singer continues:

Greenhouse theory says (and the models calculate) that the atmospheric trend should be 30 percent greater than the surface trend—and it isn’t. Furthermore, the models predict that polar [temperature] trends should greatly exceed the tropical values—and they clearly don’t ... In fact, the Antarctic has been cooling. Models still cannot model clouds. The latest modeling exercise (Stainforth et al. *Nature* 27 Jan., 2005)⁹⁴ obtained a warming (for a doubling of CO₂) ranging from 1.9C to 11.5C (take your pick!) when they varied only six out of many more parameters necessary to model clouds. Their result confirms my point that clouds are still too difficult to model and that climate models underlying the Kyoto Protocol have never been validated.⁹⁵

If these doubts are not bad enough, in its most recent five-year report, the UN Intergovernmental Panel on Climate Change (IPCC) picked the worst possible scenarios to represent “possible” future conditions from global warming. Robert Watson, head of the IPCC, paints a very bleak picture of the future by predicting water shortages, disease, and agricultural damage. As reported by the January 23, 2001, *Washington Post*, Watson claimed that “Earth’s average temperature *could* rise by as much as 10.4 degrees over the next 100 years”—the most rapid change in ten millennia and more than 60 percent higher than the same group predicted less than six years ago⁹⁶ (italics added).

Dr. John Christy, one of the world’s leading climatology experts and head author of the IPCC summary report, strongly disagrees. In response to the media’s clamor over the reports and Watson’s dramatically pessimistic assertions, Christy contended, “the world is in much better shape than this doomsday scenario paints. There were 245 different results in that report, and this was the worst-case scenario,” he

says. “It’s the one that’s *not going to happen*. It was the extreme case of all the different things that can make the world warm”⁹⁷ (italics added). Christy is a professor of atmospheric science and director of the Earth System Science Center at the University of Alabama.

Watson’s politicized summary also directly contradicts the actual scientific report to the IPCC. The report’s conclusions state, “In sum, a strategy must recognize what is possible. In climate research and modeling, we should recognize that we are dealing with a coupled non-linear system, *and therefore that the prediction of a specific future climate is not possible*”⁹⁸ (italics added). In other words, in writing the political summary, Robert Watson overrode the actual scientific report as well as protests of the report’s lead author to make the IPCC political summary as negative as possible.

MIT’s Dr. Richard Lindzen goes so far as to describe the UN-IPCC report as “absurd.” In a recent interview, Dr. Lindzen agreed with Dr. Christy, claiming the latest report of the UN-IPCC, “was very much a children’s exercise of what might possibly happen” in a worse-case scenario prepared by a “peculiar group” with “no technical competence.”⁹⁹ Yet the press reports it as certainty. “You should approach climate models with a degree of awe and a sense of humour,” claimed Christy. “They are incredible accomplishments in code-writing, but they are not the real world.” Christy went on to point out that: “evidence shows we are living in a climate of natural variability. Variations of climate have always occurred, even when humans could not have had an impact!” Because “even with all our cars, factories, and cities, man’s impact on the powerful energy force we call the weather is too small to measure.”

The deliberate distortion of science by IPCC leadership led one of the world’s leading scientists on Atlantic tropical cyclones (hurricanes) to resign his position as a participant in the IPCC in January 2005. In doing so, Chris Landsea used the words “unsupported agenda,” “motivated by preconceived agendas,” “so far outside current scientific understanding,” “misrepresentation of climate science” “subverted and compromised” science, and “unfounded pronouncements,” in describing how the lead author for the IPCC chapter on warming effects on cyclones (AR4), Dr. Kevin Trenberth, proclaimed to the media that there is a link between global warming and tropical cyclones without *any* scientific basis for doing so.¹⁰⁰

Some research does tend to support the man-caused global warming theory. These studies raise more questions than they answer, or may represent

isolated examples. Ironically, while few people question that there is global warming, there remains sharp debate in the scientific community over whether the warming is man-caused or even catastrophic.

What is not in doubt, however, is the demonstrated fact that there is a willingness on the part of the UN and other international players to grossly distort the data of climate change. By doing so they create a conclusion that may support measures designed to limit fossil fuel use, but disingenuously distorts the facts surrounding the issue of climate change.

The Kyoto Protocol

Even if there is man-caused global warming, it is widely acknowledged that the Kyoto Protocol is not designed to stop it, let alone reverse it. In fact, even the United Nations recognizes that over the next 50 years (at a cost of trillions of dollars) the treaty would only reduce warming by 0.015°C at best. Why? Because only developed nations would be bound by the treaty, and almost all the future increases in CO₂ emissions are expected to take place in the developing nations. To accomplish even the treaty's stated reduction in temperature, it would require the United States to reduce CO₂ emissions by 30 percent. Since there is nearly a one-to-one ratio between emissions and energy consumption, the U.S. would be forced to reduce its energy consumption by 30 percent by 2012. Such a strategy would have a devastatingly negative effect on the U.S. economy.

The proposed alternative is to buy credits from developing nations to keep U.S. industry at home while developing nations continued to escalate their own CO₂ emissions. Since buying credits will do nothing to stop or reverse warming, the plan is nothing more than a massive global income redistribution effort.

In summary then, there is tremendous uncertainty over whether man-caused global warming is even occurring, or if CO₂ is even directly involved in warming. In all three of the most recent glacial terminations, the earth warmed well before there was any increase in the air's CO₂ content.¹⁰¹ Even if CO₂ is responsible, the Kyoto Protocol would do almost nothing to stop it, and merely represents the greatest global income redistribution plan ever conceived by the mind of man.

The Benefits of CO₂

There is another side of the CO₂

emissions issue that is almost never discussed, yet could hold the answer to meeting food production needs until population levels stabilize. Carbon dioxide is a determining factor to plant growth throughout the world. The addition of this gas to any environment causes plants to grow faster and more robust, increasing both their productivity and growth. Scientists have found that crop production is increased by about 50 percent with a doubling of CO₂ (which is the assumption that climate change is based upon). More importantly, CO₂ enhancement dramatically improves crop tolerance to stress such as droughts and pollution, permitting much greater crop production compared to normal levels of CO₂. If global CO₂ does increase, crops will grow even faster and healthier.¹⁰²

The CO₂ fertilization effect is substantial. The Center for the Study of Carbon Dioxide and Global Change has estimated that the 100 ppm increase of CO₂ in the past 150 years due to the industrial revolution has allowed a 77 percent increase in the

Table 2. Mean percentage yield increases produced by a 300 ppm increase in atmospheric CO₂ concentration for all crops for which experimental data could be found.

Crop	% Increase	Crop	% Increase
C3 CEREALS		ROOTS AND TUBERS	
Barley	66	Carrots	60
Rapeseed	62	Cassava	87
Rice	37	Onions	28
Sunflower Seed	36	Potatoes	35
Wheat	48	Sugar Beets	33
Average	48.8	Sweet Potatoes	46
		Average	48.2
C4 CEREALS			
Maize	22	Cabbages	27
Sorghum	18	Cauliflower	34
Average	20.0	Green Chilies & Peppers	25
		Cucumbers & Gherkins	39
FRUITS & MELONS		Eggplants	54
Other Fresh Fruit	30	Lettuce	40
Pumpkins,	18	Tomatoes	20
Squash	24.0	Other Vegetables	53
Average		Average	36.5
LEGUMES			
Beans	32	WOODY PLANTS	
Broad Beans	86	Average	51.0
Cow Peas	32		
Okra	31		
Peas	46		
Soybeans	44.3		
Average			

Source: Craig and Keith Idso. "Forecasting World Food Supplies: The Impact of the Rising Atmospheric CO₂ Concentration," *Technology* 7S:41, 2000. <http://www.greeningearthsociety.org/pdf/idso.pdf>

yield of wheat and a 70 percent increase in other C₃ cereals. The increase is 28 percent for C₄ cereals, 33 percent for fruits and melons, 62 percent for legumes, 61 percent for roots and tuber crops, and 51 percent for vegetables.¹⁰³ And, there does not appear to be a limit to the fertilization effect. Applications of up to 100 times (35,000 ppm) of the amount of CO₂ currently in the atmosphere continued to enhance photosynthesis in herbs and trees in Venezuela. Plants in these super-enriched CO₂ environments continued to grow better, even in drought and in the presence of toxic hydrocarbons and sulfur gases.¹⁰⁴

This has a potentially tremendous impact on future food production. For instance, Mayeux, *et al.* determined that the growth response of the wheat was a linear function of atmospheric CO₂.¹⁰⁵ Based on the linear regression equations Mayeux's team developed for grain yield in these situations, the 100 ppm increase in atmospheric CO₂ concentration experienced over the past century and a half should have increased the mean grain yield of the two wheat cultivars by about 72% under well-watered conditions and 48% under water-stressed conditions, for a mean yield increase on the order of 60% under the full range of moisture conditions likely to have existed throughout the entire real world.

The improved growth with elevated CO₂ levels is so pronounced that Drs. Craig and Keith Idso state, "In summation, the ongoing rise in the air's CO₂ content should continue to enhance plant growth and development, particularly in the face of resource limitations and environmental stresses that tend to do just the opposite. In a nutshell, when it's needed most, elevated CO₂ helps the most."¹⁰⁶ Best of all, it is *free* to the developing nations.

The Idsos are two of the world's recognized leaders on carbon dioxide research. They calculate that over the next half-century, the aerial fertilization effect of atmospheric CO₂ enrichment will boost world agricultural output by about half as much as will the expected advances in agricultural technology and expertise. Taken together, these two effects "should augment food production just enough to supply the dietary requirements of the projected human population of the world in the year 2050."¹⁰⁷

Indeed, there is hard evidence this is really happening. NASA reported that during the period 1980-2000 satellite data clearly showed a marked greening of parts of the northern hemisphere, which they attribute to CO₂ fertilization and warming.¹⁰⁸ So important is this greening that the Idso's strongly warn, "if proposed regulations restricting anthropogenic CO₂ emissions (which are designed to remedy the potential climate problem) are enacted, they will exacerbate the

future food problem by reducing the CO₂-induced stimulation of crop productivity needed to supply future world food requirements not provided by expected advances in agricultural technology and expertise."¹⁰⁹ The benefits of CO₂ fertilization to both humanity *and* the environment are so strong, while the potential threat of CO₂-induced global warming is so tenuous, that the continued all-out attempt to reduce CO₂ emissions is totally unwarranted.

A Cautious Policy Approach Warranted

President Bush's *Climate Action Report*, released on June 1, 2002, reflects a proper caution about the global warming issue. Although the report incorrectly states that there is man-caused global warming, the United States correctly "seeks an environmentally sound approach that will not harm the U.S. economy, which remains a critically important engine of global prosperity. We believe that economic development is key to protecting the global environment."¹¹⁰

The report states the obvious truth: "no one will forgo meeting basic family needs to protect the global commons." Environmental protection and sustainability *have* to be linked to continued development and increasing prosperity to be successful. The report lays out a plan to expand "nuclear power generation; improved energy efficiency for vehicles, buildings, appliances, and industry; development of hydrogen fuels and renewable technologies; increased access to federal lands and expedited licensing practices; and expanded use of cleaner fuels, including initiatives for coal and natural gas."¹¹¹

Critics argue that the science pointing to man-caused global warming is so weak that no policy is needed. At least the U.S. plan appears to be applying the free market approach—not the heavy hand of regulation that stifles creativity and problem solving. Incentives will be used to promote alternative fuels and production efficiencies. And, the go-slow-to-be-sure policy of the U.S. is prudent when CO₂ has the potential for doing so much good for mankind.

The go-slow approach has yielded significant progress. Although considerable evidence exists that there is little or no man-caused global warming, the Bush administration is taking concrete steps on climate change issues. Bush's Methane to Markets (M2M) initiative is the first international low-cost anti-climate change agreement that can actually reduce greenhouse gas emissions. The 2004 M2M agreement requires the United States, United Kingdom, India, Ukraine, Mexico, and Italy to reduce their methane emissions by about 1 percent of all greenhouse gases released to the atmosphere by human activity. This doesn't sound like much, but

methane is about 20-30 times more potent a greenhouse gas than CO₂.¹¹² Although only 175.8 million tons of methane is emitted by human use annually compared to 1547 million tons of CO₂, every ton of methane removed is equivalent to at least 20 tons of CO₂.¹¹³ According to *Environment and Climate News*, this is the equivalent of:

- taking 33 million cars off the road for a year;
- eliminating 50 coal-fired electricity plants; or
- forgoing energy used for providing enough heat to warm 7.2 million households for a year.¹¹⁴

Unlike the Kyoto Protocol, the M2M agreement will make some real tangible progress in reducing greenhouse gas emissions at a very low cost. M2M is projected to cost the U.S. only \$53 million over five years rather than the billions of dollars the Kyoto Protocol is forecast to cost.¹¹⁵

Other good signs also emerged in 2005. The G-8 meeting that was held during the first week of July revealed a stunning reversal in the geopolitics of global warming. The joint statement issued at the conclusion of the G-8 meeting stated, “uncertainties remain in our understanding of climate change.” Although the statement diplomatically reaffirmed the goals of the United Nations Framework Convention on Climate Change (UNFCCC) and the work of the United Nations Intergovernmental Panel on Climate Change, it did so with restrained moderation. The G-8 leaders also pledged “to put ourselves on a path to slow and...stop and then reverse the growth of greenhouse gases,” but only “as the science justifies.”¹¹⁶ This is in sharp contrast to the heretofore proclamations of the immediate need to implement the Kyoto Protocol regardless of cost.

Even more striking is the failure of the G-8 joint statement to even mention any of the scientifically weak predictions of drought, storm frequency, famine, and other “catastrophes” consistently predicted by global warming alarmists. Instead, the statement emphasized the promotion of “innovation, energy efficiency, conservation; improve policy, regulatory and financing frameworks; and accelerate deployment of cleaner technologies, particularly lower-emitting

technologies.” Another shift from the Kyoto Protocol by the G-8 is the need to stress adaptation technology. “Adaptation to the effects of climate change due to both natural and human factors is a high priority for all nations,” the statement read.¹¹⁷

Finally, the G-8 acknowledged that no climate policy would be successful if it does not include the rapidly growing nations of China and India. These nations are second and third in the world in terms of greenhouse gas emissions today and will soon take over as the number one emitters of greenhouse gases. Efforts are already underway to include China, India and other nations in a more coherent climate change effort. M2M already includes India and more nations will likely join the agreement.

The magnitude of the geopolitical shift away from Kyoto did not come, however, until July 26, 2005 when the United States was leading a six-nation partnership of Pacific states in a new agreement on global warming. The United States, Australia, China, India, South Korea and Japan comprise the group. Called the Asia-Pacific Partnership on Clean Development and Climate, the six-nation plan emphasizes the need for increased access to affordable and reliable energy in the developing world, and flexibility in reaching the group’s environmental goals. The “vision statement” for the new initiative could be taken from the G-8 Action Plan.

The partnership’s vision is to cooperate and share “existing and emerging cost-effective, cleaner technologies and practices.” These technologies include, but are not limited to: “energy efficiency, clean coal, integrated gasification combined cycle, liquefied natural gas, carbon capture and storage, combined heat and power, methane capture and use, civilian nuclear power, geothermal, rural/village energy systems, advanced transportation, building and home construction and operation, bioenergy, agriculture and forestry, hydropower, wind power, solar power, and other renewables.”¹¹⁸

The emphasis appears to be on “cost-effective” solutions. M2M, of course, fits perfectly within this vision. Although the statement diplomatically states that the partnership effort runs in “parallel” with Kyoto, in fact it is a radical departure from Kyoto.

Ozone Depletion

Like global warming, much uncertainty burdens the ozone depletion theory. According to proponents of the theory, freon for refrigeration and halon for fire

extinguishers are the primary chlorofluorocarbons (CFCs) causing the oxidation of ozone in the stratosphere. However, both are heavier than air—which

begs the question of how they get into the stratosphere to do their damage.

Then there is also the issue of Mt. Erebus, an Antarctic volcano which has been emitting chlorine and fluorine gases since 1972. Some of these gases make it into the very low polar stratosphere where the ozone thinning occurs every late winter at the South Pole. Another problem is that only minor thinning of the ozone layer has occurred in the Northern Hemisphere, where most of the CFCs are made and used, while most of the thinning occurs at the South Pole. Various explanations have attempted to provide reasons for these anomalies, but natural ozone thinning caused by the continuous eruption of Mt. Erebus since 1972 still provides the most logical explanation.

Even if manmade CFCs are causing ozone to thin at the South Pole, a number of scientists have raised the question, so what? The most the ozone layer is predicted to thin is less than 10 percent, but the *natural* annual variation between the hemispheric summer and winter is 50 percent!¹¹⁹ This natural variation is caused by temperature and sunlight.

The colder the temperature and the less sunlight there is, the thicker the ozone layer. Because extreme cold and sunlight cause ozone thickening, the ozone layer is naturally much thicker during the polar winter than the polar summer. It is also much thicker at the poles than the equator—by 130 percent. This works out to be a variation of 5,000 percent in actual UV radiation between the poles and the equator.¹²⁰ In fact, because the poles have much more ozone than the equator, a New York family vacationing in Florida during March would have 7% less ozone protecting

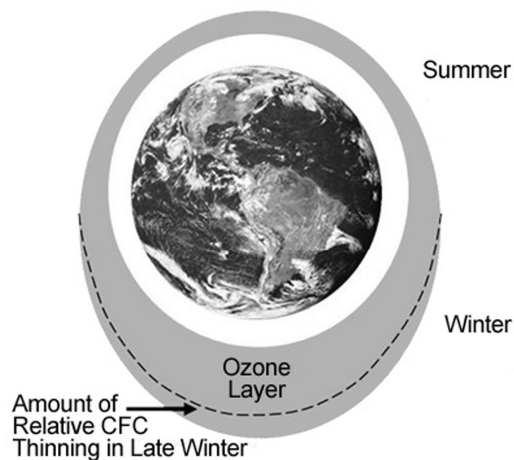


Figure 8. Dramatization of ozone layer during the southern hemispheric winter. Actual ozone thickness is only a few centimeters. Ozone is thickest at the South Pole in the coldest part of the late winter and naturally thins closer to the equator. The dashed line represents the relative thinning that is caused by CFCs in late winter. The thickness relationship reverses itself during the North Pole winter.

them, thereby exposing them to 270 percent more damaging UV-B radiation, than if they had stayed in New York!¹²¹ Of course, it is unlikely they would be sunbathing in New York in March. How much further south would one have to move to be equivalent to the increased UV-B resulting from current ozone thinning? About 200 km (124 miles) closer to the equator—"a move smaller than that from Manchester to London, Chicago to Indianapolis, Albany to New York, Lyons to Marseilles, Trento to Florence, Stuttgart to Dusseldorf or Christchurch to Wellington."¹²²

Why do many scientists ignore contradictory evidence when the stakes are so high? Some, no doubt, have honest

disagreements respecting the evidence. Others, perhaps, have other motives. Melvyn Shapiro, an atmospheric scientist at NOAA, offered this sobering comment:

...This is about money. If there were no dollars attached to this game, you'd see it played in a very different way. It would be played on intellect and integrity. When you say that the ozone threat is a scam, you're not only attacking people's scientific integrity, you're going after their pocketbook, as well. It's money, purely money.¹²³

In summary, the Montreal Protocol that bans freon and other important CFCs from the market has a questionable scientific basis, and denies mankind of some of the safest, most important chemicals used for refrigeration, fire extinguishers and many other products.

Air Pollution

Of all the pollution affecting human health, indoor and outdoor air pollution is by far the most important. According to the EPA, 86-96 percent of all social benefits come from the regulation of air pollution.¹²⁴ Air pollution has always been a problem in cities because of waste. In the 1660s, London was a

foul place to live. In 1661 John Evelyn lamented, "most Londoners breathe nothing but an impure and thick mist, accompanied by a fuliginous and filthy vapour, corrupting the lungs." Stench from human waste was added to this foul vapor. Lawrence Stone tells us that:

The city ditches, now often filled with stagnant water, were commonly used as latrines; butchers killed animals in their shops and threw the offal of the carcasses into the streets; dead animals were left to decay and fester where they lay;...¹²⁵ [Human excrement were] cast into the streets at night time when the inhabitants shut up their houses. [Visitors] are forced to stop their noses to avoid the ill smell occasioned by it.¹²⁶

The stench from burning coal was so bad that in 1257 the Queen of England cut short a visit to Nottingham because the smell of smoke was so intolerable she feared for her life. Lead poisoning from smelting was also very serious around smelting facilities. People got sick and mysteriously died. As late as 1952, 4,000 Londoners died in seven days because of severe smog.¹²⁷ All this pollution represents a classic illustration of the Tragedy of the Commons. No one owned the streets or air, so the easiest way to get rid of waste was to throw it onto the common areas.

The good news is that air pollution plummeted during the last half of the twentieth century and is now lower than before the industrial revolution. Of the many sources of air pollution, smoke and soot particles are found in highest concentrations, followed by sulfur dioxide (SO₂), ozone (O₃), lead, nitrogen oxides (NO, NO₂, NO₃), and carbon monoxide (CO).¹²⁸ These are the only air pollutants for which the U.S. EPA has established National Ambient Air Quality Standards.¹²⁹ According to the *National Air Quality and Emissions Trends, 2003* report by the EPA:

National air quality levels measured at thousands of monitoring stations across the country have shown improvements over the past 20 years for all six principal pollutants. Since 1970, aggregate emissions of the six principal pollutants have been cut 48 percent. During that same time, U.S. gross domestic product increased 164 percent, energy consumption increased 42 percent, and vehicle miles traveled increased 155 percent.¹³⁰

Since 1970, the United States has reduced emissions of lead by 98 percent, particulate matter (PM₁₀) by 34 percent, sulfur dioxide by 52 percent, volatile organic compounds by 51 percent, carbon monoxide by 48 percent and various nitrogen oxides by 17 percent. Although tremendous progress has been made over the past thirty years, the EPA report

warns, “about 160 million tons of pollution are emitted into the air each year in the United States. Approximately 146 million people live in areas where monitored air in 2002 was unhealthy at times because of high levels of at least one of the six principal air pollutants.”¹³¹ Although this sounds bad, just what defines an area to be “unhealthy?”

Taking just one example from hundreds, an EPA-funded study from 1982 to 1989 of some 550,000 adults in 151 metropolitan areas found a 17 percent increase in mortality among inhabitants of the most polluted areas in the country. The EPA *assumed* that these increased deaths were caused by particulates and ozone. It *arbitrarily* proposed new clean air national standards in 1996 by dropping the maximum particle size from 10 to 2.5µm (micrometer) and maximum ground level ozone levels from 0.12 to 0.08 parts per million.

The EPA’s standards represent a constantly changing goal that simply cannot be justified. First, although the most polluted communities in a 1995 EPA-funded research project may have had a 17 percent higher death rate than the least polluted areas,¹³² this coincidence does not, by itself, demonstrate a cause-and-effect relationship between air-particulate pollution and death rates. Second, researchers did not measure how much air pollution exposure even one study subject received. Instead, they made assumptions, or *guessed*, how much pollution these individuals might have encountered. Third, study subjects undoubtedly differ in many behavioral, occupational, environmental and genetic factors—factors that were inadequately considered by the epidemiologists. For example, the researchers did not look at variances in the subjects’ diet, income, health history, exercise habits, stress level or migration characteristics. Any one of these factors, or a combination thereof, could explain the difference in death rates.¹³³

The announcement for the new standards stunned cities, counties and even research scientists. The *natural* summer background level of ozone in the eastern third of the United States is typically about .075 to .08 parts per million from natural sources. This ozone is formed from volatile organic compounds (VOCs) in normal transpiration of the hardwood forests of the east. It creates the haze that is typical of eastern forests in the summer and gave the Southern Appalachian mountain range the name, the Smoky Mountains. Many eastern cities will never be able to achieve the new standards because the forest is often out of compliance. Likewise, the *natural* calcium-loaded dust from the dry western states is often below 10µm in size, putting many Western

cities at risk of being unable to comply because nature exceeds the new EPA standards.

