

Concerned about the Climate?¹ Focus on the Economy

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When I first started reading about global warming, back in the 1990s, I understood the urgency of the problem, but I doubted that climate change would become a significant *public issue* during my lifetime. The temperature increases would be too slow to make much difference to a nation that rarely looks beyond the five-year corporate planning horizon or the four-year election cycle. In fact, Americans in general don't get too concerned about environmental or social issues until they are confronted with a crisis.

However, the earth seems to be warming much faster than expected. People have actually been able to feel the rising temperatures, with three of the ten hottest years on record during the last ten. Most people have seen television images of the impacts of record setting heat waves, floods, droughts, and storms caused by global climate change. And many also have seen the dramatic satellite images of melting glaciers and polar ice caps. Most Americans were ready to believe Al Gore when he revealed the *inconvenient truth*: “the earth has a fever” and industrial economic development is a major cause of its rising temperature.

So we are here today, taking part in a nation-wide effort to focus the attention of the nation on the growing threat of global climate change. I was invited to speak to you this evening, not as an expert on global warming, but as a person who has spent the past 50 years of his life, including a 30-year academic career, trying to understand why people continue to do things that make the earth sick and what we need to do differently. I have come to the conclusion that global warming is but a symptom of the much larger problem – an unsustainable economy within an unsustainable society. The ecological problems of global warming, depletion of fossil energy, scarcity of drinkable water, and loss of biodiversity all share this same root cause. Global economic development is making demands on the earth that the earth cannot long endure.

I have also come to the conclusion that problems of growing social isolation, incivility, economic inequity, mental depression, drug abuse, and suicide are symptoms of the same cause, an increasingly exploitative economy. Alarming instances of terrorism, genocide, and unending war also can be traced to an extractive, exploitative global economy. The economy is making demands on global society that humanity cannot long endure. Ridding the earth of its “economic infection” will require fundamental changes in virtually every aspect of our lives. As Albert Einstein once pointed out, “We cannot solve our problems with the same thinking we used when we created them.” To address the challenges of global climate change, we must focus on the economy. We are not going to solve the problem of global warming until we make the changes in thinking necessary to create a sustainable economy.

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This is not a matter of personal opinion; it is rooted in the most fundamental laws of science. Sustainability ultimately is a matter of energy. Everything that is of use to humanity – our houses, clothes, food – requires energy to make, energy to use, and in fact, is made of energy. All useful human activities – working, thinking, managing – also require energy. And equally important, the usefulness of human energy is a product of society. We are not born as productive individuals but as helpless babies. We have to be nurtured, socialized, and educated by society before we are capable of being useful to society.

According to the most basic laws of physics, the laws of thermodynamics, energy inevitably changes form whenever it is used to do anything useful, which physicists call *work*. Although energy is never created or destroyed, each time it is used and reused, some of its usefulness is lost. This is the essence of the law of *entropy*. Once energy is used, it takes energy to make energy useful again and energy used to make energy useful is no longer available to do anything useful. Conserving, reusing, and recycling wastes can improve the efficiency of energy use, but cannot offset the energy inevitably lost to entropy. The only source of energy available to offset entropy is the daily inflow of solar energy.

The fundamental problem with all capitalist economies is that they provide powerful incentives to use and reuse energy but provide no incentives to collect and store solar energy to offset the energy lost to entropy. Economic value is