Just as most counties in the United States were coming into attainment with the old standards, the new standards threw hundreds of counties and most large cities out of attainment—but provided new justification for the existence of the Air Projects and Programs Division of the EPA. Since most emissions in the 2.5 to 10µm range are from combustion products, the new standards would permit the EPA to directly regulate automobiles, lawnmowers and barbeques. The EPA's cost/benefit analysis showed that the program would save \$100-\$120 billion in medical costs and some 15,000-20,000 lives annually, and would cost American cities only \$6-\$10 billion. Few accepted these numbers, however. Independent analysis showed it would at best save only 840 lives¹³⁴ and cost at least \$60 billion (up to \$120 billion).¹³⁵ That is \$610-\$1,200 per American family.

EPA's own panel of scientific experts, the Clean Air Scientific Advisory Committee (CASAC), stressed the need for more research to fill the "obvious gaps in our knowledge," because there are "... many unanswered questions and uncertainties" in the search for a possible link between fine particles and health effects. EPA has acknowledged this gap by requesting \$27 million for research into the effects of parts per million. But this research was not even scheduled to begin until after the rules become law, and the results not known until well into the 21st Century.¹³⁶

The EPA's argument was so weak, in fact, that a U.S. Court of Appeals panel in Washington, D.C. decided unanimously in May, 1999 that EPA had used science selectively. The panel also ruled 2-to-1 that EPA overstepped its constitutional authority by setting (extremely tight) standards on urban ozone and fine particulates in an arbitrary way. However, when the panel's decision was appealed to the Supreme Court by the EPA, the Court reversed the decision of the Court of Appeals on February 28, 2001 saying the Clean Air Act "instructs the EPA to set primary ambient air quality standards 'the attainment and maintenance of which... are requisite to protect the public health' with 'an adequate margin of safety.'" Justice Scalia, while voting with the majority, nonetheless was highly critical of the Clean Air Act for allowing the use of such pseudoscience. Although he sharply disagreed with the EPA's abuse of science, Scalia said the language of the law "is absolute," and he had to vote with the majority.

However, a new law is now on the books in the United States called the Data Quality Act of 2001. This long-overdue act requires federal agencies to

accurately report the science used in making regulatory decisions. Most agencies complained and sought to remove themselves from having to comply with its requirements—all to no avail, however. At a minimum, the act requires federal agencies to disseminate accurately all information on their websites and literature. However, many attorneys and top administration officials believe it also includes the science and information used in the rule-making process for creating regulations. Several ongoing court cases should define the limits of the act.¹³⁷

When government employees can make decisions without undergoing thorough public scrutiny, abuse is inevitable. Until the Data Quality Act of 2001, there was no incentive for EPA to apply hard science to justify many of its arbitrary and capricious regulations. On May 12, 1998, the National Wilderness Institute issued a scathing report on the corruption and abuse of power by the EPA.¹³⁸ Six days later, EPA scientist Dr. David L. Lewis held a press conference with the National Wilderness Institute exposing the blatant corruption of science within the EPA: "Science has become an impediment to an imperious environmental agenda aimed at crafting and enforcing far-reaching regulations of historic proportions. Disturbingly, [former EPA Administrator Browner's] actions have lacked scientific merit."¹³⁹

Risking their jobs and reputation, nineteen additional EPA scientists and managers published a letter on June 8, 1998, accusing the EPA of the same flagrant abuse of power: "EPA employees are harassed, even fired," claimed the whistleblowers, "for protesting illegal or irresponsible behavior by managers who jeopardize the proper enforcement of the law under Superfund, the Clean Air Act, the Safe Drinking Water Act, and other environmental statutes." Tragically, such bureaucratic abuses are only met with a hand slap—even if they are found to have created arbitrary regulations. The Data Quality Act of 2001 has the potential to be a powerful tool in stopping this terrible abuse of power in the United States. But what about other nations where there are no laws protecting the citizens from government abuse?

There is a better way to administer and enforce federal environmental law than the highly politicized, heavy-handed bureaucratic system administered by the EPA and similar bureaucracies around the world. The temptation for bureaucratic abuse is too high when the power to promulgate and enforce regulations exists three or four levels of government distant from the average citizen. Promulgation and enforcement at the national level also encourages a one-size-fits-all approach which under-regulates the real problem areas and over-regulates other ones.

The only way to resolve this issue is to shift promulgation and enforcement to the individual states, permitting states and local governments to be subject to the same common law concepts of harm and nuisance as private landowners. It would stimulate local

creativity to find solutions for the real problems faced by that state or county. In such an approach the EPA could serve as a well-trained advisory and investigative resource not unlike that of the Center for Disease Control and Prevention.

Water Resources

Water Availability

Water resources can be subdivided into two issues, water availability and water pollution. Addressing the issue of water availability first, a UN environmental report entitled *GEO 2000* claims that the planet's water shortage constitutes a "full-scale emergency" where "the world water cycle seems unlikely to be able to cope with the demands that will be made of it in the coming decades." According to the United Nations, "severe water shortages already hamper development in many parts of the world, and the situation is deteriorating."¹⁴⁰ While this may sound rather alarming, the evidence to substantiate these claims appears to be quite exaggerated.

While there are problems to be sure, predicting that water availability will be the world's number one crisis in the twenty-first century seems far-fetched. It is unlikely there will be any "water wars" as nations fight other nations for dwindling supplies of water. As an Israeli Defense Forces analyst pointed out, "Why go to war over water? For the price of one week's fighting, you could build five desalination plants. No loss of life, no international pressure, and a reliable supply you don't have to defend in hostile territory."¹⁴¹ Of course a nation has to abut an ocean to be able to use desalination plants, but the point is plainly made. Many nations use nuclear-powered desalination, which has the potential to cost effectively meet the water needs of arid regions.¹⁴²

Problems in fresh water accessibility are primarily regional in scope and logistical in nature. Seventy-one percent of the earth is covered with water—some 13.6 billion cubic kilometers. Of that amount, oceans make up 97.2 percent and polar ice

2.15 percent. Neither of these sources, however, is economically justifiable in most cases as fresh water supplies are readily plentiful and accessible. Therefore, humanity depends on the last 0.65 percent, of which 0.62 percent is groundwater.¹⁴³ Enough fresh water falls in the form of rain to provide 5,700 liters of water for every single person on earth *every single day*.¹⁴⁴ Europeans typically use 566 liters daily, and even less conservation-minded Americans use only 1,332 liters per person every day. In short, there is more than enough water.

However, not everyone has equal access to that fresh water. Kuwait has only 30 liters/ person/day while citizens of Iceland have nearly two million liters per person per day. Surprisingly, while Kuwait has only 30 liters of water available per day per capita, far below the UN/World Bank level of 1,370 liters per day level to qualify as having "absolute water scarcity," there is no water shortage in Kuwait. Why? It doesn't depend on rain to provide its fresh water.

Rather it depends on desalination. Desalting requires large amounts of energy, but Kuwait also has huge energy resources. Through innovation the cost to desalt sea water is down to 50-80¢ per m³ (cubic meter).

While more expensive than readily accessible fresh water, desalination is definitely not out of reach for many nations from either a technological or economic point of view.¹⁴⁵ Its use clearly shows that there is sufficient water—if only the nations can pay for it. Once again, poverty, not the environment or resource limitations is the villain that often forms the root problem. Making a desalination infrastructure needed

Table 3. A representation of the range of water availability for nations.

	Available Water, liters/person/day		
	2000	2025	2050
Kuwait	30	20	17
Israel	969	738	644
South Africa	2,959	1,911	1,497
Britain	3,337	3,270	3,315
United States	24,420	20,405	19,521
Iceland	1,666,502	1,393,635	1,289,976

Source: WRI, *World Resources 1998-99: A Guide to the Global Environment*. In Collaboration with UNEP, UNDP and the World Bank (New York: Oxford University Press, 1998)

for total global municipal needs would cost about 0.5 percent of the global Gross Domestic Product (GDP).¹⁴⁶ This is a significant, though by no means insurmountable, challenge to meet financially—but one that could provide enormous benefits.

Countries that have minimum fresh water have also become extremely efficient at exploiting this valuable and limited resource. Israel, for instance, has made the desert green using drip irrigation that in some cases recycles household gray water. Yet, according to United Nations and World Bank guidelines, Israel is suffering crippling water scarcity. Israel does face a serious problem, but because water is a scarce resource its value drives innovation and creativity, bringing truth to the saying, “necessity is the mother of invention.” This is something a planned, bureaucratized society has rarely, if ever, achieved.

Globally, agriculture uses 69 percent of all fresh water, while industry uses 23 percent, and households 8 percent.¹⁴⁷ Since every ton of grain production uses about 1,000 tons of water, countries in which water is scarce import most of their grain rather than growing it. Israel imports about 87 percent of its grain requirements, Jordan 91 percent, Saudi Arabia 50 percent. This is not necessarily bad for the purposes of conserving water. Looking at it in a different way, this is a very efficient way of importing water.

Most food production regions of the world are what some call “wasteful” of water. But what is waste? From an economist’s point of view, there is little virtue in paying 30 cents per cubic meter (m^3) of water in a region to satisfy notions of “efficiency” when water is so plentiful that it only costs 20 cents per m^3 . It is not until it becomes scarce, as in the Mideast, that it becomes valuable. Once it becomes valuable, people become creative in how they use or obtain it—if, of course, a genuine free market exists to provide proper incentives. There is no need to impose costly international government programs to solve a non-existent problem. India, Jordan, Spain and the Western United States consistently cut water use by 30-70 percent when agricultural drip irrigation became necessary, while increasing yields by 20-90 percent.¹⁴⁸

In summary, “more than 96 percent of all nations have at present sufficient water resources. On all continents, water accessibility has *increased* per person, and at the same time an ever higher proportion of people have gained access to clean drinking water and sanitation.”¹⁴⁹ The remaining water availability and accessibility problems are primarily related not to physical water scarcity, but to a lack of proper water management—and poverty. Both usually result from either government corruption

or a lack of a properly functioning genuine free market system. The answer, as consistently observed with other issues, is found in the Lockean formula of unalienable rights, free enterprise and government by *consent of the people*.

Water Pollution

The second problem, water pollution, was becoming very serious in the United States, and the world, by the mid-twentieth century. In the 1960s several badly polluted rivers in the U.S. caught fire and burned, including the Cuyahoga River in Cleveland, Ohio in 1969. This stimulated action, and the U.S. Congress passed the Clean Water Act in 1972. Today, those once-polluted rivers have been cleaned up and have new parks on their banks. Likewise, Lake Erie was so polluted that most fish species could no longer live in its waters—primarily because nutrient pollution, especially phosphorus, created algae blooms that caused severe oxygen depletion in the lake waters. Proclamations that it would take a hundred years for Lake Erie to be restored have proven false. “As the level of raw sewage and phosphorus entering the lake was reduced, water quality improved dramatically. Fish such as the walleye began to flourish again. By the time the 1980s arrived, Lake Erie had begun to play a significant role in recreation and in the economy of Ohio.”¹⁵⁰

As discussed earlier, the cause of this pollution was not property rights, or genuine capitalism or free market enterprise. Rather, as economists have pointed out, it is another example of the Tragedy of the Commons. No one owned the rivers and lakes, and the cheapest way for companies and cities to get rid of waste was to use the rivers and lakes like sewers. The Clean Water Act forced industry and communities to clean up their effluent *before* it was dumped into the nation’s rivers and lakes. Clearly the act has had some positive environmental benefits. But, similar to the Clean Air Act and other environmental laws, it came with a heavy price.

Communities with just a few hundred or thousand people had to put in the same treatment facilities as cities of tens of thousands or millions of people. The cost per person to a community of 3,000 people spread over several square miles was many times higher than for the same population in a city block of New York City. Federal cost-sharing helped, but the regulations were overkill for these smaller communities. If the regulatory promulgation had been shifted from the federal level to the state and even community level, far better and more cost effective solutions could have been found. At the same time, those

promulgating the regulations would have been more accountable to the electorate they were regulating.

Rivers and lakes at the global level have also shown tremendous improvement in water quality. Fecal pollution has shown dramatic improvement and seems to be directly correlated to per capita income. Fecal pollution seems to worsen, for example, until average income for the nation reaches about \$1,375, after which the rivers get cleaner. However, once income exceeds \$11,500, pollution once again dramatically increases. Why? “The explanation seems to be that there is a general downwards trend in fecal pollution *so long as people are dependent on river water*. However, when a nation gets rich enough, it uses groundwater to a much greater extent, which

diminishes the urgency and political inclination to push for ever lower fecal pollution levels.”¹⁵¹ Once again, need determines value, which drives how much a society is willing to spend on environmental cleanup.

Similarly, nutrient overloads, which cause algae blooms and oxygen depletion, have diminished dramatically around the world. Oxygen levels have returned to near normal levels for most rivers and lakes of industrialized nations. The wealthier a nation, the greater the oxygen levels in its fresh water, which in turn allows life to return. The biodiversity in the Rhine River, for example, has increased six-fold since 1971, and twenty-fold for the Thames River.¹⁵²

Oceans

Over-fishing and Aquaculture

Two major problems exist in our oceans: over-fishing and pollution. Taking over-fishing first, the total catch of ocean fish increased until the early 1980s and then leveled off at about 90 million pounds annually.¹⁵³ (Figure 9) It is estimated that the oceans can produce about 100 million pounds of fish annually. However, this figure cannot be attained because modern fisheries have caused over-fishing. In the northwest Pacific, for instance, China’s catch has increased from about 20 percent in 1970 to more than 60 percent in 2000.¹⁵⁴ Over fishing has reduced the breeding stock and kept the harvest lower than it might otherwise be.

The reason for over-fishing is the same reason America’s air and water in the past were polluted—the Tragedy of the Commons. Since oceans belong to everyone, they are no one’s responsibility, and there is no incentive to harvest less than technology allows. “The trouble is,” notes Lomborg, “that the optimal level [of harvest] can only be attained if some sort of ownership can be established over the fish.”¹⁵⁵ But ownership cannot easily be allocated over the many fish living in the oceans.

On the other hand, is a solution even necessary? Harvests, and by assumption fish stocks, have remained relatively stable since the mid-1980s. Besides normal cyclical variation on a regional basis, there is no indication fish stocks are in danger. Other than getting another 10 million tons of harvest, there is no real reason to optimize fish stocks and harvests. Fish consumption represents less than 1 percent of the world’s total calorie consumption and 10 million tons would feed the world for only 19 days.¹⁵⁶

The UN Food and Agriculture Organization warns that annual harvests could decline more if fishing pressure increases. Since there are no feasible means to increase the harvest beyond 100 million tons, the only other way to both increase the harvest *and* protect the existing stocks is through fish farming or aquaculture.

This has been so successful on a global basis that although fish catches have not been able to keep pace with the population growth, the total fish production has increased so much that the fish per capita in 2000 once again reached record levels.¹⁵⁷

While the overall global picture looks good, government interference in the United States has resulted in artificial dislocation of the fishing industry.

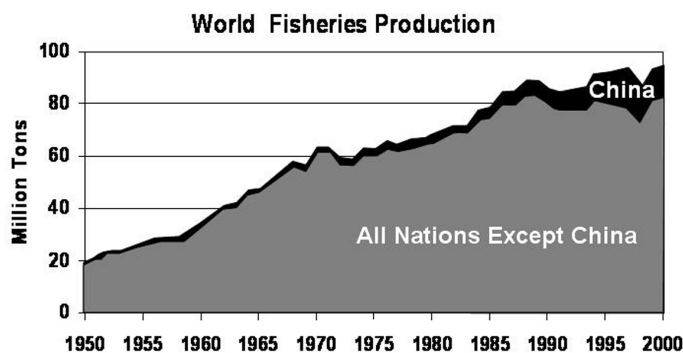


Figure 9. World Fisheries Production from 1950 to 2000.

China’s data is separate because data may be too high.
Source: *The State of World Fisheries and Aquaculture, 2002*, (Rome: United Nations Food and Agricultural Organization, 2000)
<http://www.fao.org/docrep/005/y7300e/y7300e00.htm>

Tremendous pressure from certain environmentalists as well as recreational fishermen who want no commercial fishing, has led to sometimes onerous regulatory restrictions. In the early 1990s, these environmentalists, decrying the loss of some dolphins while harvesting mature tuna in the Eastern Pacific, launched a public relations campaign against the United States tuna industry. Dolphins are often associated with schools of mature yellow-fin tuna, and are used as “scouts” to help tuna boats locate the schools of tuna. Unfortunately, the dolphins themselves can sometimes be caught in the nets.

Although the tuna industry had made a tremendous effort in time and money, including the adoption of new net technology to reduce dolphin mortality, it was not enough for the anti-tuna fishing groups. Although most catches killed no dolphins at all, and neither the dolphins nor tuna were ever in danger of becoming depleted, environmental protests led to the passage of “dolphin-safe” laws that ultimately had the effect of destroying the West-coast tuna industry in the United States. The remaining fleet had to fish in the Western Pacific where younger tuna are caught, producing an inferior product at a higher price. Meanwhile, the Japanese and other individual nations continue to fish the Eastern Pacific—an area that has become devoid of American commercial fishing.¹⁵⁸ Similar problems are occurring in other commercial U.S. fisheries as well.

Even fish farming or aquaculture is being attacked in the United States. For instance, because of the Endangered Species Act, commercially bred salmon are not allowed to mix with indigenous salmon, even though in most cases they are genetically identical. Regulations are being promulgated or discussed that either eliminate or severely regulate salmon farms whose fish pens *might* fail, releasing the artificially bred salmon into the rivers where they *might* contaminate the nearly identical genetic pool of the indigenous salmon. Yet, the gene pool of indigenous salmon is already contaminated from a hundred years of *federal* salmon stocking of rivers throughout the United States. Geneticists disagree whether this is even a problem. In fact, by keeping a variety of salmon genes thriving through salmon farming, a broad gene pool is being preserved for future generations.

The harm done to otherwise viable property owners, be it fishing boats or fish pens, by the arbitrary passage of laws and regulations is once again demonstrated in the ocean fishing industry. One way to avoid these kinds of arbitrary and sometimes capricious laws and regulations is to compensate property owners for the loss of their property as stipulated in the U.S. Constitution. As discussed earlier, such compensation would force society to

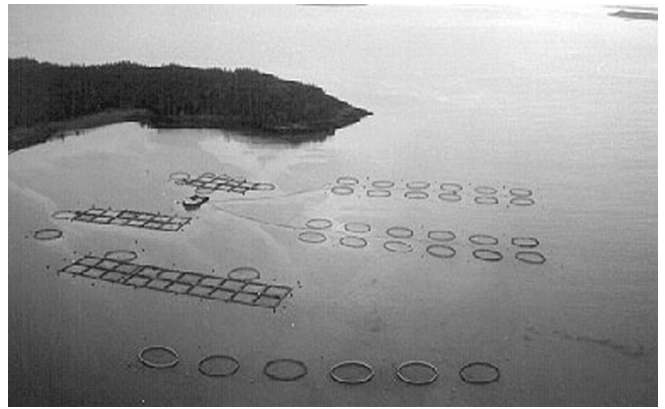


Figure 10. An Atlantic Salmon farm in Maine, USA. The salmon farming industry is threatened because of unnecessary regulations. (<http://www.majesticsalmon.com/>)

prioritize what is important with the limited resources, rather than destroy or harm individual businesses or families.

Ocean Pollution

Turning now to ocean pollution, the greatest threat is to coastal beaches and estuaries. Even so, since the mid-1960s the installation of water treatment facilities and storm and sewer separation has yielded tremendous gains in cleaning our rivers and direct discharge into the ocean by abutting communities. All forms of fecal, pesticide, toxic and heavy metal pollution have shown large declines since the 1970s.¹⁵⁹ This is largely because of the Clean Water Act in the United States discussed in the water pollution section above. Tremendous gains have been made, but at what cost? Could the same or even greater gains have resulted using common law versus central command and control approach utilized by the EPA?

Sewage is the most prevalent source of marine contamination and coastal discharges of untreated sewage have escalated during the past 30 years. Rising levels of nitrogen pollution from agricultural and other sources have caused blooms of toxic phytoplankton and other signs of marine and coastal water eutrophication.¹⁶⁰ Nutrient pollution, primarily from upriver agriculture, livestock and home lawn fertilization, represents another of the ongoing problems for coastal beaches and estuaries. The UN *Global Environment Outlook 2000* equated nutrient pollution, and subsequent algae growth and oxygen depletion, as comparable to the global warming problem, which the UN believes to be a threat to the survival of the earth.¹⁶¹

While fertilizer use has plateaued in developed nations and dramatically declined in developing nations,¹⁶² portions of the Gulf of Mexico become

dead zones each year from oxygen depletion. About 50 percent and 15 percent of the nutrient loads that wash down the Mississippi River from upriver sources come from synthetic and animal waste, respectively.¹⁶³ Evidence exists that this has been a periodic problem since even before the use of fertilizers, but has now become an annual phenomenon.

It is estimated it would cost nearly \$4.8 billion to reduce this problem—namely by cutting fertilizer use by 20 percent and creating 5 million acres of wetlands to filter out nitrogen before it reaches the river.¹⁶⁴ But this would not entirely solve the problem. Oxygen depletion would no longer occur every year, but would occur frequently enough to kill rebounding sea life populations every few years. Further, other species in the Gulf that thrive on additional nitrogen would suffer if the loads declined.

Although this merits concern, it is important to also maintain a sense of proportion. While fertilizer and consequent eutrophication [i.e. oxygen depletion] kill certain organisms in local marine habitats (but provide life to others), it has also made it possible to grow much more food on the same agricultural land. This has saved about 25 percent of today's forests [from land conversion to agriculture] and will save much more in the future.¹⁶⁵ So the use of fertilizer not only feeds more people, it has a huge impact on saving forests from being converted to agriculture. Had fertilizer use remained at the 1960 level, we would need at least 50 percent more farmland than the present-day use.¹⁶⁶ This is the equivalent of converting almost a quarter of the global forests.¹⁶⁷ Once again, it comes down to prioritizing limited resources to determine how best to protect the environment.

The major sources of marine pollution are urban runoff (oil from streets and highways entering streams and rivers, and making its way into the oceans) and natural seeps out of cracks in the sea floor. Oil pollution from bunker tanks, accidental spills and offshore drilling operations, by comparison, is relatively small. Such spills result from ships using sea water as ballast to displace empty bunker oil tanks, and then flushing them out just before or after arriving in port. Since most nations have ratified international treaties forbidding that practice, this source of pollution, has largely been eliminated. The next greatest source is accidental spills, 80 percent of which originate from major accidents.¹⁶⁸ Even so, the number of these spills has dropped dramatically, from an average of 24 before 1980 to eight in the 1990s. In 1998 and 1999 there were less than two each year.¹⁶⁹

Regarding spills, the oceans are more resilient than many wildlife experts suggest, as was demonstrated with the Exxon Valdez. The Valdez became the poster child of oil spill disaster throughout the 1990's. While the ship leaked a total of 266,000 barrels of oil starting on March 24, 1989, it was, in reality, only the twentieth most serious spill of its kind, and was 25 times less serious than the 6 to 8 million tons released by Saddam Hussein from a refinery in Kuwait during the Gulf War in 1991. Nevertheless, both spills were decried as two of the worst biological disasters of modern times, with some suggesting it would take decades, and perhaps even a hundred years, to recover.

In the case of the Gulf spill, however, animal life in the sea was “in much better shape than even the most optimistic of pundits could have predicted” by 1994.¹⁷⁰ Although the coastal areas had been harder hit, they had “largely recovered” as well.¹⁷¹ Today, there is little sign of harm. The same is true of the Prince William Sound in Alaska. Although Exxon had spent over \$2 billion in cleanup and more than \$5 billion in class action suits, NOAA scientists are “impressed by the degree to which Prince William Sound has rebounded from the spill and its aftermath” (i.e. the cleanup), since the cleanup itself caused a tremendous amount of damage. There were “rapid increases in plant cover between 1989 and 1991 at the oiled and washed sites [that] significantly reduced the trendline differences between those sites and the unoiled sites.”¹⁷² Most recovery occurred during the two years following the spill, with slower recovery since then.

Perhaps most surprising, official NOAA investigations have shown that the more than \$2.1 billion cleanup probably did more harm than good. Pressure-washing the coast killed much of the marine life. Further, when equally contaminated washed and unwashed beaches were compared, life returned in just 18 months on the cleaned beaches while the same recovery took three to four years on the “cleaned” beaches.¹⁷³ As *Scientific American* observed, “the public wants the animals saved—at \$80,000 per otter and \$10,000 per eagle—even if the stress of their salvation kills them.”¹⁷⁴

No one denies the Valdez accident was tragic. It claimed about 300 harbor seals, 2,800 sea otters, 250,000 sea birds, 250 bald eagles and possibly 22 killer whales. But to put the Exxon Valdez “disaster” into perspective (without attempting to justify the damage caused by the Valdez spill), it should be noted that about 57 million birds are killed every year in the United States by cars, another 97.5 million by colliding with plate glass. The number of birds killed

by the Exxon Valdez oil spill is roughly equivalent to the number of birds killed by cats in two days in Britain.¹⁷⁵ “Another thought provoking comparison is that the overall pollution was less than 2 percent of pollution caused by powerboats in the U.S. every

year.”¹⁷⁶ In sum, despite the sense of social good will generated by spending over \$2.1 billion on cleanup, many experts believe the money could have been better spent on other more pressing public interest problems.

Principles

While there are local and regional problems to be sure, many of the issues surrounding global warming, biodiversity, and air and water quality are not serious, poorly understood, or showing tremendous progress in their improvement. The best way to help protect the environment is to minimize government corruption, allow genuine free markets to work, and base our decisions on sound science.

Global warming is poorly understood, and human factors are likely to play an insignificant role. Contrary to assertions by the United Nations and U.S. Environmental Protection Agency, it is unlikely that global warming is caused by man, but represents a recovery from the Little Ice Age in the 1700s. Over 17,000 scientists, two-thirds having advanced research degrees (masters or Ph.D.) in the hard sciences, have signed a petition to this effect.

The Kyoto Protocol would not stop global warming even if it were implemented. Even the United Nations acknowledges that the most the treaty would do is reduce the warming by 0.15°C from whatever warming was expected without the treaty. However, it would seriously harm the United States economy, costing the US some \$10-\$15 trillion over the next 50 years. The United States would be forced to buy tens, perhaps hundreds of billions of dollars of pollution credits from developing nations (which would then be pressured not to use fossil fuels or develop economically), or reduce its CO₂ emissions (and therefore energy requirements) by around 30 percent. In short, the Kyoto Protocol is ill-designed to help the environment and would facilitate the creation of a global income redistribution plan that would benefit neither industrialized nor non-industrialized countries.

The fertilization effect of carbon dioxide has been shown to increase crop growth from 25 to 50 percent. This fertilization effect is especially prominent for crops stressed by drought, nutrient deficiency, pollution, ozone, and disease. Best of all it is free to the developing nations. If future human food supply is of concern, the potential benefits far

outweigh the very uncertain risk of increased global warming from man-caused CO₂ emissions.

Chlorofluorocarbons may not be the primary cause of ozone depletion. Natural phenomenon, like volcanoes and evaporation from the sea, appear to play a much larger role.

Natural variation in ozone thickness overwhelms the effects of ozone thinning. Ozone thickness varies by over 50 percent between winter and summer and between the poles and the equator. Since thinning is worst in late winter, damage from increased UV-B radiation is minimal. The same magnitude of increased UV-B radiation caused by the thinning at mid-latitudes is experienced by merely moving 200 km (124 miles) towards the equator.

Almost all air and water pollution results from the Tragedy of the Commons. Common ownership over resources such as the air or water provides no incentives to care for them. There is every incentive, however, to dump waste into them because it is the cheapest means of disposing of waste. Therefore, laws and regulations are essential – but must be based on sound science rather than private agendas, rhetoric or political pressure.

Tremendous gains have been made in reducing air and water pollution in both the United States and the world. Pollution has been reduced by 50 to 98 percent, depending on the pollutant. Most additional improvements will be made only at extremely high cost. As technology and cost permit, future gains can also be made. In the meantime, society needs to prioritize what benefits to society and the environment it is willing to pay for with limited resources.

There is no water shortage in the world—but rather a lack of proper water management. More than 96 percent of all nations have, at present, sufficient fresh water resources. Poverty, caused by corrupt, centrally controlled governments or the lack

of real private property rights, is the greatest contributor to inadequate fresh water accessibility.

Highly politicized regulations regarding ocean fishing and fish farming are doing more harm

than good. Regulations are needed. But the only way to avoid politicizing them is to demand that the regulations be based on peer reviewed empirical science.

Policy Recommendations

1. **Provide incentives to increase the wealth of developing nations to improve all levels of environmental protection.** Environmental damage can be reduced principally by increasing the wealth of the citizens of developing nations. The Agenda 21 plan must be stopped and a plan to institute private property rights with rigorous common-law limitations strongly encouraged, as recommended by Hernando de Soto in his book *The Mystery of Capital*.
2. **Do not ratify the Kyoto Protocol.** The Kyoto Protocol will not stop or even slow global warming, if it is occurring at all. But it will devastate U.S. and global economies.
3. **Reinstate the use of highly beneficial freon and halons.** Significant ozone thinning by CFCs has not been scientifically demonstrated. The Law of Unintended Consequences demands that policies not be implemented before the harm of eliminating these valuable chemicals has been fully assessed.
4. **Restrain United Nations efforts to interfere with the water rights of nation states.** Fresh water is not generally limited and where it is, local solutions are often the cheapest and most effective. Most fresh water problems are political, not environmental in nature.
5. **Revise any laws defining the responsibilities of federal, or national, environmental agencies to principally provide only scientific advice to the states and local governments.** Federal environmental agencies should not become regulatory bodies. If the UN Charter is rewritten giving the Trusteeship Council the responsibility of the global commons, as proposed by Secretary General Kofi Annan, it too should have only advisory powers.
6. **Encourage the development of fish farms in the United States and other nations to supplement current regulatory limits placed on ocean fishing.**

IV. Chemicals and Management of Waste

Overview

Toxics

For many, the mere mention of toxic chemicals immediately conjures up images of skull and crossbones, of dead fish floating on poisoned water, of barren soils, and of people made sick by chemicals in food, water, and air. Likewise, many people believe most chemicals produced by manufacturing processes are bad and should be banned. “Toxic chemicals” to them are synonymous with “synthetic” or “man-made” chemicals, while chemicals in “organic” or “natural” foods or products are perceived to be benign.

The popular division between man-made and natural is incorrect, however. Toxic substances occur naturally, and humans and other life forms cope with them as part of everyday existence. A chemical is or is not a risk depending on how it is used and how living things encounter it. Arsenic, a deadly poison, is *naturally* found in wheat and other foods. Humans produce hydrochloric acid in their stomachs to aid in digestion, and our stomach’s lining provides protection from the acid. While salt is essential in our diet, it can be lethally toxic in high enough concentrations.

Paracelsus, a sixteenth century Swiss physician, made the key point that “Poison is in everything, and no thing is without poison. The dose makes it either a poison or a remedy.” Dr. Bruce Ames, who developed one of the most frequently used tests for cancer-causing potential, wrote, “The vast bulk of the

chemicals humans are exposed to are *natural*, and for every chemical some amount is dangerous.”¹⁷⁷

For instance, Ames has found that coffee is about 50 times more carcinogenic than DDT, and more than 66 times more carcinogenic than the most dangerous present-day pesticide, called ETU.¹⁷⁸ Coffee is made up of over 1,000 chemicals, 70 percent of which are thought to be carcinogenic.¹⁷⁹ Yet, the U.S. Environmental Protection Agency (EPA) does not ban or even regulate exposure to coffee because these carcinogens are not harmful in the concentrations found in coffee. Yet, the United States and other nations banned DDT because of the *misperception* that it was dangerous at *any* concentration. Ames reminds us that many chemicals serve vital functions when used properly. It is only when they are not used properly that problems can occur.

Toxic chemicals can clearly cause damage and must be treated with respect. When used properly, however, they carry little risk for either people or the environment. Extreme reaction to a *perceived* toxic threat is usually counterproductive and can be the result of deliberate scare campaigns conducted by activist pressure groups that are legally exempt from the false advertising laws that govern the conduct of corporations. This was the case in the 1989 Alar scare perpetrated by the Natural Resources Defense Council, Fenton Communications, and a gullible CBS *60 Minutes*. The scare terrified mothers and created

economic devastation for the United States apple industry, which used this safe chemical to prevent unripe apples from dropping from the trees.¹⁸⁰ It also brought much new revenue to the NRDC, Fenton, and CBS.

Government officials can also politicize risk, thereby creating fear when risk is actually low. Dioxins, for instance, are a group of chemical compounds that can be released naturally in volcanic eruptions and forest fires, and by human activities like trash burning, metal smelting, fuel burning, and bleaching paper pulp. While some dioxins are highly toxic and carcinogenic in laboratory tests, many studies have shown that dioxin is non-genotoxic in its cancer analysis.¹⁸¹

The EPA labeled dioxins a “known human carcinogen” in 1994 but its scientific advisors rejected that conclusion. In June 2000, the EPA tried again. Relying on its own methods to estimate cancer risks, EPA’s 2000 dioxin risk assessment claimed the cancer risk is ten times higher than the agency estimated in 1994.¹⁸² The EPA estimate is completely out of line with assessments conducted by government and scientific agencies in the rest of the world. The Chlorine Chemistry Council reports that the EPA set its “safe” daily exposure to dioxins at levels 100 to 1,000 times lower than safe levels determined by the Joint United Nations Food and Agriculture Organization/World Health Organization Expert Committee on Food Additives, the European Commission Scientific Committee on Food, the governments of Canada, Japan and the Nordic nations, and the U.S. Agency for Toxic Substances and Disease Registry.

It gets worse. Research presented at the 23rd International Symposium on Halogenated Environmental Organic Pollutants in 2003 showed that at high body levels, humans eliminate from their bodies traces of dioxin three to five times faster than previously thought. This research “cast doubt on the commonly used estimate of dioxin cancer potency, a cornerstone of the EPA’s draft health risk assessment of this substance.”¹⁸³

Applying the EPA’s risk estimates to real world situations leads to ludicrous results. One serving of Ben and Jerry’s vanilla ice cream contains 200 times the EPA’s “safe” level of dioxin. Even more worrying

for anyone who takes the EPA’s risk estimate literally, the background level of dioxin in the United States is presently 100 times higher than the EPA deems safe for human exposure.¹⁸⁴

In spite of the highly controversial science used to justify its stringent and very costly regulations for dioxin emissions, the EPA’s regulations have been extremely successful in reducing dioxin. The combination of EPA regulations and voluntary efforts in industry dramatically reduced dioxin emissions by 92 percent

between the 1970s and 2004 in the United States.¹⁸⁵ Human levels of dioxin have followed a similar path. The levels of dioxin in the average U.S. resident are so low that a 2003 study by the U.S. Centers for Disease Control and Prevention (CDC) reported dioxin levels in the blood were below levels of detection.¹⁸⁶

These examples do not necessarily lead to the conclusion that regulations should not be used to reduce risk. But large government agencies are rarely a good source of information to define risk and formulate regulations because they are subject to myriad political agendas within bureaucracies. No one can be certain what led the EPA to its high estimates of risk, but the agency has invested much time and effort to convince the public that its regulations are important for the public’s health.

Another deficiency of government agencies establishing risk and regulations is that they rarely factor in the costs of their actions. Congress actually forbids the EPA to consider cost in some environmental laws. Without considering cost, however, limited financial resources will be squandered on poster-child issues like DDT and dioxin, while other far more serious health issues do not get addressed.

Tengs *et al.* calculated the costs of government programs that are designed to save lives. It costs almost nothing “per life-year saved” to reduce the lead in gasoline from 1.1 g (gram) to 0.1 g. However, to control arsenic emissions at glass manufacturing

Dioxin Exposure Guidelines Set by Various Nations & Government Agencies

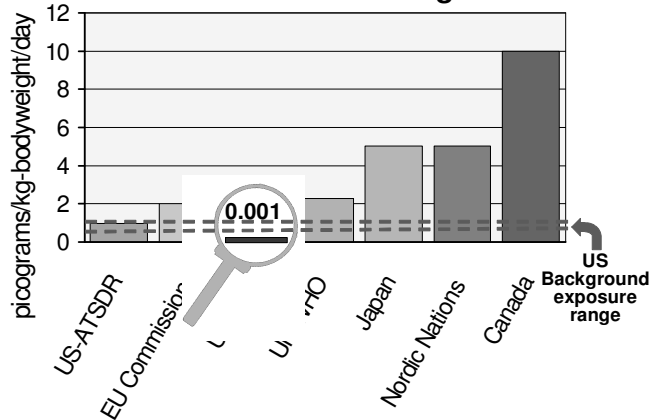


Figure 11. The U.S. EPA has arbitrarily set the maximum “safe” level of dioxin 100 to 1000 times lower than any other agency or government in the world.

plants would cost \$51 million per life-year saved and to control benzene (a highly toxic chemical) emissions at rubber tire manufacturing plants would cost \$20 billion per life-year saved.¹⁸⁷ The question is where best to spend our limited dollars. In almost every case, the cost of protection from environmental toxics like dioxin is many orders of magnitude higher than saving lives in health care, residential safety, transportation safety and occupational safety. (See Figure 12)¹⁸⁸

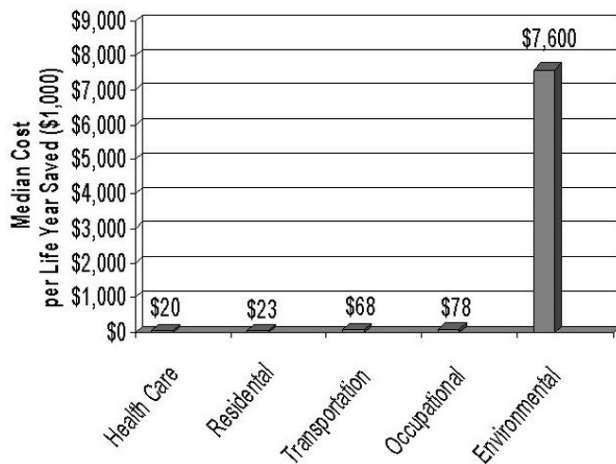


Figure 12. Median cost per life-year saved for different sectors of society in 1993 dollars. Source: Tengs *et al.* “Five-hundred life-saving interventions and their Cost Effectiveness.” *Risk Analysis*, 1995, 15:371

The real cost comes when the zeal for saving lives suffers the law of unintended consequences, in which the cure is worse than the problem. Such is the case for the drumbeat by many environmentalists to eliminate pesticides. These special interest groups claim that hundreds of Americans die annually due to man-made pesticide-caused cancer. In contrast to that claim, a group of prominent scientists found that the number of pesticide-caused cancer deaths is at most 20 a year, and may be zero. That number of 0 to 20 estimated deaths can be compared to the 300 people who die annually from drowning in their bathtubs¹⁸⁹ and 2,000 that die of cancer from eating spices.¹⁹⁰ Since eliminating pesticides would cost between \$20 billion and \$300 billion annually, the minimum cost per life saved would be \$1 billion.¹⁹¹

An immediate consequence of eliminating pesticides would be increased food prices, especially for fruits and vegetables. Increased prices will force people of limited means to reduce their fruit and vegetable consumption with the tragic unintended consequence that cancer rates will increase. A decrease of fruit and vegetable consumption of just 10 percent in the United States is estimated to cause an increase in cancer deaths by about 26,000.¹⁹² In other words, banning the use of pesticides in the United

States *might* save 20 people, but 26,000 lives could be lost doing so.

In spite of the overwhelming evidence that pesticides are not a significant cause of cancer, people remain fearful and are easily persuaded by emotionally charged advocacy literature that pesticides are extremely dangerous to public health. Dr. Robert Scheuplein, head of the Food and Drug Administration’s office of Toxicology in the early 1990s, explains this phenomenon. He explains, “When risks are perceived to be dread, fatal, unfamiliar, uncontrollable by the individual, unfair, involuntary, and potentially catastrophic, they are typically of great public concern (or ‘high outrage’). When risks are perceived as voluntary, controllable by the individual, familiar, equitable, easily reducible, decreasing and non-catastrophic, they tend to be minimized by the public (or ‘low outrage’).”¹⁹³

Scheuplein’s observation is a reflection of human nature. Opportunistic activist groups take advantage of this phenomenon by playing on public concern. Because issues like dioxin and pesticides strike primal fears, boring factual education rarely convinces people that there is no problem. The only effective means of maintaining balance in an emotionally charged issue is in maintaining unbiased regulatory agencies. However, when those agencies appear to join hands with activists, as is the case with dioxin and pesticides, the system of checks and balances can no longer function properly. Overly restrictive regulations are imposed, resulting in squandering limited resources and harming people and the economy.

There is an even more troublesome side to regulatory agencies joining activist causes—the law of unintended consequences. To reach the goals established in the 1990 Amendments to the Clean Air Act, the EPA required oil companies to add oxygenates to gasoline sold in the nation’s ten smoggiest cities. Methyl tertiary butyl ether (MTBE) quickly became the additive of choice. Although MTBE is not known to be carcinogenic, it has been indirectly linked to testicular, kidney and liver cancer, as well as leukemia and lymphoma in laboratory rats.¹⁹⁴ The Centers for Disease Control also reports MTBE exposure is linked to health symptoms including: headache, dizziness, burning sensation of nose or throat, coughing, nausea, vomiting, and disorientation.¹⁹⁵ Because of its high solubility, MTBE spreads quickly, polluting ground water and causing it to taste and smell like turpentine. Leaking underground tanks at corner gas stations forced wells to close. A mere spoonful of MTBE can foul the water in an Olympic-sized swimming pool sufficiently to smell it.

MTBE has been detected in water supplies of all 50 states, and in cities of all sizes. New York has identified 1,500 contaminated sites, with 400 on Long Island alone. California has identified upwards of 10,000 sites. Santa Monica, California was hit hard in 1995, forcing the city to shut down half of its wells and import 80 percent of its water. Human health has been affected. In Alaska, so many people became ill, the state declared an epidemic, finally banning MTBE in 1994.¹⁹⁶ Many other states have also reported adverse health reactions: Montana, Illinois, Arizona, Iowa, New York, Colorado, Maine, Massachusetts, and Pennsylvania.¹⁹⁷

Incredibly, the EPA *knew* about some of these problems *before* it authorized MTBE use. Yet, it forged ahead anyway and mandated the spending of billions of dollars to retrofit refineries to inject MTBE into gasoline. Once the magnitude of the problem was determined, the EPA refused to ban the substance, forcing nearly two dozen states to partially or totally ban it.¹⁹⁸ Other states are considering bans. Yet it wasn't until 2000 that the EPA even started to consider banning it.

The overriding question in the MTBE issue is why the EPA chose to use MTBE to solve one problem when it knew beforehand that it would create other environmental problems. Why has it taken so long to take action once it was clear that MTBE was creating one of the biggest environmental problems in the history of the United States? Several states have already sued the EPA, potentially exposing the federal government to enormous liability claims. The cleanup costs alone will likely cost industry and local governments billions of dollars. Had a private

company done the same thing, its corporate officers would have been brought up on criminal charges.

In summary, the question of toxic chemicals becomes one of balancing risk. Chemicals don't present a health risk to people or the environment, *if* used correctly. Just how much we spend on preventing exposures to toxics that are proven or suspected to cause health risks should be balanced against the benefits to society and compared to the benefits of spending limited dollars elsewhere. Whether because of political pressure, personal political agendas, or some other reason, government regulatory agencies are falling well short of this goal everywhere in the world.

The above examples pointedly reveal how the law of unintended consequences can prevail when only a few overzealous government employees are given the power to develop policy that has an enormous impact on people to whom they are not accountable. As such, it graphically illustrates the potential global tragedy that can result from international governance of environmental regulations. Sustainable development, as envisioned by the UN, calls for giving even more power and autonomy to UN officials to stop anything they believe is not sustainable. If the EPA can be insensitive to opposing ideas and facts when they are only slightly accountable to the people over whom they have jurisdiction, it can only be surmised that a totally unaccountable UN bureaucracy nobly administering its vision of sustainable development would have virtually no motivation to correct a potentially flawed policy. Such a scenario, to be sure, would be most troubling, and thus should be avoided at all costs so as to better serve the public interest.

Hazardous and Radioactive Waste

Hazardous waste

Hazardous waste is the term given to the waste generated at home, school and work that poses a danger to human health or the environment. If not disposed of correctly, it can damage our air, land and water. The EPA identifies four categories of hazardous waste: corrosive, ignitable, reactive, and toxic. American industry alone produces 320 million tons of hazardous waste every year. According to the EPA, 288 million tons of this is wastewater managed in treatment systems or pumped into injection wells. Twenty-seven million tons of industrial and household hazardous wastes are disposed of by

methods other than incineration, and 5 million tons are incinerated each year.¹⁹⁹

Following a fatal chemical-release accident in Bhopal, India, the U.S. Congress enacted the Emergency Planning and Community Right-to-Know Act (EPCRA) in 1986 to promote emergency planning, minimize the effects of such accidents, and provide the public with information on releases of toxic chemicals in their communities. Section 313 of EPCRA established the Toxics Release Inventory (TRI), a national database that identifies 650 chemicals and the facilities at which they are used.²⁰⁰ The TRI tracks chemicals manufactured and used at identified facilities, as well as the annual amounts of

these chemicals released in routine operations or accidents.

The TRI is an excellent system for getting information about chemicals to first respondents and community leaders who understand chemicals, toxicity, risk management and how to safeguard a community. However, it has been abused greatly by both the EPA and NGO green activists like Greenpeace. They have used the data to disseminate raw information to people who don't understand its context and limitations, and thus frighten communities into demanding that companies either shut down or relocate safe facilities.

Critics of the TRI reported on one unintended consequence from its inception. It provides invaluable information to terrorists about where chemicals are stored, how many people might die from a release, and details of the containment structures and processes to guard against a release. In the wake of the 9/11 terrorist attacks, the EPA finally removed TRI data from its website. At a minimum, centralized policies like TRI may not be in the public interest. Again, the potential for abuse by an unaccountable government agency and its NGO partners should be more than sufficient not to advance the UN sustainable development concept.

Household hazardous wastes include leftover household products that contain corrosive, toxic, ignitable, or reactive ingredients.²⁰¹ Many communities in the United States offer a variety of options for safely managing these wastes. While not always convenient, they can help to reduce future pollution. The primary problem is identifying under what circumstances a waste item becomes hazardous. Environmental bureaucracies have a tendency to lump anything that might conceivably be a future problem in this category, even if it is not a problem today, and generally frown at concentrations of chemicals which are currently found in the waste. The best solution for this is local control, where the federal government serves as an advisor and the local government sets the rules on hazardous waste. In some cases, like batteries and tires, commercial recycling has provided a viable solution.

Commercial hazardous waste has a long history and is involved with recycling, breakdown into harmless substances, and storing toxics in long-term containment. Since this kind of storage is very expensive and costly to the user, companies have been very innovative in finding ways to recycle or develop markets for them. Vitrification, or incineration at extremely high temperatures, in kilns that have state-of-the-art air recycling and pollution control

systems, is one of the best ways to get rid of toxic chemicals.²⁰²

Reprocessing waste product from other commercial processing plants into useful new chemicals is a potential alternative to disposal. However, the Basel Convention on the Transboundary Shipment of Hazardous Wastes makes it impossible to send many chemical wastes to countries that would otherwise welcome such cheap sources of chemical feedstock for their processing and reprocessing plants. Many countries signed onto this accord, believing it was designed to protect them. They did not realize how it would be used to prevent them from acquiring feedstock because certain developed countries (mostly in Europe) did not want any cheap foreign competition for their own chemicals industries.

Containment is the choice of last resort. Once companies can no longer dump their waste into rivers, oceans or dump sites, genuine free market incentives create the ability to find alternative uses.

Nuclear Waste

Much of the controversy over nuclear power centers on the lack of a disposal system acceptable to politicians and the public. As a result, progress on nuclear waste disposal is widely considered a prerequisite for any future growth of nuclear power.

Concerns about past abuses haunt the technology and complicate public acceptance. Russia, for instance, used the Arctic Ocean as a dumping ground for many types of nuclear waste, some of which has a half-life of thousands of years. If the polymer containers in which the waste is stored deteriorate, they may create future containment problems. This represents a case of an unaccountable government-owned industry choosing short-term solutions that could cause severe problems in the future.

There is some good news for the Arctic dump sites, however. Investigations by the International Arctic Sea Agency have tentatively shown that the nuclear waste provides no immediate threat to either humans or the Arctic environment. This optimistic conclusion is based on the fact that despite the detection that leakage has already occurred, the radioactive elements of the waste remain localized to the specific waste sites.²⁰³

Planned nuclear waste disposal in the United States will be far more secure, though concerns remain. Under the Nuclear Waste Policy Act of 1982 (NWPA) and 1987 amendments, the Department of Energy (DOE) has selected Yucca Mountain, Nevada, for housing a deep underground repository for spent nuclear fuel and other highly radioactive waste. The state of Nevada has fought DOE's efforts on the

ground that the site is unsafe, pointing to potential volcanic activity, earthquakes, water infiltration, underground flooding, nuclear chain reactions, and fossil fuel and mineral deposits that might encourage future human intrusion.

DOE contends, however, that extensive and exhaustive studies have shown that Yucca Mountain is a suitable depository site, although studies of the site should continue. A “viability assessment” issued by the DOE December 18, 1998, concluded, “no show stoppers have been identified to date at Yucca Mountain.” A Draft Environmental Impact Statement completed by the Energy Department in July 1999 supported those findings. The planned Yucca Mountain repository is not scheduled to open until 2010 at the earliest, more than a decade later than the

1998 goal specified by NWPA. Because scientists believe the geologic formations have remained undisturbed for millions of years, it appears technically feasible to isolate radioactive materials from the environment until they decay to safe levels. “There is no scientific or technical reason to think that a satisfactory geological repository cannot be built,” according to the National Research Council.

While no one can be certain the geology will remain stable for the needed 10,000 year period, the Yucca site does offer the safest depository. Local residents remain concerned, however, and every means should be taken to monitor the site for safety purposes and ensure that proper security and safety protocols are followed.

Solid Waste

Each American produces about 4.4 pounds of waste daily, up from 2.7 pounds per person per day in 1960. During the course of a year, the U.S. produces some 229 million tons of municipal waste.²⁰⁴ This has given rise to claims that the U.S. is running out of landfill space. However, Americans ship less waste to landfills than they did in 1979 because of incineration, recycling, and composting. Currently, in the United States, 30 percent is recovered and recycled or composted, 15 percent is burned at combustion facilities, and the remaining 56 percent is disposed of in landfills.²⁰⁵ Consequently, of 229 million tons of waste produced, only 128 million tons wind up in America’s landfills.

Incineration offers one alternative to landfills. Many incinerators built during the 1980s did not burn hot enough, thereby emitting unacceptable levels of polluting gases into the atmosphere. However, improvements in technology since the 1980s have reduced emissions of polluting gases and it is now possible to attain 99.99 percent cleaning of incinerator stack emissions.²⁰⁶ In 2001, 97 communities in the U.S. utilized solid waste incinerators, “waste to energy” (WTE) facilities²⁰⁷ that generate substantial amounts of electricity in state-of-the-art, non-polluting plants. In goes a steady stream of garbage, and out comes electricity, ash that is perhaps 10% of the wastes’ original volume and recycled metals and glass that can be readily collected from the ash. (Even bottle caps, paper clips, staples and metal bottoms from cardboard juice boxes can be extracted from the ash. Previously, these items would have gone to landfills.)

Although incineration technologies are available, the preferred method of disposal continues to be

landfills. The popularity of landfilling (largely because of cost factors) by local communities has fueled the claim that the world is running out of space for landfills, especially in the United States. Fortunately, these claims are untrue. If the U.S. continues to produce 128 million tons of landfill waste for the next one hundred years, the total space required would fill up a block fifteen miles square, and one hundred feet deep. Assuming there are only 2,000 landfills in America, each landfill would require less than 0.12 additional square miles to dispose of all the waste in the next 100 years. Even with an ever-increasing amount of landfill waste, only a slightly larger area would be required—nineteen miles on a side.²⁰⁸ When spread out over thousands of landfills in America, the seemingly insolvable problem disappears.

It is also extremely unlikely that landfills will cause an increase in cancer-related deaths. The EPA estimates that the 6,000 landfills in the U.S. will only cause 5.7 cancer-related deaths over the next 300 years,²⁰⁹ and it’s almost equally likely that they will cause no deaths.

The biggest problem with solid waste is the age-old “not in my back yard,” or NIMBY syndrome. Solid waste dumps create truck traffic, some smells, and reduce property value. Thus the solid waste problem is a political issue, not one of insufficient space. Modern landfill sites are kept clean to comply with contracts written between waste disposal companies and government entities and regulations, hidden behind trees and berms, and often capped by gasification systems that collect escaping methane for use in power plants. Also bear in mind that garbage

and landfills are a price of being people. Even the Anasazi and Romans had garbage and landfills.

One solution to the NIMBY problem is for the local city or county government to purchase sufficient land to act as a buffer zone between the landfill and adjacent residential development. The site can also be located in industrial areas which are not as sensitive to this issue. Finally, the city or county can compensate local residents for the inconvenience by

reducing their property taxes and giving them free trash service or reduced electricity rates (especially if some of the electricity comes from gasification or WTE facilities). Nonetheless, these options are generally very expensive solutions that will, in a genuine free marketplace, place increasing pressure on the waste industry to develop more cost-effective alternatives.

The Danger of Agenda 21

Agenda 21 claims that the problems with chemicals, toxic waste and solid waste are so massive that only international solutions are possible if the world is to become sustainable. As defined by Freedom 21, however, every one of these problems is either greatly exaggerated or can be solved most effectively at the local or national level. The powerful, unaccountable form of global governance proposed in Agenda 21 by the United Nations and international NGOs opens the governing process up to inefficiency, corruption and abuse.

Agenda 21 cannot work. Almost all the topics addressed in the sustainable development issues above are resolved by eliminating poverty. Although Agenda 21 calls for eliminating poverty as a necessary step, it is incapable of doing so as described in the introduction and Chapter 1 of this Freedom 21

document. Tragically, global governance as envisioned by Agenda 21 can only make poverty worse, thereby exacerbating all the problems outlined in Agenda 21.

There is a direct correlation between the waste produced per person and per-capita income.²¹⁰ The wealthier a developing nation becomes, the more waste it will produce. At the same time, however, the wealthier the nation the more environmental protection it can afford. Since developing nations will not have to reinvent the wheel concerning waste disposal, they will be able to employ existing technology to cost-effectively dispose of their increasing amounts of solid waste. However, wealth creation still remains the highest priority—something Agenda 21 and global governance as envisioned by the United Nations is incapable of doing.

Principles

Chemicals are not inherently bad. All things are composed of chemicals. How chemicals are used determines whether they harm or help people and the environment.

Nature produces toxic chemicals. Many toxic chemicals are *naturally* produced, including the vast majority of pesticides. Natural does not necessarily mean better or safer.

Perceived toxic chemical threats can invoke the law of unintended consequences. Applying an environmental “solution” without first determining its consequences can create problems far worse than the original problem.

Risk analyses done by government agencies are often politicized. Too often the internal politics and agendas of agencies, bureaucrats, and outside pressure groups and the media politicize the science used in developing regulations for a specific law. Likewise, industry is biased by self interest. Although there is no perfect mechanism for determining risk, that does not mean that risk cannot be estimated and problems resolved.

Government agencies tend to lump real and potential chemical hazards into one group. Not all hazards contain the same risk under all circumstances. Yet, government agencies often lump them all together for *their* ease of administration, or to increase regulatory power, funding, or notoriety.

Sustainable solutions must be prioritized before implementing. Billions of dollars can be spent on perceived problems that have low benefits for people and/or the environment compared to other, less glamorous problems.

There is more than adequate space for solid waste disposal. The problem is political, not physical, and centers on legitimate NIMBY concerns.

Where possible, genuine free market solutions are usually better than regulatory solutions. Hazardous

waste problems can often be met with creative use of markets and reformulation rather than repressive and expensive regulations.

Nuclear waste can be safely contained, but strict protocols must protect neighboring communities. While controversial, permanent repositories such as the Yucca Mountain site in Nevada should provide safe storage for spent nuclear fuel. Reprocessing spent fuel could eliminate most of the waste currently needing storage.

Policy Recommendations

1. **Revise the laws defining the responsibilities of government agencies** so that they become federal scientific advisory body to state and local governments, not regulatory and enforcement bodies. Those functions should be given to the lower governmental bodies. If the UN Charter is rewritten, giving the Trusteeship Council the responsibility for the global commons, it too should have only advisory powers.
2. **Create a government/academic/industry board to define risk.** Although there is no perfect way to define risk, a board comprised of government, academic and industrial scientists and specialists

would yield the best balance in defining risk with the least bias.

3. **Depoliticize research funding. Return to private funding.** There exists too great a temptation for agenda-driven NGOs and government employees to fund their special interest agendas. Instead, greater tax incentives should be given to the private sector for research into solving problems defined by a genuine free market. The self-interest of industry can be used to unleash the creativity needed to find the best solution at the least cost.

V. Meeting Essential Human Needs

Overview

Energy

Modern civilization depends on energy. While many people in developing countries only use modest to small amounts of energy in their day-to-day lives (much of it from wood or animal dung), most people in developed nations take energy for granted. It is not until they are without electricity because of an act of nature, a California-style brownout, or the 2003 U.S. blackout that they really discover the extent of their dependence.

Of all the forms of energy, *electricity*, without a doubt, is the one component upon which citizens in developed countries most greatly depend. Access to affordable and reliable electricity creates jobs, promotes economic development and increases disposable income for consumers.

The world's energy demands have increased consistently throughout the last half of the twentieth century. Since 1970, total energy use has doubled from just over 200 quadrillion BTUs annually to over 400 quadrillion in 2003.²¹¹ A BTU (British thermal units) represents the amount of energy required to raise the temperature of one pound of water by one degree Fahrenheit.

Oil and other Fossil Fuels

Over 80 percent of our energy comes from non-renewable sources such as oil, natural gas and coal.

These inexpensive sources power our national economies and civilizations, and represent an important segment of the global economy as well. Oil alone contributes up to 1.6 percent of global GDP.

It is often said the earth is rapidly running out of these non-renewable sources of energy. A barrel of oil contains 5.8 million BTU. Currently, there exists a 1.0 to 1.2 trillion barrels of oil in reserve.²¹² This represents a mere 14.5-year supply. However, according to the U.S. Geological Survey, in its most recent assessment of oil's long-term production potential, identified at least 3 trillion barrels (mean

estimate) of ultimately recoverable conventional oil worldwide.²¹³ Currently, the world uses about 77 million barrels of oil annually,²¹⁴ which means the world has only about a 40 year supply of economically available oil at the current rates of consumption.

The same holds true with respect to natural gas. The known reserves for natural gas extend for 65 years, despite a 75 percent increase in its use since 1980.²¹⁵ On the other hand, affordable coal has always been used by man to warm homes. During the early industrial revolution cities used coal so heavily that people got sick and even died from the smog it created. Today, current technology can clean coal of its impurities and make it safe to use. There is a 230-

**World Energy Consumption by Fuel Type
1970-2020**

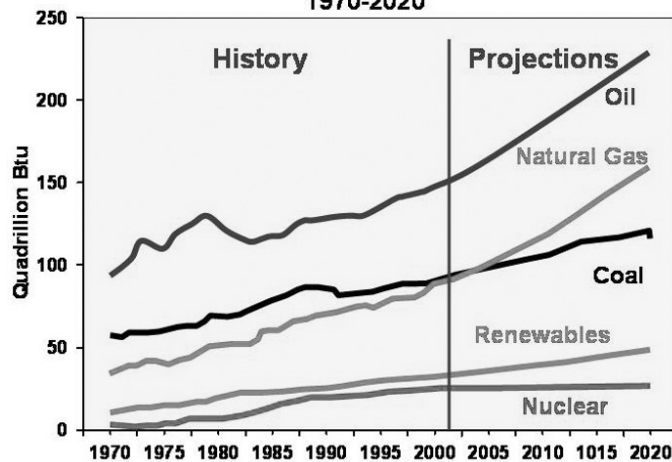


Figure 13. World Energy Consumption by Fuel Type for the period 1970 to 2020. Source: International Energy Outlook—2002. DOE/EIA-0484(March, 2002), p. 3. [http://tonto.eia.doe.gov/FTP/forecasting/0484\(2002\).pdf](http://tonto.eia.doe.gov/FTP/forecasting/0484(2002).pdf)

year supply of coal in spite of a 38 percent increase in its use since 1975.²¹⁶

We can burn coal cleanly, but only in large-scale power plants, where pollution controls are practical. In other words, burning coal cleanly is not an option for decentralized, distributed generation that renewable-energy advocates vigorously promote.

What is Sustainable?

Are we really running out of oil? Gloomy short-term forecasts of oil supply have been the norm for the past one-hundred years. In 1939 the U.S. Department of the Interior projected only 13 more years of oil. In 1951, experts again projected that the U.S. would run out of oil in 13 years.²¹⁷ Ironically, today's forecast of a 40-year supply of oil is three times greater than it was fifty years ago! Why have these projections changed? The answer is simple: As consumption and demand increased, so did the incentive to find more oil—and companies discovered more and more oil. Only a tiny fraction of the world's lands and oceans have been explored.

The UN concept of sustainable development and Agenda 21 views earth's resources as nonrenewable or replaceable. In 1985, the United Nations established the Commission on Sustainable Development, which issued its report, *Our Common Future*, in 1987. Commonly called the Brundtland Report, named after Gro Harlem Brundtland, who served as the commission's chair, the commission defined sustainable development as "a notion of discipline. It means humanity must ensure that meeting present needs does not compromise the ability of the future generations to meet their own needs. And that means disciplining our current consumption."

While Brundtland definition sounds noble and does offer good guidance in some situations, it assumes that all resources on earth are like an unchanging pie. Whenever someone takes a slice, there is that much less for others. But the Brundtland definition ignores the fact that, like any natural resource: 1) oil is not a goal in itself; it merely provides the means to achieve our real goals: energy to accomplish tasks, fuel our economies, and improve the human condition, and 2) the supposedly very limited nature of oil is largely due to its *economic and political availability*. Therefore, we regard the report's statement as pessimistic. We should be *insuring the ability* of future generations to meet their own needs.

Copper is another example. The mining for copper is not a goal in itself, but a means to build products for human use. A primary use in the mid-

twentieth century was wire for transmitting electrical power and telephone calls. If the Brundtland definition for sustainable development had been applied to transmission lines in the 1960s, the world would have depleted known reserves of copper by 2000, even with recycling. To be "sustainable," copper would have been subjected to an eighty percent reduction in use. This would have severely curtailed the use of electricity and communications, and short-circuited the budding electronics industry or space exploration, and many other programs.²¹⁸ Instead, the year 2000 has come and gone and the U.S. still has plenty of copper because Americans did *not* limit production, hence they had the needed time and the *incentive* to create alternative ways of efficiently transmitting electricity and communications.²¹⁹ The goal never changed. The means of attaining the goal did change as new technology became economically available.

Some advocacy groups within the United States and the international community constantly proclaim we will run out of this or that resource because they are in *finite* quantities. Indeed, they are finite, because the earth itself is finite. That, however, is not the issue. While many may ultimately be limited in some practical sense, man's imagination and creativity are not. Consequently, humanity has *always* found an economically viable way to achieve the goals it requires to improve the human condition. It can come in 1) finding more of the resource, 2) using the resource more efficiently, or 3) replacing the resource with an alternative way to meet the goal.

In *every* case, however, it requires individual freedom and a genuine free market to provide the incentive to find it. All resources and technologies are first discovered in the human mind, which the late economist Julian Simon correctly called "the ultimate resource." But burdensome government restrictions almost *always* limit initiative and creativity—which stagnate the human condition and eventually lead to its deterioration.

Much of the pessimism about oil resources has focused entirely on conventional resources. However, the decade of the 1990s saw technological advances that helped bring down the cost of producing liquid fuels from several non-conventional sources, including heavy oils, tar sands, and natural gas. More than 3.3 trillion barrels (oil in place) of heavy oil and tar sands is estimated worldwide, increasing likely oil supplies to 80 years.²²⁰ While only 1.0 to 1.2 trillion barrels are proven reserves,²²¹ the U.S. Geologic Survey estimates that there may be as much as 724 billion barrels of conventional oil that are yet undiscovered.²²² This will continue to increase the

amount of reserves. In fact, one of the biggest potential undiscovered reserves was discovered in the Caspian Sea area of Southern Russia and the former Soviet Republics of Central Asia in 2000. In May 2000, companies exploring in the Caspian Sea off of the coast of Kazakhstan discovered a mega-field that is estimated to contain between 30 and 50 billion barrels of oil.²²³ Oil is also being discovered in Northern Russia, prompting the Russian government to build a major oil export terminal in the Arctic port of Varandei.

There is yet another debate that may change the sustainability equation. It is commonly believed that the source of oil is ancient biomass that has somehow reacted under heat, pressure and possible bacterial action. The late Thomas Gold, former emeritus professor of astronomy at Cornell, disputed that view. He argues that hydrocarbons were formed directly from primordial methane (CH₄) and smaller amounts of ethane (C₂H₆) deep within the earth under intense heat and pressure, and that it has seeped upwards. Gold based this hypothesis on the fact that the hydrogen:carbon ratio of CH₄ is 4:1 and that of petroleum is very close to 2:1. He believed that subterranean microbes very slowly reacted with CH₄ and rust (and a few other oxygen-bearing materials) to extract some hydrogen from CH₄ and oxygen from rust to form H₂O, leaving a lower H:C ratio—i.e. petroleum.²²⁴ While considerable disagreement exists about Gold's theories, if he is even partially correct it would potentially provide new geologic formations for oil exploration.

When discussing sustainability of natural resources, it is essential to make a distinction between copper, iron, nickel, and other such useful metals, and oil, coal, natural gas, and other fuels. Aside from the trivial amounts of metals we have sent into space never to return, there is no less of those metals on the earth than there was a thousand years ago. For example, iron ore is now dispersed in forms used by humans, such as I-beams, girders, automobiles. Even iron that is no longer directly used is still accessible in dumps, scrap yards or unused buildings. In principle, all "unused" metal can be gathered and recycled into useful products. The ultimate price to accomplish the task is energy.

Fuels are a different matter. There is less coal, less oil, and less natural gas on the earth than there was last year. Still, while there is less on the earth, new discoveries have increased available supplies. It is availability, not the hypothetical absolute quantity, that is essential in determining sustainability.

Availability is key. The U.S. Energy Information Administration (EIA) of US DOE estimates that the

ten largest oil fields in the United States will still contain 63 percent of their original oil when production closes down.²²⁵ It is very likely that improving technology will decrease costs, making this oil economically available well beyond the 22nd century. Further, environmental politics have placed many of America's best oil and coal field prospects off limits in Alaska, the West, and the Outer Continental Shelf. In addition, DOE estimates that Americans could save anywhere from 50 to 94 percent of our home energy consumption, thereby reducing future demands.²²⁶

The United Nations' view of sustainability also rests on two common misconceptions. First, curtailing the use of fossil fuel will do almost nothing to increase their vision of sustainability. Current predictions indicate that there is enough oil to last the world only 40 years. If the U.S. reduced its oil consumption by 10 percent—about what the Kyoto Protocol would have required—the world's oil supply would be extended by less than a year—to 40.7 years. Such a reduction would seriously impact the U.S. economy for no real gain in sustainability. Even a 100 percent reduction in U.S. oil consumption would extend the world's supply to only 48 years. This is a mere blip on the scale of long-term sustainability.

The second misconception is belief that increased efficiency leads to decreased consumption. While large gains in energy efficiency have led to far more work done without a proportional increase in the use of energy, it has not diminished total energy needs. Cars and trucks, for instance, averaged 6 to 10 miles per gallon (mpg) in the 1950s. Today it is over 27 mpg today for cars in the U.S. and 21 for trucks. Nonetheless, demand for oil continues to increase—albeit at a far slower rate than would occur without the increases in efficiency. Likewise, solid-state circuitry has greatly diminished the energy requirements for electronics, but electricity demands continue to increase because the efficiency gains have allowed people to use more electronics.

All these debates are dwarfed by the estimated 18.8 trillion barrels of oil in the form of shale oil.²²⁷ That is 242 times more shale oil that is presently not economically available compared to conventional petroleum reserves. The World Energy Council estimates proven amounts of in-place shale at about 210 billion tons and *proven recoverable* reserves at about 13.35 billion tons of oil (97 billion barrels)—a 1,260 year supply at current global consumption rates of 77 million barrels a year.

Major deposits of oil shale exist in Australia, Brazil, Estonia, Jordan, Morocco, Thailand, and the USA.²²⁸ Using today's technology, this oil will

become available only at prices above \$40 a barrel—a price that was greatly exceeded in the summer of 2004. The easier-to-extract oil tar and shale oil would become economically available at costs of less than \$30 a barrel, doubling global reserves.²²⁹ Experts also estimate that there is over eight times more energy in the more-difficult-to-extract shale oil than in all other energy resources combined.²³⁰ This represents a 5,000 year supply.²³¹ As with fresh water (discussed in Chapter III), there are no shortages of primary energy supplies—other than those set by political and economic limitations.

Does Consumption Really Matter?

This reality puts an entirely different perspective on the constant accusation that the United States is the biggest energy consumer in the world and is therefore an oil glutton. In 2001 the U.S. consumed 19.6 million barrels of oil, which is 25.5 percent of the world's consumption of 77 million barrels.²³² However, that is down slightly from 27 percent in 1980.²³³ Part of this is due to increased consumption in other nations, but much of it is due to increased energy efficiency.

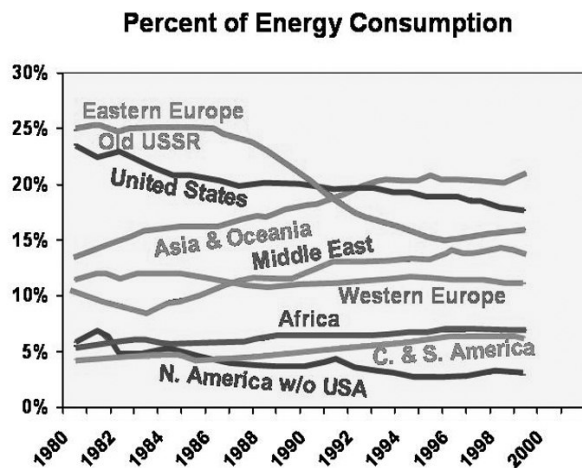


Figure 14. Relative global energy consumption for all fuel types by region and the United States. Source: Table F—World Primary Energy Production (BTU), Source: 1980-2001. *International Energy Annual, 2001*. Energy Information Administration, U.S. Dept. of Energy, pp. 203-204. Updated March, 2003. <http://www.eia.doe.gov/pub/pdf/international/021901.pdf>. <http://www.eia.doe.gov/pub/international/iealf/tablef1.xls>

Figure 14 reveals total energy use in the U.S. has declined from 24 percent of the world's consumption in 1980 to 17 percent in 2001. The only other region with a comparable drop is Eastern Europe and the former Soviet Union.²³⁴ The collapse of the Soviet Union precipitated this decline. As a percentage of total energy used, the Asia/Oceania region now exceeds that that of the United States and the Middle East is rapidly closing the gap.²³⁵ Increasing energy efficiency in the United States since 1950 has almost

halved energy use per dollar of GDP—from 21,000 BTUs to 10,570 BTUs per 1996 dollar of GDP.²³⁶ Without this gain of efficiency, United States consumption would have been much higher.

There are records of energy consumption dating back to colonial days, and of the population as well. It is a simple matter to gather the data and find the historical per-capita consumption of energy. Colonial America was not primitive; glass-making and metal smelting consumed energy, as did providing heat in homes in the bitter New England winters. Homes were poorly insulated and fireplaces were notoriously inefficient. Lighting from candles and oil lamps was particularly inefficient.

At the beginning of the twenty-first century, we drive cars, fly planes, flip on electric lights, sit at computers, air-condition our homes, keep all of our rooms warm in winter, and manufacture all sorts of things. One might suppose that we perhaps use a hundred times as much energy per capita as did our colonial ancestors. But that impression is false.

In fact, Americans in the twenty-first century use only about 3.1 times as much energy per capita as did our ancestors in the colonial times of Ben Franklin and George Washington.²³⁷ It has been a continual process of increasing efficiency and finding even more ways to use energy.

Critics will be quick to point out that the combustion of fossil fuels releases CO₂—one of the primary greenhouse gases that allegedly cause global warming. Figure 15 clearly shows that relative wealth is foundational for increasing the efficiency of energy use and therefore decreasing carbon emissions. While

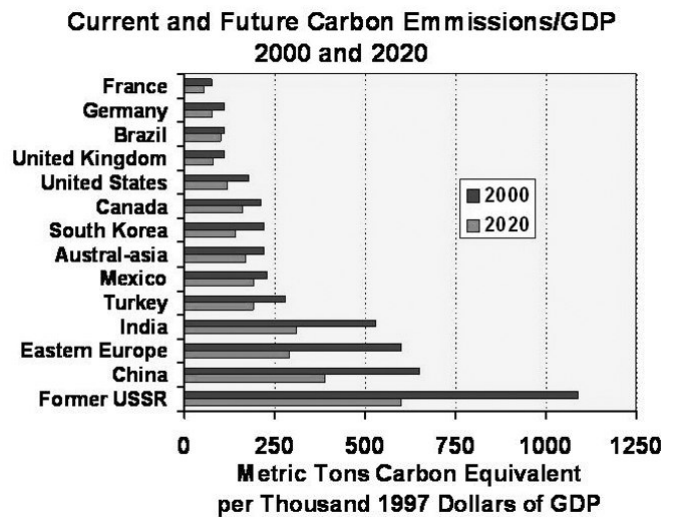


Figure 15. Current and future global carbon emissions by selected nations. Source: *International Energy Outlook—2002*. DOE/EIA-0484 (March, 2002), p. 6. [http://tonto.eia.doe.gov/FTP/ROOT/forecasting/0484\(2002\).pdf](http://tonto.eia.doe.gov/FTP/ROOT/forecasting/0484(2002).pdf)

the low carbon emission/GDP for France and Germany is partially due to their high use of nuclear power, the high ratios of India, China and the former communist block are of concern because that is where analysts forecast future energy increases to occur. The 2020 projections for these nations depend upon their ability to increase energy efficiency.

With increasing technology (coming primarily from the U.S. because of its relatively free markets), there should be abundant cheap energy for everyone. Like the copper example above, high energy use is advancing technological development in the U.S., making it much more likely that developing nations can improve their economic condition much faster and at much less cost than would otherwise be possible. Even so, economic improvement is possible only with a genuine free market, having laws that enhance rather than dampen the wealth-creating phenomenon of private property rights. That is something the UN Agenda 21 and sustainable development are likely to inhibit, or even prevent. The inability of developing nations to effectively utilize available energy is not because the U.S. uses so much oil, but because of their own repressive command-and-control governments, which stifle creativity and hinder investment.

This paper focuses on the problems and opportunities of oil as the primary source of energy. The same conclusions are true, however, for other fossil fuel energy sources. Freedom, property rights and free enterprise will solve the world's energy problems much more quickly and effectively than the sustainable development policies being proposed by the United Nations, the international community, and activist NGOs.

Nuclear

Nuclear energy makes up 6 percent of global electricity production and 20 percent of the electrical energy from countries that have nuclear power plants. Nuclear power uses the energy of fission by splitting the molecules of uranium-235 and capturing the energy released in the process. One gram of uranium-235 is equivalent to almost three tons of coal.²³⁸ The real advantage of nuclear energy is that it does not pollute. Incredibly, radioactive emissions from nuclear power plants are actually *lower* than the radioactivity released by coal-fueled power plants.²³⁹

Table 4 currently nuclear power provides 16.7 percent of the world's electrical energy needs.²⁴⁰ With the exception of France, which produces 78 percent of its power from nuclear sources,²⁴¹ and Europe overall at 29.8 percent, most nations that use it produce between 10 to 20 percent of their total power

Table 4. Percent of total electrical energy produced that comes from nuclear power plants for selected nations.

	%		%
Region/Nation	Nuclear	Region/Nation	Nuclear
Lithuania	80.1	Italy	28.2
France	78.0	Spain	25.8
Belgium	57.3	Czech Rep	24.5
Slovakia	54.7	UK	22.3
Bulgaria	47.3	United States	20.4
Ukraine	45.7	Russia	16.0
Sweden	45.7	Canada	12.3
Slovenia	40.7		
Armenia	40.5	Western Europe	29.8
Switzerland	39.5	North America	18.1
Rep. of Korea	38.6	Eastern Europe	17.0
Hungary	36.1	Asia & Oceania	12.3
Japan	34.5	Africa	3.2
Germany	29.9	South America	1.4
Finland	29.8	Global Average	16.7

Source: "World Net Energy Generation by Type, 2000. EIA

<http://www.eia.doe.gov/iea/table63.html>

Nuclear Share in Electricity Generation. International Atomic Energy Agency. Power Reactor Information System

<http://www.iaea.org/programmes/a2/index.html>

production using nuclear. Interestingly, Europe uses much less fossil fuel for its electrical production than the U.S. because of nuclear energy. Along with the fact that the EU had to modernize the East Block electrical production facilities anyway, resulting in huge reductions in CO₂ emissions, the nuclear power production allowed the EU to have the *appearance* of being generous in reducing its CO₂ emissions below their 1990 levels for the original Kyoto Protocol. Even at a 10 percent reduction below 1990 levels, the economic hit to the EU would have been much less than for the U.S. at a 7 percent reduction below 1990 levels.

As Table 5 indicates, the price of nuclear power is difficult to determine because different nations have differing levels of government support as well as different standards and safety requirements. Nonetheless, best estimates suggest nuclear plants using current technology can produce electricity profitably at a total cost of \$(US)0.02-0.025 cents per kilowatt-hour. This compares to about \$0.035-0.045 for electricity produced by modern gas-fired plants.²⁴² The price of

Table 5. Relative cost of fuel types for electricity at power plants per Kilowatt hour in the U.S.

Fuel Type	Cost	
	USA (\$ US/ kWh)	France (€/kWh) ²
Coal	0.0182 ¹	0.033 ²
Natural Gas	0.0338	0.031-0.043
Oil	0.0261	NA
Nuclear	0.0500	0.032
Solar	0.1200	NA

Source: ¹University of Michigan, April 16, 2001

http://www.engin.umich.edu/class/ners211/pro01/fuel_costs/fuel_costs.htm

²The Economics of Nuclear Power. World Nuclear Association. March 2004.

<http://www.world-nuclear.org/info/inf02.htm>

solar energy in Table 6 is misleading because huge subsidies, rebates and tax credits artificially deflate the price to \$0.12 per kilowatt-hour.

Table 6. Projected cost by fuel type and nation for the period 2005-2010.

Country	USA (\$ US/ kWh)		
	nuclear	coal	gas
France	0.032	0.046	0.047
Russia	0.027	0.046	0.035
Japan	0.058	0.056	0.079
Korea	0.031	0.034	0.042
Spain	0.041	0.042	0.048
USA	0.033	0.025	0.023-0.027
Canada	0.025-0.030	0.029	0.030
China	2.54-3.08	3.18	NA

The Economics of Nuclear Power. World Nuclear Association. March 2004. <http://www.world-nuclear.org/info/inf02.htm>

Until 2002, the U.S. EIA projected that the use of nuclear energy will decline through 2020 for every nation and region except Asia, primarily because of its high cost and the difficulty of properly disposing of the nuclear waste. However, the EIA's 2002 International Energy Outlook revised that estimate and now shows a near-term annual increase for nuclear power. Higher capacity utilization and fewer expected retirements of existing plants caused by increasing competitiveness have resulted in revised expectations for nuclear-generated electricity consumption. World nuclear capacity is now projected to rise from 350 gigawatts in 2000 to 363 gigawatts in 2010 before falling to 359 gigawatts in 2020, with the greatest increase occurring in developing nations.²⁴³

Among the fears often stated for nuclear power is the waste materials generated by a nuclear power plant. They remain radioactive for over 10,000 years, 100,000 years, a million years, or some other long time, depending upon the source of the information. About a hundred different radioactive isotopes result from fission, some with extremely short half-lives and others with extremely long half-lives. In fact, the mere existence of a half-life implies that there will *always* be some radioactivity remaining, at least in a mathematical sense.

Physicists often liken radioactivity to continual withdrawal of funds from a bank account that does not pay interest. The mathematics is the same. Assume that initially there is a million dollars in that account. If we withdraw money at 1 percent per year—\$10,000 in the first year—half the money will remain after 69.3 years. After another 69.3 years, the amount remaining will be a quarter of a million dollars. The *half-life* of the money is 69.3 years. In comparison, if 10 percent per year is withdrawn—\$100,000 in the first year—the half-life of the money will be 6.93 years. Importantly, when the half-life is ten times shorter, the first-year withdrawal is ten

times greater. The same relationship holds for every year, although the actual amounts are different.

The rate of withdrawal corresponds to the amount of radioactivity, with the following rules in force. The shorter the half-life, the more radioactive the substance. The longer the half-life, the less radioactive the substance. The health hazard to people from radioactive substances has to do with the radioactivity. Some of the radioactive by-products are so intensely radioactive that they don't last even until fuel rods are changed. Some of the radioactive by-products have such long half-lives that their radioactivity is quite low.

For example, the worst materials are two isotopes with 30-year half-lives, strontium-90 and cesium-137. Strontium is a bone-seeker, having the same chemistry as calcium. Its radioactivity is of the beta type, which is relatively harmless for materials external to the body. Strontium's hazard comes from ingestion. Cesium-137 is also a beta-emitter, but it also emits very energetic and penetrating gamma radiation. Unlike strontium, cesium does not have to be ingested to cause harm to people. Radiation exposure can come from mere proximity to unshielded Cs-137.

Nevertheless, the relatively short half-life of strontium and cesium means they will not be around for long. After 300 years, they are reduced to 0.1% of their original intensity, and another 300 years reduces their activity by another factor of 1000. By the time 900 years have passed, the activity is a mere billionth of the original. While these times are very long on the scale of human life, they are virtually zero on the scale of geological processes. There is no reason why a well-chosen geological repository cannot be used to safely store radioactive waste from a full nuclear economy.

As with all other issues of hazardous waste, the question eventually is reduced to, "how much is safe?" We also need to distinguish between the waste itself and its environment. For example, if a little boy urinates in a swimming pool, the news media could write a headline about 100,000 gallons of contaminated water! While seemingly ridiculous, the same logic is frequently applied to nuclear waste.

A nuclear power plant that produces 1000 MW of electricity for every second of a year produces only about one metric ton (one tonne) of high-level nuclear waste, the volume of which would fit under a kitchen table. The waste is actually in the original fuel rods with about 15 tonnes of uranium oxide, and the fuel rods themselves weigh something. The weight becomes even greater when the fuel rods are packed into stainless steel containers for eventual shipping

after having been stored in cooling tanks for a few years. It is common for media headlines to cite the total weight as if the entire package were radioactive.

Another disadvantage of nuclear power is that there is only sufficient uranium-235 for about 100 years at present use²⁴⁴ using current light-water technology. One way to remedy the short supply is simply to find more; however there is far more to gain simply by using uranium more efficiently.

A breeder reactor is designed to produce Pu-239 from U-238, thereby producing more fuel than it uses. An economy that got all of its energy from breeders would produce Pu-239 as fast as it was used, therefore maintaining a steady-state quantity of Pu-239. Although Pu-239 is the material of nuclear weapons, it always exists in a highly radioactive environment, making it very hard to steal and use in weapons. Governments can also reduce risk by requiring the use of Generation-IV reactors. Generation-IV reactors allow the utilization of all of the energy available in uranium, while being inherently safe and proliferation-proof.

Theoretically, more efficient use of uranium would extend supplies by a factor of about 100, up to 14,000 years at present consumption.²⁴⁵ But even this is a vast underestimate. The 14,000-year supply estimate is based on *economically available* uranium. There is far more uranium in deposits that are not presently economically available. Just as the quantity of available oil increases with price, so does the quantity of uranium, but very dramatically. Suffice it to say that there is enough uranium to last not just millennia, but millions of years.²⁴⁶

There has been considerable effort to develop fusion technology, which fuses two hydrogen atoms into a single atom of helium. A single gram of fuel can develop the same energy as 45 barrels of oil.²⁴⁷ The fuel in this case comes from sea water (or any other water), which in today's world is virtually limitless, and it produces no radioactive by-products from the fusion itself.

Fusion demands exceedingly hot temperatures, and so far scientists have limited research to learning exactly how much heat is required in order to develop machines capable of producing fusion power. One certainty seems to be that fusion machines will be huge. It will be decades, if ever, before this source of power can be viable or economically competitive.

Renewable

In an abstract sense, renewable energy has several advantages over fossil fuel energy production. It pollutes less and emits no CO₂. can be produced within a country, thereby reducing the need to import

foreign oil. Since nearly all oil purchases are in U.S. dollars, it also reduces the need to obtain U.S. dollars. In addition, many of the technologies are easy to repair and/or transport and are ideal for developing nations and remote areas.

Hydro, Biomass and Geothermal. In spite of these benefits, renewable energy production constitutes only 7.4 percent of the global energy production.²⁴⁸ Of that total, hydro power is the most important, providing 6.6 percent of the world's power needs. Sixty-three nations supply more than 50 percent, and 23 countries supply at least 90 percent of their electricity production with hydro power.

Although hydro power has been around a long time, there are few additional opportunities for expansion. Dams also interfere with river ecology and usually begin to fill with silt within 20 to 50 years.

Biomass, geothermal, wind and solar power make up the last 0.6 percent of global electrical energy production.²⁴⁹ Unfortunately, the most common use for biomass energy is for heating, not for converting to useful work.

It takes considerable land area to grow biomass, and while it may be very important in localized areas, other, more profitable uses can usually be made of the land. The big exception is forests, which provide large amounts of fuel from land areas having little other economic use. As forests grow, especially even-aged forests, they often become dense with saplings and brush, long before the trees are large enough to thin commercially for pulp or lumber. The huge forest fires the last few years in the western U.S. testify that these dense forests can be disasters waiting to happen. Pre-commercial thinning for biomass offers a potentially economically viable means of reducing the density and lowering the potential fire hazard—as well as helping the remaining trees to grow faster in diameter, and sometimes in height. President Bush's Healthy Forest Restoration Act of 2003 provides incentives to do just that.

Biomass is still not very competitive with fossil fuel energy production, but can sometimes be justified on the basis of other benefits. As with other fuels, biomass can release obnoxious smoke when burned in primitive apparatus. Fireplaces are particularly bad. Many mountain resorts in Colorado forbid their use. But this is not an argument against burning firewood or other biomass; it can be burned cleanly in well-designed furnaces.

Nonetheless, because of high transportation costs between harvest site and production facility and other difficulties, it is unlikely biomass production will be able to provide a major part of global energy

consumption. If, for example, a coal-fired power plant uses 100 coal cars per day to produce electricity, it would require 500 to 600 of the same size railroad cars to handle the wood to produce the same amount of electricity.

Geothermal energy from the earth's natural heat has been used for thousands of years and can also be competitive. The name "geothermal" comes from two Greek words: "geo" means "Earth" and "thermal" means "heat." Hot rocks underground heat water to produce steam. Holes are drilled down to the hot region. Water is injected into the hot strata and steam comes up, purified and used to drive turbines, which drive electric generators. Geothermal power requires no fuel, produces no pollution, takes up very little space and production costs are very low. The problem is that the geologic conditions needed for the production of geothermal power are very limited and only a few places around the world qualify.

Wind and Solar. Of the most highly touted renewables, wind and solar power, together make up an inconsequential 0.05 percent of current energy production. As noted by Bjorn Lomborg, "Put simply, this low share of renewable sources in global energy production is simply a consequence of the sources not yet being competitive compared to fossil fuels."²⁵⁰ There is less than meets the eye in the word "yet."

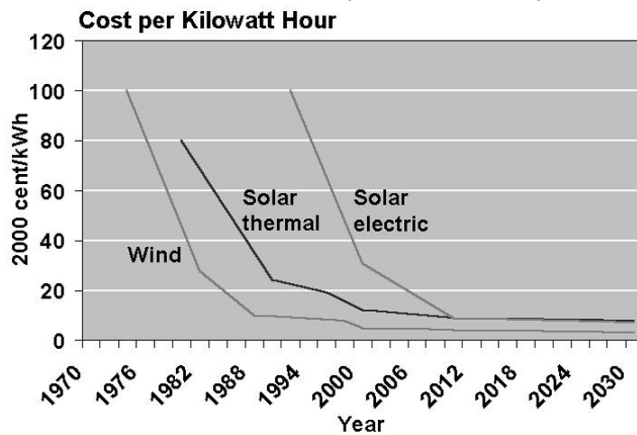


Figure 16. Price per kilowatt hour for different renewable energy sources since 1975. Source: Adapted from Bjorn Lomborg, *The Skeptical Environmentalist* (London, New York: Cambridge University Press, 2001), p. 131.

Wind power is already nearly competitive with fossil fuel-generated electrical power, although it is difficult to sort out the economics for a true picture. There are installation tax credits, production tax credits, as well as additional electrical charges that are passed on to willing customers.

Perhaps the principal problem with wind power is that it works only when there is wind, so it requires backup. Many places lack sufficient dependable wind or the huge land area wind farms require. Others lack

the transmission lines to deliver their power to customers. The 100-300 foot turbines are also unsightly and kill hundreds of raptors and thousands of other birds every year. Without some means of storing the produced energy (at enormous additional cost), the energy may not be there when a stagnant high pressure dominates a temperate region, bringing with it windless bitter cold in the winter and blistering heat in the summer.

Like wind power, solar electric power requires a huge amount of area for the solar receptors. Not only are these unsightly, but not every area has sufficient sunlight to produce consistent power or be cost effective. Storage of power is an absolute necessity, because solar cells work only when the sun is shining.

It is commonly—but incorrectly—argued that mass production will force the price of solar cells to drop in the same way that the prices of computers have dropped. For example, today's cheaper computers are 500 times faster, have a million times more random-access memory, and have 5,000 times larger disk space, than computers of the early 1980s that cost 10 times as much. But all of that increased performance is due to miniaturization. For solar cells, miniaturization accomplishes nothing. The simple rule is that the larger the area covered, the more sunlight can be intercepted and used to produce electricity.

So while both wind and solar may have niche applications, it is doubtful they will ever effectively produce more than a few percentage points of the global energy needs unless technological improvements radically increase their efficiency relative to their cost and size.

In summary, the world is not heading for a major energy crisis. We have at least 40-80 years of oil, at least 60 years of natural gas, and 230 years of coal at present rates of consumption and at current or slightly above current prices. New discoveries of oil and gas fields occur every year around the world. At \$40 a barrel in 2000 dollars, which is about one-third above the current world price, shale oil and tar sands can supply oil indefinitely at current consumption. Prices averaged over \$40 a barrel, even hitting \$65 a barrel, in 2005. Once shale oil is commercially developed, it is not unreasonable to assume that new technologies will increase efficiencies, reducing the cost of production dramatically.

In total, there is enough oil to meet our total fossil energy use for the next 5,000 years—if we are willing to pay the economic and political costs of using shale oil. There is enough uranium for millions of years, assuming that we use reactors that are both inherently safe and proliferation-proof. The risk factor in long-

term storage of nuclear waste is also acceptable using state-of-the-art technology. Yet, to realize these benefits, nation's must encourage creativity and initiative through freedom and genuine free markets to increase the efficiency of exploiting energy sources such as oil shale, renewables and sources yet unknown. A highly bureaucratized, international form

of governance demanded by the UN version of sustainable development will discourage, even thwart, the attainment of these benefits, condemning the impoverished of the world to a continued life of extreme poverty and potentially eliminating the middle class of developed nations.

Food

Besides water and shelter, food is the single most important need for humanity. Humanity's existence depends on it. Food is renewable, but it is scarce in many regions of the world. That does not mean, however, that the world is running out of food.

The Population Bomb, written in 1967 by Dr. Paul Ehrlich of Stanford University, predicted massive starvation in the 1970s and 1980s because of overpopulation. However, that starvation never happened because of the Green Revolution. The Green Revolution is the application of genetic improvement, fertilization and pesticides which more than doubled the yield of many crops.

Food Production

Since the Green Revolution in the early 1960s, the world's cereal (grain) production has increased by 136 percent—from 877 million metric tons per year to 2,068 million in 2003²⁵¹ (Figure 17). Grain yields increased by 129 percent over the same period, from 1.4 to 3.1 metric tons per hectare. Total grain production in the United States also doubled—from 164 million metric tons in 1961 to 349 million in 2003, accounting for 17 percent of the total global grain production. At the same time, overall U.S. grain crop yields doubled from 2.5 to 5.9 metric tons per hectare, an increase of 136 percent and almost double the global average. Europe experienced similar gains.

Developing nations have seen the greatest gains in total grain production over the past 50 years as they applied agricultural technologies developed in the West, primarily from the U.S. Many developing nations have reaped the benefits of the Green Revolution without the high research costs of doing so. Although their absolute yields per hectare in developing countries are still well below those seen in the U.S. and Europe (many nations still lag behind in applying the technology), the roughly 130 percent increase in yields has resulted in a 138 percent increase in total grain production.

Importantly, these ever-larger cereal crops were produced on essentially the same land area. During

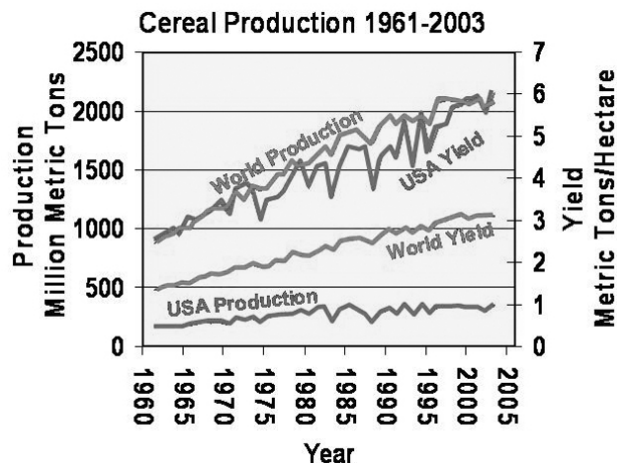


Figure 17. 1961-2003 World and United States grain (cereal) production and yields per hectare for the years 1961-2003. Source: UN FAO, FAOSTAT Agriculture Data, February, 2004. <http://apps.fao.org/page/collections?subset=agriculture>.

the 1961-2003 period, the world's cereal grain crop area increased by only 2.8 percent to 666 million hectares. Conversely, the area upon which the U.S. grew its cereals actually *declined* by 11 percent, from 65 to 57.8 million hectares.²⁵² Part of this is due to increased U.S. productivity. However, increased self-sufficiency in developing nations, and unfavorable international trade agreements also work against many U.S. farmers, thereby limiting export opportunities. This is both bad and good. Because the U.S. is producing more food than it can consume or export, its higher yields have allowed marginal land to be taken out of production. Much of this land has returned to forests and other wildlife habitat. In other words, the Green Revolution has permitted marginal land to revert to forests, savannah, and grasslands—habitat to species that otherwise might become endangered.

Contrary to popular perceptions, the relatively free marketplace of the U.S. has made it possible for many developing nations to feed themselves. The U.S. has also shown how greater yields can help biodiversity, and therefore sustainability, by converting marginal farmland back to a more natural condition.

Additionally, while the U.S. is criticized for having only 5 percent of the world's population yet consuming some 25 percent of the world's oil (17 percent of the world's overall energy consumption), the U.S. produces 17 percent of the world's food. While this is down from 19 percent 30 years ago, it is mostly a reflection of the major increases in non-U.S. cereal grain production from the U.S.-led Green Revolution.

Many environmental organizations claim that the benefits from the Green Revolution are fading, and in some cases actually declining.²⁵³ These claims are false and misleading. While per-capita grain production has leveled off globally, as shown in Figure 18, it has done so for a number of reasons unrelated to the ability to grow more food. U.S. and EU markets are near saturation. They are growing all the food their

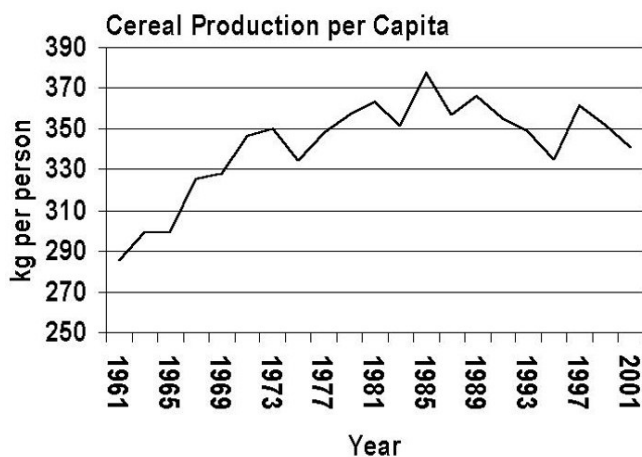


Figure 18. Global cereal production per capita for 1961-2003. Source: UN FAO, FAOSTAT Agriculture Data, February, 2004.

<http://apps.fao.org/page/collections?subset=agriculture>.

own citizens can eat and exports are declining as developing nations are producing more of their own food. Additionally, the early 1990s were bad for global grain production because the centrally controlled societies of the Soviet Union collapsed, causing a major drop in their grain production of almost 40 percent—from supplying almost 17 percent of the world's grain to less than 10 percent.²⁵⁴

At the same time the EU restructured its Common Agricultural Policy to reduce subsidies that contribute to over-production, resulting in a 15 percent decline in cereal crop area and a 5 percent decline in total EU grain production. While global per-capita cereal production has declined slightly, per-capita production has continued to increase in developing nations. "Thus," as Bjorn Lomborg states, "only showing the global decline merely masks the fact that ever more people in the developing world get more and more food."²⁵⁵

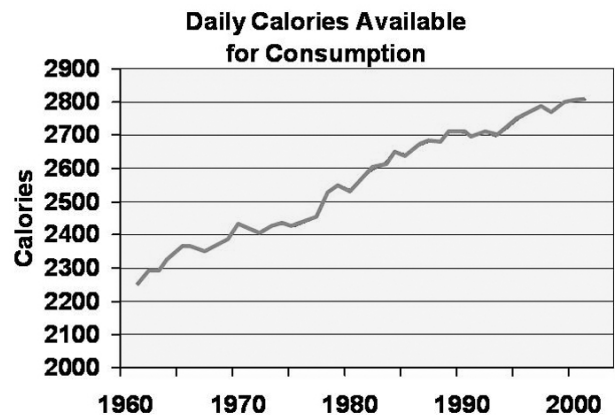


Figure 19. Total food production in calories per person per day is more has increased by 25 percent since 1961 and is more than sufficient to feed every person on earth 2800 calories per day. Source: FAOSTAT Agriculture Data: Food Supply, Crops, Primary Equivalent. February, 2004. <http://faostat.fao.org/faostat/collections?subset=agriculture>

The U.N.'s Food and Agricultural Organization (FAO) specifically states that the decline in global cereal production per capita is "no cause for general alarm."²⁵⁶ The 2004 FAOSTAT data in Figure 19 reveal a steady increase in total calories available per person, reaching 2,800 cal/day by 2001, well above the 2,300 cal/person/day generally used as the minimum necessary to enable a person to lead an active and healthy life.²⁵⁷

In spite of this global good news, nearly 850 million people went to bed hungry each night at the end of 2003.²⁵⁸ Some tout these statistics as "proof" that the world's food supply is inadequate for the earth's growing human population. Again, however, this is a gross distortion of the facts.

Although hunger and starvation still occur in many parts of the world, insufficient food production is not the cause. For decades the world has produced more than enough food to feed all of humanity. World agriculture produces 17 percent more calories per person today than it did 30 years ago, despite a 70 percent population increase. This is enough to provide everyone in the world with at least 2,720 calories (cal) per person per day.²⁵⁹ Rather, it is poverty, wars, corrupt governments, poor transportation and infrastructure systems, lack of private property rights, or policies of deliberate starvation of political opponents that prevent people from producing or delivering food to places where people need it. Once again, wealth creation is at the heart of the solution. In turn, wealth creation depends upon governments free from corruption, legally formalized property rights, and genuine free markets.

Erosion

Critics of modern agriculture charge that its use causes excessive soil erosion, resulting in unsustainable losses of topsoil that will soon result in equally devastating losses in crop productivity. Yet, studies indicate that in temperate climates the productivity losses even from past high rates of soil erosion extended for the next 100 years would reduce crop yields by only 2 to 4 percent.²⁶⁰ Given the tremendous advances in soil-conserving farming practices such as no-tillage farming, made possible on more hectares and more crops through advances in biotechnology, even these modest productivity losses seem unlikely.

As for tropical and other soils, the FAO notes that while there is widespread evidence of soil erosion exceeding 50 tonnes/hectare in some areas, the impact of erosion on “crop yields or production has not been well established in physical terms though there have been many attempts to do so. The relationship between erosion and productivity loss is more complex than previously thought.”²⁶¹ Yield loss in one area may be compensated by gains further down the slope, valley or plain, where the soil is eventually deposited. This is especially true for wind erosion.

The FAO has also found that:

...man has commonly been blamed for much of the silt load of rivers, whereas it is now considered that a substantial proportion results from upward and ongoing movements in the earth's crust. In China, for example, whereas the severe erosion of the loess [highly fertile wind deposited soils] plateau was once attributed largely to man's activities, and is still presented in these terms by some observers, it is now thought that over 60 percent of the erosion is due to such movements.²⁶²

Many commentators fail to realize that rivers and streams have inherent energy levels and will carry a certain amount of sediment and silt no matter what erosion measures are taken. Measures that reduce anti-sediment availability and/or streamload will increase the river's energy level and cause additional sediment to be picked up downstream.

Even so, in a survey cosponsored by the United Nations Environmental Program nearly 200 soil experts found that about 38 percent of all agricultural land is degraded to some extent, 20 percent moderately and 6 percent strongly.²⁶³ However, the author reported three years later the estimates for South and Southeast Asia, where there exists the most

serious degradation, were less serious than originally indicated.²⁶⁴

Farmers depend on the soil for their livelihoods, and do not willingly cause damage unless they are just too poor to use modern technology or are forced via poverty and lack of land tenure to farm steep lands that simply shouldn't be farmed, such as in some parts of Central America. Modern agriculture techniques dramatically reduce soil erosion and losses. While soil loss exceeds 50 tonnes/hectare in some areas of the world, water-caused soil movement (not loss) was estimated to be only 6.3 tonnes/hectare in the U.S. in 2001—down from 9.2 tonnes/hectare in 1982.²⁶⁵

Movement of soil due to wind accounted for another 4.9 and 7.6 tonnes/hectare for 2001 and 1982, respectively. It is unclear how much soil is actually lost from farmed land by wind, although the available evidence indicates that it is a small fraction of the estimated soil moved.²⁶⁶ Overall, scientists estimate that the U.S. will lose only about 3 percent of its soil over the next 100 years. However, “by comparison with yield gains expected from advances in technology, the 3 percent erosion-induced loss is trivial.”²⁶⁷

Pesticides

As discussed more thoroughly under the subject of “toxins” in Chapter IV, a number of activists decry the use of pesticides and claim that hundreds of Americans, and numerous others from around the world, die each year from their use. While we must treat all pesticides and concentrated chemicals with respect, there is hard evidence that the real cancer mortality in the U.S. from pesticide use is quite low—with at most 20 people dying out of 560,000 exposed to pesticides annually.²⁶⁸ Most of these few result from the careless handling or use of these concentrated chemicals by factory workers, farm workers, and exterminators, often decades ago before safety measures were in place. In the U.S., experts say the greatest cause of cancer is smoking and diet. When all causes of cancer are examined, those estimated to result from pesticide exposures (including occupational) are barely a blip in the data, as is shown in Figure 20 (next page).

Nonetheless, anti-pesticide activists invoke the precautionary principle in their calls for banning pesticides. The precautionary principle holds that if a technology, like the use of pesticides, *may* cause damage sometime in the future, its use should be banned or restricted until it is proven absolutely safe. Unfortunately, this includes about any human activity. Additionally, the precautionary principle

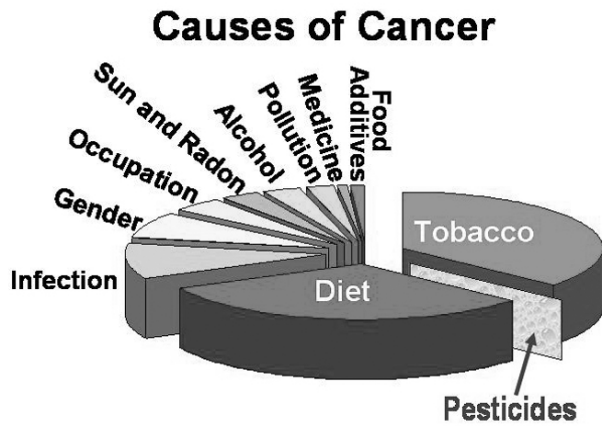


Figure 20. Cancer mortality resulting from the use of pesticides is less than 0.1 percent of cancer mortality from other sources, most of which are controllable by the individuals themselves in their own decisions. Source: Doll, Richard and Richard Peto. "The causes of cancer: quantitative estimates of avoidable risks of cancer in the United States today." *Journal of the National Cancer Institute* 1981 66(6):1256

does not allow for the Law of Unintended Consequences and would ban or restrict virtually all technologies.

For instance, scientists have thoroughly investigated the carcinogenic properties of thousands of chemicals and have found that the greatest risk of cancer comes, not from man-made pesticides, but from pesticide-like chemicals produced *naturally* by plants. Figure 21 shows that the risk of cancer from two natural chemicals (caffeic acid and catechol) in one cup of coffee, which hundreds of millions of people drink daily, has 60 times more cancer-causing potential than a person's daily exposure to DDT prior to its ban in 1972. In 2002, a person's daily DDT exposure is only 1/1,500th of the cancer risk from coffee. Even more dramatic, the pre-ban DDT exposure had only 1/900th of the cancer-causing potential from the alcohol in a single beer, or 1/22,500 for 2002 exposures.

Scare stories that DDT *might* cause cancer in humans and be a threat to wildlife caused the widespread banning of DDT in the 1970s. Since it was banned, tens of millions of people have died from malaria carried by mosquitoes. There isn't even a hint of environmental problems from spraying small quantities of DDT inside homes to prevent malaria in developing countries.

There are more subtle examples. The use of agricultural pesticides, for instance, greatly reduces the cost of food by reducing pest losses and conserving agricultural resources. Banning pesticides will increase food costs substantially and make the growing of some crops completely unfeasible. Even many organic farmers use pesticides.

Often, the first thing people who cannot afford higher food prices forgo is the perceived luxury of

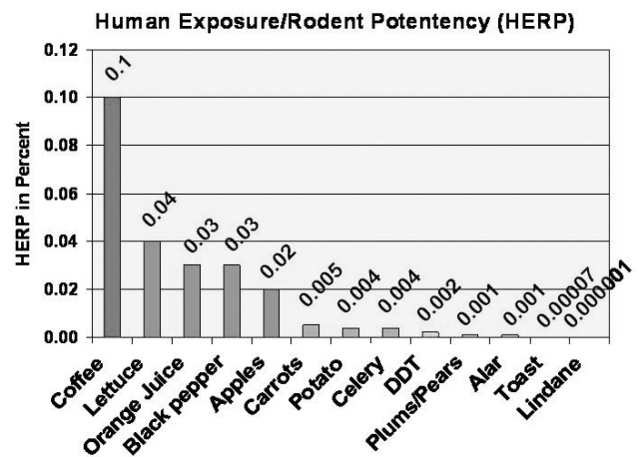


Figure 21. The standard HERP test for determining cancer risk shows coffee has a cancer risk 50 times greater than DDT. DDT was banned in the 1970s because it *might* harm people and wildlife. Meantime, tens of millions of impoverished people have perished from Malaria that was previously controlled by DDT. Source: Ames, Bruce N. and Lois S. Gold. 1998. "The causes and prevention of cancer: the role of environment." *Biotherapy* 11:205-20.

eating fruits and vegetables. Since fruits and vegetables significantly reduce cancer risks, a dietary decrease of fruits and vegetables of just 10 percent in the U.S. would cause an *increase* in cancer deaths of about 26,000.²⁶⁹ Simple math shows the magnitude of this unintended consequence. In essence, it could be argued that saving, at most, 20 lives per year in the U.S. by banning pesticides could result in the net loss of 26,000 lives because higher food costs prevent people from buying and eating the fruits and vegetables they must have to lower their cancer risk. From a human as well as economic cost-benefit analysis, the case for eliminating pesticides is very weak.

In spite of this overwhelming evidence of the benefits of pesticides, some environmentalists continue to insist on banning the use of non-organic-approved pesticides, especially in Third World countries where pesticides could save millions of lives. Paul Driessen, author of *Eco-Imperialism*, laments:

...eco-radicals have an uncanny ability to ignore or deny the horrendous misery and death toll their attitudes impose on the world's poor. They simply cite their standard pseudo-theological dogma: "We're saving the planet from big business, bad technology, and rampant overpopulation. We're protecting birds from pesticides." To which my Ugandan friend Fiona Kobusingye replies: "I lost two sisters, two nephews, and my son to malaria. Don't talk to me about birds."²⁷⁰

Trade

Increased farm trade could help significantly to produce more food from less land in the future, thereby conserving resources and improving human well-being. Tropical sugar yields, for example, are often double the yields of temperate-zone beet sugar growers. At the same time, temperate-zone farmers' grain yields are often double those of tropical farmers. Both sides win if temperate countries import cane sugar and tropical countries import some of their grain needs in genuine free markets. French rain-fed farms tend to produce more per acre than India's non-irrigated farms, due to both moisture shortage and tropical pest pressures.

Grass-fed cattle tend to be more economical than grain-fed, and the world should use the grass resources sustainably, whether they are in the American Great Plains, the African Sahel, or the Australian outback.

Most countries have tried to prevent food imports because they trigger political protests from local farmers. Such import barriers impose a heavy burden on the urban poor, and an intolerable burden on environmental resources in densely populated countries. Farm subsidies in the rich countries have given poor, densely populated countries an additional excuse for continuing import barriers, even as they prevented the developing country farmers from earning their own economic growth by exporting the food and fiber they produce efficiently. At the same time, the subsidies have aggravated the environmental problems caused by inefficient agriculture, such as the needless water pollution from sugar cane production in the Florida Everglades, while Brazil is unable to find markets for its low-cost and environmentally sound sugar production.

Summary

In summary, studies from FAO, USDA and others all show that there is no agricultural crisis or scarcity of food. Everything points to cheaper, more plentiful food and fiber, especially if nations of the world continue to cautiously increase their use of biotechnology. All in all, never has the future for mankind *and* the earth's environment been brighter. The key to unlocking this bright future is, as always, individual freedom, property rights, the curtailment of corruption, and genuine free markets.

With its insistence on increasing the size and scope of government regulation through its version of "sustainable development," Agenda 21 is a recipe for

On the other side of the equation, stringent government regulations on the use of pesticides and genetically modified foods as well as onerous environmental laws regarding wetlands, clean water, and endangered species, among others, have hampered the competitiveness of farmers in rich countries and caused ill-will toward those in the developing world who are unencumbered by such restrictions. Subsidies are thus often justified as a "leveling" mechanism to assist the farmers of North America, Europe and Japan with what is often felt to be unfair competition.

Unfortunately, many environmental laws in developed nations often lack a scientific basis and fail in any measurable degree to improve either public health or the environment where they are imposed, and thus ought to be either reformed or repealed. Government initiatives to lessen burdensome regulation and maximize market incentives should be pursued either before, or concurrently with, efforts to end subsidies, so as not to cause undue hardship on First World farmers. In addition, policies in the developing world ought to be improved, where necessary, to reflect better health and environmental standards.

The free trade fostered by the General Agreement on Tariffs and Trade (GATT) and the World Trade Organization has been able to lower the average tariff on non-farm products from about 40 percent to 4 percent over the past 50 years. However, the average farm product tariff is still more than 60 percent. For the sake of both the urban poor and the environment in developed and developing countries, both farm subsidies and onerous regulations around the globe need to be radically constrained.

failure and invites abuse and corruption. Driessen contends the kind of sustainable development propagated by Agenda 21 is heavily influenced by special interest NGOs in a way that "violates people's most basic human rights in furtherance of their own political agendas. It's morally reprehensible, it's lethal, and it has to end."²⁷¹ In fact, rather than benefiting people, it is highly probable that such governance will cause deterioration in the condition of both mankind and the environment. We have a choice. Agenda 21 or Freedom 21; and that choice is ours.

Principles

Overall the energy outlook for the U.S. and the world is very bright. While it is estimated that there remains only a 40-year supply of oil, 60-year supply of natural gas and a 230-year supply of coal from known reserves which are economically available today, geologists are finding new supplies of oil on a steady basis. New technologies should make even more supplies of these resources economically viable in the future. Food supplies have also been rapidly increasing since the 1960s, especially in the developing world where it is needed the most. There is no food crisis, only a crisis in governance.

Economically available supplies of oil and gas continue to increase faster than the world uses them. In 1939 and again in 1951, many experts pessimistically estimated that there was only a 13 year supply of oil. Today's estimate of 40 years is equally misleading.

With current technology, the supply of oil and natural gas could be increased 50 percent if oil prices continue to skyrocket. The more easily extracted oil and gas will be made economically viable with only small increases in oil price.

With more efficient technology or at stable oil prices which remain high, a 5,000-year supply of shale oil starts to become economically available. It is probable that once this source becomes commercially viable, gains in efficiency will bring the price down for consumers.

There is a 230-year supply of economically available coal. Coal could be an economically cheap source of electricity for a long time to come.

At current rates of use of nuclear power, there is enough U-235 to last for 100 years, though this source of power is about twice as expensive as fossil fuel due to excessive regulations and political delays. Technologically, nuclear power has overcome its major obstacles surrounding safety and waste (long-term storage). The biggest problems remaining are those surrounding public perceptions and pressure group politics.

Renewable energy supplies have too many insurmountable problems to be much more than a niche supplier of energy for the foreseeable future. All forms of renewable energy (except hydro-power)

are expensive, although becoming cheaper. Their use may never amount to a significant source of energy without major breakthroughs in technology that increase their energy output, reduce their costs, resolve their reliability problems, and curtail their adverse environmental impacts on the land and wildlife. Serious, unavoidable limitations exist for hydro, biomass, geothermal, wind and solar power that will confine their use to areas where the costs of conventional forms of energy are uniquely high.

Creativity and innovation must be encouraged to exploit the world's energy supplies. To do this, freedom and a genuine free market system must be encouraged, not discouraged by governments and regulatory bodies. Agenda 21 promotes a top-heavy bureaucracy that stifles creativity and initiative in a quagmire of bureaucratic red tape. Rather than helping humanity and the environment, it is far more likely to repress people and harm the environment, and it is simply not sustainable.

World cereal (grain) production and yields have more than doubled since the start of the Green Revolution in the early 1960s. This rapidly increasing food production revealed that forecasts of global starvation were overly alarmist with no basis in science.

Developing nations have benefited greatly from technology transfers with the West and are gradually become food self-sufficient. By utilizing new technologies, those countries that have embraced property rights, markets, and trade have improved their productivity and increased economic development.

Although the U.S. uses 25 percent of the world's oil production and has only 5 percent of the world's population, it produces 15 percent of the world's food production and much of the "green" technology that feeds the world today. Without the freedom, property rights and genuine free markets found in the U.S., the innovation and initiative would not have existed to create the Green Revolution that has both prevented global starvation and prevented the plow-down of an estimated 15 million square miles of critical wildlife habitat.

Yields per acre for the developing nations are still less than half of what is common in the Western developed nations. There is still plenty of

opportunity to produce more food in the developing nations as well as conserve and more efficiently utilize land, water, and other natural resources.

The greatest obstacles to further increasing the yields and productivity of developing nations are poverty, war, corruption, restrictive societies that stifle creativity and initiative, and an absence of private property rights and legal institutions that

enable and encourage entrepreneurship. Regrettably, Agenda 21 proposes a sustainable development scheme which relies upon greater government regulation and discourages private initiative—exactly the opposite of what is needed.

The future is bright, but economic freedom, private property rights and free enterprise are the only mechanisms that will guarantee that future.

Policy Recommendations

1. **In the United States, turn the power to enforce regulations from the federal agencies to the states.** Bureaucratic abuses and quagmires become more prevalent the further they are removed from the people. Regulations to protect individuals as well as the public are necessary, but regulators need to be accountable to the people they regulate. Always, the consent of the governed is paramount.
2. **Eliminate arbitrary and capricious regulations for mineral/oil extraction in the United States.** Arbitrary and constantly changing environmental regulations represent one of the greatest impediments for developing critical minerals and oil.
3. **The United Nations should not establish an international environmental regulatory regime.** Moving the regulators from the national to the international level will further hamper the effectiveness of good policy making—for the reasons noted above.
4. **In addition to facilitating investments by international energy and agriculture companies, laws should focus on encouraging risk-taking on the part of smaller entrepreneurs.** The United Nations, as well as all nations, must design international treaties and national laws to help both large and small businesses secure property rights for collateral and production, as well as expand in the area of research and development.
5. **National and international laws and treaties must recognize broad property rights.** Governments around the world, including the United States, must grant farmers strong property rights to provide political stability that protects their high-risk investment from potentially corrupt politicians and bureaucrats.
6. **International trading regimes must remain science-based in their regulation of trade in agricultural products.** Trade barriers based on ideology rather than science have already demonstrated themselves to be serious barriers to the improvement of productivity in developing countries, increasing poverty and environmental degradation.
7. **Efforts to reform rich countries' farm production subsidies and Third World farm import barriers are urgently needed.** All countries should attempt to reform agricultural policies that discourage farm trade

Notes and Citations

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- ¹ Kofi Annan. Reform at the UN." Track-2, Part I Overview, para 85.
<http://www.un.org/reform/track2/initiate.htm>
- ² Marc Morano. "Environmentalism Laments Introduction of Electricity", *CNS NEWS*, August 26, 2002
<http://www.cnsnews.com/Culture/Archive/200208/CUL20020826b.html>
- ³ *The global 2000 Report to the President: Global future: Time to Act*, prepared by the Council on Environmental quality and the U.S. Department of State (Washington: U.S. Government Printing Office, January 1981), p. ix.
- ⁴ "World Population 2002." Data Tables. United Nations Population Division, Department of Economic and Social Affairs. Last posted February 14, 2004.
http://www.un.org/esa/population/publications/wpp2002/POP-R2002-DATA_Web.xls Also, World Population Prospects: the 2004 Revision Population Database
<http://esa.un.org/unpp/p2k0data.asp>
- ⁵ Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2002 Revision and World Urbanization Prospects*, March 3, 2004. Go to:
<http://esa.un.org/unpp/index.asp?panel=2>
- ⁶ "World Population Prospects: The 2002 Revision," Press Release, population division department of economic and social affairs united nations.
<http://www.un.org/esa/population/publications/wpp2002/2002RevisionPop-PressRelease.doc>
- ⁷ Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2002 Revision and World Urbanization Prospects*, March 3, 2004. Go to:
<http://esa.un.org/unpp/index.asp?panel=2>
- ⁸ Table 3. Total Fertility, By Country, For Selected Periods. In: Annex Tables, *World Population Prospects, The 2002 Revision*, United Nations Population Division. March 3, 2004.
<http://www.un.org/esa/population/publications/wpp2002/wpp2002annextables.PDF>
- ⁹ Bjorn Lomborg. *The Skeptical Environmentalist* (Cambridge, New York: Cambridge University Press, 2001). p. 91-160.
- ¹⁰ *Ibid*, p. xix
- ¹¹ *Ibid*, p. 159
- ¹² World Bank, *World Development Report*, (Oxford: Oxford University Press, 1992), p. 34.
- ¹³ "World Population Prospects; The 2000 Revision." The Database. <http://esa.un.org/unpp/index.asp?panel=1>.
- ¹⁴ http://www.usmayors.org/uscm/news/press_releases/documents/metroeconomies110399.htm.
- ¹⁵ Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2002 Revision and World Urbanization Prospects*, March 3, 2004. Go to:
<http://esa.un.org/unpp/index.asp?panel=1>
- ¹⁶ Bjorn Lomborg, *The Skeptical Environmentalist*, p. 49.
- ¹⁷ *Ibid*, p. 72.
- ¹⁸ *Human Development Report 1997*. United Nations Development Program.
<http://www.undp.org/hdro/hdrs/1997/english/97.htm>
- ¹⁹ Kofi Annan. "Freedom From Want." *We The Peoples, The Role of the United Nations in the 21st Century*. Section III, 2000. <http://www.un.org/millennium/sg/report/full.htm>
- ²⁰ *Ibid*.
- ²¹ Hernando de Soto. *The Mystery of Capital*. Chapter 1.
<http://www.ild.org.pe/tmoc/cp1-en.htm>
- ²² Ronald Utt and Wyndell Cox. *City Limits: Putting the Brakes on Sprawl: A Contrary View*, WebMemo#20, Heritage Foundation. June 29, 2001.
<http://www.heritage.org/Research/SmartGrowth/WM20.cfm>
- ²³ James Gwartney and Robert Lawson. *Economic Freedom of the World – 2004 Annual Report*. Fraser Institute, 2004.
<http://www.freetheworld.com/2004/efw2004complete.pdf>
- ²⁴ Hernando de Soto. *The Mystery of Capital* (New York: Basic Books, 2000), pp. 6-7, 20-21, 35.
- ²⁵ Joseph E. Stiglitz. *Globalization and Its Discontents* (New York: WW. Norton & Company, 2003), p. 15.
- ²⁶ *Ibid*.
- ²⁷ *Ibid*, p. 19.
- ²⁸ <http://www.freetheworld.com>
- ²⁹ *Ibid*, p. 74.
- ³⁰ *Ibid*, p. 73.
- ³¹ http://en.wikipedia.org/wiki/Marshall_Plan#Expenditures
- ³² Joseph Stiglitz. *Globalization and Its Discontents*, p. 164.
- ³³ *Ibid*, p. 18.
- ³⁴ Hernando de Soto. *The Mystery of Capital*, p. 35.
- ³⁵ Joseph Dalaker, *Poverty in the United States: 2000*, Number of Poor and Poverty Rate, 1959-2000, September 2001. p 3. U.S. Bureau of Census, Current Population Trends, Series P60-214.
<http://www.census.gov/hhes/poverty/poverty00/pov00.ht>

- ml and <http://www.census.gov/prod/2001pubs/p60-214.pdf>
- 36 Poverty: 2000 Highlights, U.S. Department of Census. <http://www.census.gov/hhes/poverty/poverty00/pov00hi.html>
- 37 <http://www.freemarketfoundation.com>
- 38 James Gwartney, Robert Lawson and William Easterly. *Economic Freedom of the World; 2006 Annual Report*. 2006, p. 3
<http://www.freetheworld.com/2006/EFW2006complete.pdf>
- 39 Lomborg, p. 49.
- 40 "Real Gross Domestic Product by Industry in Chained (1996) Dollars, 1994-2000. Bureau of Economic Analysis of the Department of Census. 2001.
<http://www.bea.doc.gov/bea/dh2/gpox.htm>
- 41 Kimberley Strassel. "Rural Cleansing" *The Wall Street Journal*, Thursday, July 26, 2001.
- 42 U.S. Census Bureau determines an area is urban if it has over 1,000 people per square mile surrounded by census blocks having at least 500 people per square mile
- 43 USA Today. "Latest Vote, County by County".
<http://www.usatoday.com/news/nation/2002/02/18/electionmap.htm>
- 44 Jacqueline Kasun. *The War Against Population, The Economics and Ideology of World Population Control* (San Francisco: Ignatius Press), p. 64.
- 45 Ibid, p. 45.
- 46 Jeffrey Frankel. "Why economies grow the way they do." *Canadian Business Economics*, Spring/Summer 1998.
<http://www.ksg.harvard.edu/fs/jfrankel/Apecgrow.pdf>
- 47 Ibid.
- 48 Hernando de Soto Asks Why Capitalism Triumphs in the West But Fails Everywhere Else. DevNews Media Center, World Bank Group. July 23, 2002.
<http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,contentMDK:20055477~menuPK:34457~pagePK:34370~piPK:34424~theSitePK:4607,00.html>
- 49 Hernando de Soto. *The Mystery of Capital* (New York: Basic Books, 2000), p. 35.
- 50 Amartya Sen. *Democracy as Freedom* (Anchor, 1999)
- 51 <http://www.wehaitians.com/does%20democracy%20avert%20famine.html>
- 52 Lomborg, p. 211.
- 53 "In-situ Conservation." Article 8(a). Convention on Biological Diversity.
<http://www.biodiv.org/convention/articles.asp?lg=0&a=cbd-08>
- 54 V.H. Heywood and R.T. Watson, ed. *Global Biodiversity Assessment*, (London, New York: Cambridge University Press, 1995). Section 13.4.2.2.3, p. 993
- 55 Reed Noss, "The Wildlands Project," *Wild Earth*, 1992, p. 10.
- 56 V.H. Heywood and R.T. Watson, ed. Section 11.2.3.2 p. 773.
<http://www.sovereignty.net/p/land/unproprts.htm>
- 57 Ibid.
- 59 "Environmental laws curb firefighting," *Washington Times*, September 1, 2000.
- 60 Reported by the National Interagency Fire Center, Wildland Fire Statistics for the years 1960-2006.
<http://www.nifc.gov/>
- 61 Alston Chase, *In a Dark Wood; The fight over Forests and the Rising Tyranny of Ecology* (New York: Houghton Mifflin, 1995), p. xii.
- 62 Ibid, p 252.
- 63 Ibid, p. 253.
- 64 Ibid, and personal communication with Dr. James Beers, U.S. Fish and Wildlife Service, retired.
- 65 Bjorn Lomborg. *The Skeptical Environmentalist* (London, New York: Cambridge University Press, 2001), p. 81.
- 66 Michael Coffman, *Saviors of the Earth?* (Chicago: Northland Press, 1994), pp. 273-274.
- 67 Ibid, p. 2-3.
- 68 John Adams. "Defence of the Constitutions of Government of the United States," *Works*, (1787) 6:8-9. In: C. Francis Adams, ed. (Little & Brown, Boston, 1850-1856). 1854. Vol. 14:560. Also In: Philip Kurland and Ralph Lerner, Eds, *The Founders Constitution* (Chicago: University of Chicago Press, 1986), Ch. 16(17).
<http://press-pubs.uchicago.edu/founders/documents/v1ch16s15.html>
- 69 Noah Webster, "An Examination into the Leading Principles of the Federal Constitution," *Pamphlets* (October 10, 1787), p. 58-61. In: Philip Kurland and Ralph Lerner, Eds, *The Founders Constitution* (Chicago: University of Chicago Press, 1986), Ch. 16(17).
<http://press-pubs.uchicago.edu/founders/documents/v1ch16s17.html>
- 70 *4 Letters and Other Writings of James Madison*, 174. Taken from the essay "Property" written in 1792 and published in the *National Gazette*, March 27, 1792. See also *The Papers of James Madison* 266 (Riland, ed, 1977).
- 71 Michael Coffman, *The Philosophy, Politics and Science of Biodiversity* (Bangor, ME: EPI Publishing, 1995), p. 21-22.
- 72 Norman Myer, *The Sinking Ark: A New Look at the Problem of Disappearing Species* (Oxford: Pergamon Press, 1979), pp 4-5.
- 73 B. Groombridge, ed., 1994 *IUCN Red List of Threatened Animals* (Gland, Switzerland: IUCN, 1993).
- 74 Michael Coffman, *The Philosophy, Politics and Science of Biodiversity* p. 28.
- 75 Ibid.
- 76 Allan Savory, *Holistic Resource Management*. (Washington, DC: Island Press, 1988), 563 pages.
- 77 Michael Coffman, *The Philosophy, Politics and Science of Biodiversity* p. 20-21.
- 78 Bjorn Lomborg, p. 259. Also: Patrick Michaels and Robert Balling, Jr. *The Satanic Gases, Clearing the Air About Global Warming* (Washington, DC: CATO Institute, 2000), p. 25.
- 79 Eric S. Blake, Jerry D. Jarrell (retired), Edward N. Rappaport and Christopher W. Landsea. *The Deadliest*,

- Costliest, and Most Intense United States Tropical Cyclones From 1851 To 2004*, NOAA Technical Memorandum NWS TPC-4, August 2005.
http://www.nhc.noaa.gov/Deadliest_Costliest.shtml
- ⁸⁰ Ibid.
- ⁸¹ James Glassman. Are Global Warming and Katrina Linked? Interview of Dr. William Gray, professor of atmospheric science and head of the Tropical Meteorology Project at Colorado State University, he pioneered the science of hurricane forecasting. Each December, six months before the start of hurricane season, the now 75-year-old Gray and his team issue a long-range prediction of the number of major tropical storms that will arise in the Atlantic Ocean basin, as well as the number of hurricanes (with sustained winds of 74 miles per hour or more) and intense hurricanes (with winds of at least 111 mph). This year, Gray expects more activity, with 15 named storms, including 8 hurricanes. Four of them, he says, will be intense.
<http://www.techcentralstation.com/images/graytranscript.htm>
- ⁸² Ibid.
- ⁸³ Patrick Michaels. "Global Warming and Hurricanes: Still No Connection," Tech Central Station, September 16, 2005. <http://www.techcentralstation.com/091605F.html>
- ⁸⁴ Patrick Michaels and Robert Balling, Jr. *The Satanic Gases*, p. 174.
- ⁸⁵ Peter Doran, et. al. "Antarctic climate cooling and terrestrial ecosystem response." *Nature*, January 31, 2002, 415:517-520.
- ⁸⁶ Richard B. Alley. "On Thickening Ice?" *Science*, January 18, 2002; 295:451-452. "Positive Mass Balance of the Ross Ice Streams, West Antarctica" Ian Joughin and Slawek Tulaczyk *Science* 2002 January 18; 295:476-480.
- ⁸⁷ A. Ohmura, et. al. "A Possible Change in Mass Balance of Greenland and Antarctic ice sheets in the coming century." *J. Climate*. 9:2124-35.
- ⁸⁸ "Easing off the (Greenhouse) Gas" NASA, January 15, 2002.
http://science.nasa.gov/headlines/y2002/15jan_greenhouse.htm
- ⁸⁹ <http://www.sitewave.net/pproject/>
- ⁹⁰ Mears, C.A., and F.J. Wentz. The effect of diurnal correction on satellite-derived lower tropospheric temperature.: *Science*, August 11, 2005
<http://www.scienceexpress>
- ⁹¹ Roy Spence. "Some Convergence of Global Warming Estimates," *Tech Central Station*. August 8, 2005.
<http://www.techcentralstation.com/081105RS.html>
- ⁹² Roy Spence, "Some Convergence of Global Warming Estimates,"
<http://www.techcentralstation.com/081105RS.html>.
- ⁹³ Arthur Robinson, et al.
<http://www.sitewave.net/pproject/s33p36.htm>.
- ⁹⁴ D.A. Stainforth, et al. Letter in *Nature* Vol 453:403-406, 27 Jan., 2005
- ⁹⁵ Fred Singer. *The Week that Was*, August 13, 2005.
<http://www.sepp.org/weekwas/2005/Aug.%2013.htm>
- ⁹⁶ Philip Pan. "Scientists Issue Dire Prediction On Warming," *Washington Post*, January 23, 2001, p. A01.
<http://www.washingtonpost.com/ac2/wp-dyn?pagename=article&node=&contentId=A30706-2001Jan22>
- ⁹⁷ "Global Warming Extremists," *The New American*, April 9, 2001, Volume 17(8).
http://www.thenewamerican.com/tna/2001/04-09-2001/insider/vo17no08_ins_warming.htm
- ⁹⁸ "Further Fallout from Kyoto Decision," *Global Warming Information Page*.
<http://www.globalwarming.org/polup/pol4-4-01.htm>
- ⁹⁹ James D Glassman. Kyoto "Absurd" Says MIT Scientist, Tech Central Station, March 5, 2001,
<http://www.techcentralstation.com/030501L.html>
- ¹⁰⁰ James Taylor. "Climate Scientist Quits IPCC, Blasts Politicized 'Preconceived Agendas'", *Heartland Institute*, April 1, 2005, p. 1.
<http://www.heartland.org/pdf/ECN%204.05.pdf>
- ¹⁰¹ Fischer, H., Wahlen, M., Smith, J., Mastroianni, D. and Deck B. "Ice core records of atmospheric CO₂ around the last three glacial terminations." *Science* 283: 1712-1714, 1999. Also, Staufer, B., Blunier, T., Dallenbach, A., Indermuhle, A., Schwander, J., Stocker, T.F., Tschumi, J., Chappellaz, J., Raynaud, D., Hammer, C.U. and Clausen, H.B. Atmospheric CO₂ concentration and millennial-scale climate change during the last glacial period. *Nature* 392: 59-62, 1998. AND, Cheddadi, R., Lamb, H.F., Guiot, J. and van der Kaars, S. Holocene climatic change in Morocco: a quantitative reconstruction from pollen data. *Climate Dynamics* 14: 883-890, 1998. AND Gagan, M.K., Ayliffe, L.K., Hopley, D., Cali, J.A., Mortimer, G.E., Chappell, J., McCulloch, M.T. and Head, M.J. Temperature and surface-ocean water balance of the mid-Holocene tropical western Pacific. *Science* 279: 1014-1017, 1998. AND Raymo, M.E., Ganley, K., Carter, S., Oppo, D.W. and McManus, J. Millennial-scale climate instability during the early Pleistocene epoch. *Nature* 392: 699-702, 1998. AND Indermuhle, A., Stocker, T.F., Joos, F., Fischer, H., Smith, H.J., Wahlen, M., Deck, B., Mastroianni, D., Tschumi, J., Blunier, T., Meyer, R. and Stauffer, B. Holocene carbon-cycle dynamics based on CO₂ trapped in ice at Taylor Dome, Antarctica. *Nature* 398: 121-126, 1999.
- ¹⁰² Keith Idso. The Most Important Global Change. *CO₂ Science Magazine*, Editorial Commentary, (Vol) 4(8), February, 2001.
http://www.co2science.org/edit/v4_edit/v4n8edit.htm
- ¹⁰³ Sherwood Idso, Craig Idso, and Keith Idso. *Enhanced or Impaired? Human Health in a CO₂ Enriched Warmer World*. Center for the Study of Carbon Dioxide and Global Change, Tempe, Arizona, November, 2003. pp. 17-18.
<http://www.co2science.org/reports/health/health2pps.pdf>
- ¹⁰⁴ Fernandez, M.D., Pieters, A., Donoso, C., Tezara, W., Azuke, M., Herrera, C., Rengifo, E. and Herrera, A. Effects of a natural source of very high CO₂ concentration on the leaf gas exchange, xylem water potential and stomatal characteristics of plants of *Spatiphyllum cannifolium* and *Bauhinia multinervia*. *New Phytologist* 138: 689-697, 1998.

- ¹⁰⁵ Mayeux, H.S., Johnson, H.B., Polley, H.W. and Malone, S.R. 1997. Yield of wheat across a subambient carbon dioxide gradient. *Global Change Biology* 3: 269-278.
- ¹⁰⁶ Craig Idso and Keith Idso. "CO₂-Induced Amelioration of Environmental Stresses." *Topical Reviews*, Center for the Study of Carbon Dioxide and Global Change, Tempe, Arizona, December 15, 1998. <http://www.co2science.org/subject/other/stress.htm>
- ¹⁰⁷ Craig Idso and Keith Idso. "Forecasting World Food Supplies: The Impact of the Rising Atmospheric CO₂ Concentration," *Technology* 7S:33-55, 2000. See <http://www.greeningearthsociety.org/pdf/idso.pdf>
- ¹⁰⁸ "Earth's Becoming A Greener Greenhouse." Top Story, Goddard Space Flight Center. NASA. September 4, 2001. Published in *Journal of Geophysical Research – Atmospheres*, September 21, 2001. <http://www.gsfc.nasa.gov/topstory/20010904greenhouse.html#images>
- ¹⁰⁹ Ibid, p. 24.
- ¹¹⁰ U.S. Department of State. U.S. Climate Action Report — 2002 (Washington, D.C.: US Government Printing Office, May, 2002), p. 2. <http://yosemite.epa.gov/oar/globalwarming.nsf/content/ResourceCenterPublicationsUSClimateActionReport.html>
- ¹¹¹ Ibid, p. 4.
- ¹¹² Duane Freese. "Important US Climate Program is Unheralded," *The Heartland Institute*, April 1, 2005. p. 7. <http://www.heartland.org/pdf/ECN%204.05.pdf>
- ¹¹³
- ¹¹⁴ Duane Freese. "Important US Climate Program is Unheralded," *The Heartland Institute*, April 1, 2005. p. 7. <http://www.heartland.org/pdf/ECN%204.05.pdf>
- ¹¹⁵ Ibid.
- ¹¹⁶ The Gleneagles Communiqué. G8 Gleneagles Summit. Gleneagles, England, July 6-8, 2005, p. 1. http://www.fco.gov.uk/Files/kfile/PostG8_Gleneagles_Communique.0.pdf
- ¹¹⁷ Ibid, p. 2.
- ¹¹⁸ Vision Statement of Australia, China, India, Japan, the Republic of Korea, and the U.S. for a New Asia-Pacific Partnership on Clean Development and Climate, U.S. Department of State, July 28, 2005. <http://www.state.gov/g/oes/rls/fs/50335.htm>
- ¹¹⁹ Michael Coffman. *Saviors of the Earth? The Politics and Religion of the Environmental Movement* (Chicago: Northfield Publications, 1994), p. 54.
- ¹²⁰ Ibid.
- ¹²¹ Michael Coffman. "Ozone Depletion Enters Twilight Zone." *Discerning the Times*. (January 1995). http://www.discerningtoday.org/ozone_depl_twilight_.htm
- ¹²² Lomborg, p. 276.
- ¹²³ Micah Morrison, *Insight* magazine, April 6, 1992, p. 188.
- ¹²⁴ Lomborg, p. 163.
- ¹²⁵ Lawrence Stone, *The Family, Sex and Marriage in England 1500-1800* (London: Penguin, 1979) p. 62.
- ¹²⁶ Ibid, pp. 62-63.
- ¹²⁷ Daniel B. Botkin and Edward A. Keller. *Environmental Science: Earth is a Living Planet*. (New York: John Wiley and Sons, 1998) p. 466.
- ¹²⁸ Lomborg, p. 165.
- ¹²⁹ EPA, *Latest Findings on National Air Quality: 2000 Status and Trends*, (September 2001), p. 1-2. <http://www.epa.gov/oar/aqtrnd00/>
- ¹³⁰ *National Air Quality and Emissions Trends Report, 2003 Special Studies Edition*. Executive Summary. U.S. Environmental Protection Agency. EPA Publication No. EPA 454/R-03-005, September, 2003. p. 2.
- ¹³¹ Ibid.
- ¹³² Steven J. Milloy and Michael Gough. "The EPA's Clean Air-ogance," *The Wall Street Journal* (January 7, 1997) <http://www.junkscience.com/news/oped.html>
- ¹³³ Ibid.
- ¹³⁴ "Sloppy Science at the EPA." *Investor's Business Daily*, June 3, 1997, p. A28.
- ¹³⁵ Fred Singer. "Respite from the Regulators," *Washington Times*, (June 8, 1999) <http://www.junkscience.com/jun99/singer.htm>
- ¹³⁶ Russell Harding, Director for Environmental Quality for Michigan: *EPA's Proposed Air Standards: Bad Science ... Worse Policy*. http://www.adti.net/html_files/reg/dd/ddharding.htm
- ¹³⁷ Susan Bisong. "Federal Agencies Subject to Data Quality Act," *FindLaw*, <http://library.lp.findlaw.com/articles/file/00312/008569/title/features>
- ¹³⁸ Bonner R. Cohen, Ph.D. "The People v Carol Browner, EPA on Trial." *National Wilderness Institute* (May 12, 1998). <http://www.nwi.org/SpecialStudies/EPAReport/Overview.html>
- ¹³⁹ David L. Lewis, Ph.D. "EPA Science Versus Carol Browner." *National Wilderness Institute* (Press Conference, May 18, 2000) <http://www.nwi.org/SpecialStudies/EPAReport/DrLewis.html>
- ¹⁴⁰ UN Environmental Program. *Global Environmental Outlook 2000* (London: Earthscan Publications, 2000), p. 362. <http://www.grida.no/geo2000/english/index.htm>
- ¹⁴¹ Bjorn Lomborg. *The Skeptical Environmentalist* (Cambridge, New York: Cambridge University Press, 2001), p. 157.
- ¹⁴² "Desalination," World Nuclear Association, Information and Issue Briefs. April 2003. <http://www.world-nuclear.org/info/inf71.htm>.
- ¹⁴³ Bjorn Lomborg, p.149
- ¹⁴⁴ Ibid, p. 150.
- ¹⁴⁵ Ibid, p. 153.
- ¹⁴⁶ Ibid.
- ¹⁴⁷ World Resources Institute, *World Resources 1998-99: A Guide to the Global Environment*. In collaboration with UNEP, UNDP, and the World Bank (New York: Oxford University Press), 1996 p. 306. <http://www.wri.org/facts/data-tables.html>.

- ¹⁴⁸ Worldwatch Institute. *State of the World, 1993* (New York: W.W. Norton, 1993), p. 34.
- ¹⁴⁹ Lomborg, p. 157.
- ¹⁵⁰ Doug Jeanneret. *Lake Erie water quality: Past, present and Future*. Fact Sheet 046 (Columbus, OH: Ohio Sea Grant Program., 1989)
- ¹⁵¹ Lomborg, p. 203.
- ¹⁵² Ibid.
- ¹⁵³ *The State of World Fisheries and Aquaculture, 2002*, Part 1—World Review of Fisheries and Aquaculture (Rome: United Nations Food and Agricultural Organization, 2000), p. 3
<http://www.fao.org/docrep/005/y7300e/y7300e00.htm>
- ¹⁵⁴ Ibid, p 8.
<ftp://ftp.fao.org/docrep/fao/005/y7300e/y7300e01.pdf>
- ¹⁵⁵ *World Agriculture: Towards 2015/30—An FAO Perspective* (Rome: Food and Agricultural Organization, April 2000), p. 72.
<http://www.fao.org/es/ESD/gstudies.htm>. In Lomborg, p. 107.
- ¹⁵⁶ *State of the World Fisheries and Aquaculture: 1996* (Rome: Food and Agricultural Organization, 1997), p. 25-26
<http://www.fao.org/docrep/003/w3265e/w3265e00.htm>
- ¹⁵⁷ *The State of World Fisheries and Aquaculture, 2002*, Part 1—World Review of Fisheries and Aquaculture (Rome: United Nations Food and Agricultural Organization, 2000), p. 3-4
<http://www.fao.org/docrep/005/y7300e/y7300e00.htm>
- ¹⁵⁸ Michael Coffman. *Saviors of the Earth? The Politics and Religion of the Environmental Movement* (Chicago: Northfield Publications, 1994), p. 157-159.
- ¹⁵⁹ Lomborg, p. 195.
- ¹⁶⁰ *Global Environmental Outlook 2003*. United Nations Environmental Program. (London/Sterling, VA: Earthscan Publications Ltd., 2002), p. 9.
<http://www.grida.no/geo/pdfs/GEFChangeandChallenge.pdf>
- ¹⁶¹ *Global Environment Outlook 2000*. United Nations Environmental Program. (London: Earthscan Publications Ltd., 2000), p. 29,
<http://www.grida.no/geo2000/english/index.htm>
- ¹⁶² Charles, R. Frink, Paul E. Waggoner and Jesse H., Ausubel. "Nitrogen Fertilizer: Retrospect and Prospect." *Proceedings of the National Academy of Science*. (1999), 96:1,180
- ¹⁶³ Donald A. Goolsby, et al. *Gulf of Mexico Hypoxia Assessment: Topic #3. Flux and Sources of Nutrients in the Mississippi-Atchafalaya River Basin*. Hypoxia Work Group, White House Office of Science and Technology, Committee on Environment and Natural Resources of the EPA Mississippi River/Gulf of Mexico Watershed Nutrient Task Force. NOAA Coastal Ocean Program. (1999), p. 22.
http://nos.noaa.gov/products/pubs_hypox.html
- ¹⁶⁴ Otto C. Doering, et al. *Gulf of Mexico Hypoxia Assessment: Topic #6. Evaluation of Economic Costs and Benefits of Methods for Reducing Nutrient Loads to the Gulf of Mexico*. Ibid. (1999) p. 133
http://nos.noaa.gov/products/pubs_hypox.html
- ¹⁶⁵ Lomborg, p. 201.
- ¹⁶⁶ Frink p. 1, 179
- ¹⁶⁷ Ibid.
- ¹⁶⁸ *FAO Statistical Databases* (Rome: Food and Agriculture Organization, 2000) <http://apps.fao.org/> and *State of the World's Forests* (Rome: Food and Agriculture Organization, 1997), p. 10.
<http://www.fao.org/montes/fo/sofo/SOFO97/97toc-e.stm>
- ¹⁶⁹ Lomborg, p. 190.
- ¹⁷⁰ Abuzinda Abdulaziz and Fridhelm Krupp. "What happened to the Gulf two years after the world's greatest oil-slick." *Arabian Wildlife* (1997) 2:1
<http://www.arabianwildlife.com/archive/vol2.1/oilglf.htm>
- ¹⁷¹ Ibid.
- ¹⁷² "Has Prince William Sound Recovered From the Spill?" Revised March 19, 2001.
<http://response.restoration.noaa.gov/bat2/recovery.html>
- ¹⁷³ F. Hoke. "Valdez cleanup a washout." *Environment* (1991), 33(5):24 and J. Raloff. "Valdez spill leaves lasting oil impacts." *Science News* (1993) 143(7):102-104.
- ¹⁷⁴ Marguerite Hjolloway. "Sounding out science: years after the Exxon Valdez disaster, but the spill's scientific legacy remains a mess." *Scientific American* (1996) 275(4):88
- ¹⁷⁵ *Look What the Cat's Brought In! The Survey*, Mammal Society 2001,
<http://www.abdn.ac.uk/mammal/catkills1.htm> Wark 2001, In: Lomborg, p. 135.
- ¹⁷⁶ Lomborg, p. 194.
- ¹⁷⁷ Bruce Ames and Lois Gold. "The Causes and Prevention of Cancer: the Role of Environment." *Biotherapy* 1998, 11:212
- ¹⁷⁸ Ibid, p. 214 and Bruce Ames, Renae Magaw and Lois Gold. "Ranking possible carcinogenic hazards," *Science*, 1987, 236:273.
- ¹⁷⁹ Bruce Ames and Lois Gold. Paracelsus to Parascience: the Environmental Cancer Distraction." *Mutation Research*, 1990, 447:4.
- ¹⁸⁰ Dixy Lee Ray. *Environmental Overkill* (Washington, D.C.: Regnery Gateway, 1993), p.174-175.
- ¹⁸¹ "A Comparison of Dioxin Risk Characterization," The Chlorine Chemistry Council, May 2002.
<http://www.heartland.org/pdf/15207.pdf>
- ¹⁸² James Taylor. "Is EPA ready for the truth about dioxin?" *Environment & Climate News*, The Heartland Institute. July 2002, 5(6):18.
<http://www.heartland.org/environment/jul02/editorial.htm>
- ¹⁸³ Janet Flynn. New Research Questions EPA's Dioxin Assumptions. Chlorine Chemistry Council. August 26, 2003. <http://www.heartland.org/pdf/15203.pdf>
- ¹⁸⁴ James Taylor. "Is EPA ready for the truth about dioxin?".
- ¹⁸⁵ "Trends in Dioxin Levels in the Environment and in Humans." Chlorine Chemistry Council, June 1, 2004.
<http://www.heartland.org/pdf/15201.pdf>
- ¹⁸⁶ "Trends in Dioxin Levels in the Environment and in Humans." Chlorine Chemistry Council, June 1, 2004.

- http://www.dioxinfacts.org/sources_trends/trends_04_1_0_04.html
- ¹⁸⁷ Tammy Tengs, *et al.* "Five-hundred life-saving interventions and their Cost Effectiveness." *Risk Analysis*, 1995, 15:371
- ¹⁸⁸ *Ibid.*
- ¹⁸⁹ Len Ritter, Clark Heath Jr., Elizabeth Kaegi, Howard Morrison and Susan Sieber. "Report of a Panel on the Relationship Between Public Exposure to Pesticides and Cancer." *Cancer*, 1997, 80:2,027
- ¹⁹⁰ Robert Scheuplein. "Do Pesticides Cause Cancer?" *Consumers' Research Magazine* 74(12):30-33.
- ¹⁹¹ Bitchel Committee. *Rapport fra hovedudvalget*. The Committee to evaluate the full consequences of a total or partial phase-out of pesticide use. Copenhagen: Danish Environmental Protection Agency. 1999, p. 129. And, *Ibid.*, *Repport fra den tvaerfaglige økologigruppe: økologiske scenarier for Danmark*. In: Bjorn Lomborg, p. 246-247. The Bitchell Committee determined the cost would impact the Danish economy by 3 percent of its Gross Domestic Product (GNP). Taken as a percentage of agricultural production in the U.S., Lomborg determined it to be \$93 billion, while taking it as a percentage of the U.S. GNP is \$277 billion.
- ¹⁹² Bjorn Lomborg. *The Skeptical Environmentalist* (Cambridge, New York: Cambridge University Press, 2001), p. 247.
- ¹⁹³ Robert Scheuplein. "Do Pesticides Cause Cancer?" *Consumers' Research Magazine* 74(12):30-33.
- ¹⁹⁴ John Howard (AP) "Gas Additive Poses Cruel Choice: Clean Air or Clean Water? MTBE Detected in All 50 States," *Arizona Republic*, January 23, 2000, 14(32).
- ¹⁹⁵ "Public Health Statement." Agency for Toxic Substances and Disease Registry, Division of Toxicology, (no date), p. 3. <http://www.atsdr.cdc.gov/toxprofiles/tp91-c1.pdf>
- ¹⁹⁶ "MTBE; Cleaning Up the Air or Increasing Our Cancer Risk?" Paper, Allied-industrial, Chemical, and Energy Workers International Union— Local 8-675. February 19, 2000.
- ¹⁹⁷ *Ibid.*
- ¹⁹⁸ "State Actions Banning MTBE (Statewide)." US Environmental Protection Agency, EPA-420-B-04-009, June 2004. <http://www.epa.gov/mtbe/420b04009.pdf>
- ¹⁹⁹ "Alternatives to Incineration: There's more than one way to remediate." *Environmental Health Perspectives*, October 1994, 102(10). <http://ehp.niehs.nih.gov/docs/1994/102-10/innovations.html>
- ²⁰⁰ "What is the Toxic Release Inventory (TRI) Program." Toxic Release Inventory (TRI) Program. U.S. Environmental Protection Agency. <http://www.epa.gov/tri/whatis.htm>
- ²⁰¹ Household Hazardous Wastes. Environmental Protection Agency. <http://www.epa.gov/epaoswer/non-hw/muncpl/hhw.htm>
- ²⁰² "Offsite Thermal Treatment of Low-level Mixed Waste." U.S. Dept. of Energy, DOE/EA-1135, May 1999. <http://www.hanford.gov/docs/ea/ea1135/section-6.html>
- ²⁰³ <http://environment.about.com/library/weekly/aa011198.htm>
- ²⁰⁴ "Basic Facts, Municipal Solid Wastes," U.S. Environmental Protection Agency, undated. <http://www.epa.gov/epaoswer/non-hw/muncpl/facts.htm>
- ²⁰⁵ *Ibid.*
- ²⁰⁶ "Alternatives to Incineration: There's more than one way to remediate." *Environmental Health Perspectives*, October 1994, 102(10). <http://ehp.niehs.nih.gov/docs/1994/102-10/innovations.html>
- ²⁰⁷ "Basic Facts, Municipal Solid Wastes," U.S. Environmental Protection Agency, undated. <http://www.epa.gov/epaoswer/non-hw/muncpl/facts.htm>
- ²⁰⁸ Bjorn Lomborg, p. 207. Adjusted for the increase in solid waste disposal since Lomborg's book was published.
- ²⁰⁹ Eban Goodstein. "Benefit-cost Analysis at the EPA." *Journal of Social Economics*, 1995, 24(2):375-389.
- ²¹⁰ Bjorn Lomborg, p. 206.
- ²¹¹ International Energy Outlook—2002. Energy Information Administration, U.S. Dept. of Energy. DOE/EIA-0484(March, 2002),, p. 7. [http://tonto.eia.doe.gov/FTP/ROOT/forecasting/0484\(2002\).pdf](http://tonto.eia.doe.gov/FTP/ROOT/forecasting/0484(2002).pdf), and Table 2.9 World Production of Primary Energy by Selected Country Groups (BTU), 1992-2001. Energy Information Administration, U.S. Dept. of Energy. International Energy Annual, 2001. DOE/EIA-0219(2001) March, 2003, p. 43. <http://www.eia.doe.gov/pub/pdf/international/021901.pdf>
- ²¹² Table 8.1 World Crude Oil and Natural Gas Reserves, January 1, 2003. Information Administration, U.S. Dept. of Energy. <http://www.eia.doe.gov/pub/international/iea2002/table81.xls>
- ²¹³ Oil Reserves by Region and Most Countries and World Total. Energy Information Administration, U.S. Dept. of Energy. <http://www.eia.doe.gov/pub/international/iea2002/table81.xls>
- ²¹⁴ U.S. Geological Survey, *World Petroleum Assessment 2000*. <http://greenwood.cr.usgs.gov/energy/WorldEnergy/DDS-60>. In: International Energy Outlook—2002. Energy Information Administration, U.S. Dept. of Energy. DOE/EIA-0484(March, 2002),, p. 25. [http://tonto.eia.doe.gov/FTP/ROOT/forecasting/0484\(2002\).pdf](http://tonto.eia.doe.gov/FTP/ROOT/forecasting/0484(2002).pdf)
- ²¹⁵ Taken from Table 1.3—World Dry Natural Gas, 1980-2002. *International Energy Annual, 2002*. Energy Information Administration, U.S. Dept. of Energy. <http://www.eia.doe.gov/pub/international/iealf/table13.xls> and Table 8.1—World Crude Oil and Natural Gas Reserves, January, 2003. *International Energy Annual, 2002*. Energy Information Administration, U.S. Dept. of Energy. <http://www.eia.doe.gov/pub/international/iea2002/table81.xls>
- ²¹⁶ Bjorn Lomborg. *The Skeptical Environmentalist* (Cambridge, New York: Cambridge University Press, 2001), p. 127.
- ²¹⁷ Julian Simon *The Ultimate Resource 2* (Princeton, NJ: Princeton University Press, 1996), p. 165.

- http://www.rhsmith.umd.edu/Faculty/JSimon/Ultimate_Resource/
- ²¹⁸ Michael Coffman, *Saviors of the Earth? The Politics and Religion of the Environmental Movement* (Chicago: Northfield Publishing, 1994), p. 187-188.
- ²¹⁹ *Ibid.*, p. 189.
- ²²⁰ International Energy Outlook—2002. Energy Information Administration, U.S. Dept. of Energy. DOE/EIA-0484(March, 2002), p. 25. [http://tonto.eia.doe.gov/FTPROOT/forecasting/0484\(2002\).pdf](http://tonto.eia.doe.gov/FTPROOT/forecasting/0484(2002).pdf)
- ²²¹ Table 8.1 World Crude Oil and Natural Gas Reserves, January 1, 2003. Information Administration, U.S. Dept. of Energy. <http://www.eia.doe.gov/pub/international/iea2002/table81.xls>
- ²²² World Undiscovered Assessment Results Summary. U.S. Geological Survey World Petroleum Assessment 2000. U.S. Geological Survey Digital Data Series 60. <http://pubs.usgs.gov/dds/dds-060/sum1.html>
- ²²³ David B. Ottaway. Vast Caspian Oil Field Discovered. *Washington Post*, May 16, 2000. Page A01. Also: "Chevron: At Risk in Kazakhstan," *Stratfor Intelligence*, May 10, 2001. http://www.stratfor.com/standard/analysis_view.php?ID=103048 <http://www.washingtonpost.com/ac2/wp-dyn?pagename=article&node=&contentId=A6723-2000May15¬Found=true>
- ²²⁴ Thomas Gold, *The Deep Hot Biosphere*, (Springer-Verlag, New York, 1998).
- ²²⁵ James Craig, David Vaughan and Brian Skinner. *Resources of the Earth: Origin, Use and Environmental Impact* (Upper Saddle River, NJ: Prentice Hall, 1996), p. 134. In: Bjorn Lomborg, *The Skeptical Environmentalist*, p. 125.
- ²²⁶ Forty-One percent of the energy in fossil fuels is lost in its conversion to electricity for household and commercial uses. G. Tyler Miller. *Living in the Environment: Principles, Connections and Solutions*(Belmont, CA: Wadsworth Publishing Company, 1998), p. 398. *Ibid.*
- ²²⁷ Oil Shale. Table 3.1—Oil shale: resources, reserves and production, World Energy Council. <http://www.worldenergy.org/wec-geis/publications/reports/ser/shale/shale.asp> Calculated by converting the total "Estimated Additional Reserves" by dividing by 7.33, the accepted conversion factor.
- ²²⁸ "Hydrocarbon Resources: Future Supply And Demand," The 18th World Energy Congress, October 2001, p. 3. World Energy Council. http://www.worldenergy.org/wec-geis/publications/default/tech_papers/18th_Congress/downloads/ds/ds1/ds1_9.pdf
- ²²⁹ International Energy Outlook—2002. Energy Information Administration, U.S. Dept. of Energy. DOE/EIA-0484(March, 2002), p. 25. [http://tonto.eia.doe.gov/FTPROOT/forecasting/0484\(2002\).pdf](http://tonto.eia.doe.gov/FTPROOT/forecasting/0484(2002).pdf)
- ²³⁰ James Craig, *et. al.*, p. 159. In Bjorn Lomborg, p. 128.
- ²³¹ Bjorn Lomborg, p. 128.
- ²³² Table 3.5—World Apparent Consumption of Refined Oil Products, 2000. *International Energy Annual, 2002*. Energy Information Administration, U.S. Dept. of Energy, p. 59. <http://www.eia.doe.gov/pub/pdf/international/021901.pdf>
- ²³³ Table 1.2—World Petroleum Consumption, 1992-2001. Energy Information Administration, U.S. Dept. of Energy. <http://www.eia.doe.gov/emeu/iea/table12.html>
- ²³⁴ Table F—World Primary Energy Production (BTU), 1980-2001. *International Energy Annual, 2001*. Energy Information Administration, U.S. Dept. of Energy, pp. 203-204. Updated March, 2003. <http://www.eia.doe.gov/pub/pdf/international/021901.pdf>
- ²³⁵ *Ibid.*
- ²³⁶ "Energy use per dollar of Gross Domestic Product, Figure 3." *Annual Energy Review, Energy Perspectives: Trends and Milestones 1948 - 2000*. Energy Information Administration, U.S. Dept of Energy. <http://www.eia.doe.gov/emeu/aer/ep/overview.html>
- ²³⁷ Personal communication with Howard C. Hayden. Emeritus Professor of Physics, University of Connecticut, May 24, 2004. Also see Howard C. Hayden. *The Solar Fraud, 2nd Edition Why Solar Energy Won't Run the World*, 2005.
- ²³⁸ James Craig, *et. al.*, p. 164. In Bjorn Lomborg, p. 129.
- ²³⁹ Coal has trace amounts of radioactive compounds that are released during combustion. See: "Radioactive Elements in Coal and Fly Ash: Abundance, Forms, and Environmental Significance." U.S. Geological Survey, Fact Sheet FS-163-97. October, 1997.
- ²⁴⁰ International Energy Annual 2000. Table 6.3 World Net Energy Generation by Type, 1999. Energy Information Administration, U.S. Dept of Energy. <http://www.eia.doe.gov/iea/table63.html>
- ²⁴¹ *Ibid.* Also, Nuclear Share in Electricity Generation. International Atomic Energy Agency, Power Reactor Information System <http://www.iaea.org/programmes/a2/index.html>
- ²⁴² "The Outlook for Nuclear Energy in a Competitive Electricity Business." Nuclear Energy Institute. 2004. <http://www.nei.org/index.asp?catnum=3&catid=38>
- ²⁴³ *International Energy Annual, 2002*. Energy Information Administration, U.S. Dept. of Energy, p. 4. [http://tonto.eia.doe.gov/FTPROOT/forecasting/0484\(2002\).pdf](http://tonto.eia.doe.gov/FTPROOT/forecasting/0484(2002).pdf)
- ²⁴⁴ James Craig, *et. al.*, p. 181. In Bjorn Lomborg, p. 129.
- ²⁴⁵ *Ibid.*, p. 170. *Ibid.*
- ²⁴⁶ Personal communication with Howard C. Hayden. Emeritus Professor of Physics, University of Connecticut, May 24, 2004.
- ²⁴⁷ Daniel Botkin and Edward Keller, *Environmental Science: Earth is a Living Planet* (New York: John Wiley and Sons, 1998), p. 454. In: Bjorn Lomborg, p. 129.
- ²⁴⁸ International Energy Annual 2000. Table 2.9—World Production of Primary Energy by Selected Country Groups (BTU), 1992-2001. Energy Information Administration, U.S. Dept of Energy. <http://www.eia.doe.gov/pub/international/iea2001/table29.xls>
- ²⁴⁹ Bjorn Lomborg, p. 130.

- ²⁵⁰ Ibid, pp. 130-131.
- ²⁵¹ FAOSTAT Agriculture Data: Agricultural Production, Crops Primary, February, 2004.
<http://apps.fao.org/page/collections?subset=agriculture>.
 The actual information was taken from the FAO query page at
<http://apps.fao.org/page/form?collection=Production.Crops.Primary&Domain=Production&servlet=1&language=EN&hostname=apps.fao.org&version=default>
- ²⁵² Ibid.
- ²⁵³ Bjorn Lomborg, p. 95.
- ²⁵⁴ Ibid. Per capita data calculated by dividing production per year by the world population for that year. FAOSTAT Agriculture Data: Agricultural Production, Crops Primary, February, 2004.
<http://apps.fao.org/page/collections?subset=agriculture..>
 The actual information was taken from the FAO query page at
<http://apps.fao.org/page/form?collection=Production.Crops.Primary&Domain=Production&servlet=1&language=EN&hostname=apps.fao.org&version=default>
- ²⁵⁵ Bjorn Lomborg, p. 94.
- ²⁵⁶ Nikos Alexandratos (ed.). *World Agriculture: Towards 2010. An FAO Study*. FAO 1995 7 Rome: Food and Agriculture Organization of the United Nations.
<http://www.fao.org/docrep/v42003e/v4200e00.htm>
- ²⁵⁷ FAOSTAT Agriculture Data: Food Supply, Crops, Primary Equivalent. February, 2004.
<http://faostat.fao.org/faostat/collections?subset=agriculture..>
 The actual information was taken from the FAO query page at
<http://faostat.fao.org/faostat/form?collection=FS.CropsAndProducts&Domain=FS&servlet=1&hasbulk=&version=ext&language=EN>
- ²⁵⁸ "Hunger Rising Again in Developing Nations." *Associated Press*, November 25, 2003. In: Global Health Council.
<http://www.globalhealth.org/news/article/3798>
- ²⁵⁹ World Hunger Facts 2005. World Hunger Education Service (WHES). December 24, 2004.
<http://www.worldhunger.org/articles/Learn/world%20hunger%20facts%202002.htm> Also, Reducing Poverty And Hunger: The Critical Role Of Financing For Food, Agriculture And Rural Development. Food and Agriculture Association, et. al., February 2002.
<ftp://ftp.fao.org/docrep/fao/003/y6265E/Y6265E.pdf>
- ²⁶⁰ F. Pierce et al., *J. Soil Water Conserv.* 39, 131 (1984), *The Second RCA Appraisal: Soil, Water, and Related Resources on Nonfederal Land in the United States* (USDA, Washington, DC, 1989).
- ²⁶¹ Nikos Alexandratos (ed.). *World Agriculture: Towards 2010. An FAO Study* (New York, Brisbane, Toronto, Singapore: John Wiley and Sons, 1995), p. 357 Rome: Food and Agriculture Organization of the United Nations.
<http://www.fao.org/docrep/v4200e/V4200E12.htm>
- ²⁶² Ibid.
- ²⁶³ L.R. Oldman. "The Global Extent of Soil Degradation." In Greenland and Szabolcs. *Soil Resilience and Sustainable Land Use* (Wallingford, UK: CAB International, 1994) pp. 99-118.
- ²⁶⁴ G.W.J. Van Lynden and L.R. Oldman. *The Assessment of the Status of Human-Induced Soil Degradation in South and Southeast Asia*. International Soil Reference and Information Centre.
- ²⁶⁵ Farm Facts. American Farm Bureau, p. 12.
<http://www.fb.org/brochures/farmfacts/ff02web0013.pdf>.
 Converted from tons/acre to tonnes/hectare. Also, Soil Erosion, National Resources Inventory—2001 Annual NRI, US Department of Agriculture, p. 1.
<http://www.nrcs.usda.gov/technical/land/nri01/erosion.pdf>
- ²⁶⁶ Stanley Trimble. "Decreased Rates of Alluvial Sediment Storage in the Coon Creek Basin, Wisconsin, 1975-93." *Science* 1999, vol. 285, no. 5431, pp. 1244-1246d
- ²⁶⁷ Nikos Alexandratos (ed.). *World Agriculture: Towards 2010. An FAO Study* (New York, Brisbane, Toronto, Singapore: John Wiley and Sons, 1995), p. 119. Rome: Food and Agriculture Organization of the United Nations.
<http://www.fao.org/docrep/v4200e/V4200E0g.htm#3.6%20The%20developed%20countries:%20prospective%20developments%20in%20brief>
- ²⁶⁸ Len Ritter, Clark Heath Jr., Elizabeth Kaegi, Howard Morrison and Susan Sieber. "Report of a Panel on the Relationship Between Public Exposure to Pesticides and Cancer." *Cancer*, 1997, 80:2,027
- ²⁶⁹ Bjorn Lomborg. *The Skeptical Environmentalist* (Cambridge, New York: Cambridge University Press, 2001), p. 247.
- ²⁷⁰ "Q & A With Paul Driessen," *CEI's Monthly Planet*, Competitive Enterprises Institute, January/February 2004, Vol. 17(1):6 <http://www.cei.org/pdf/3902.pdf>
- ²⁷¹ Ibid, p. 7.

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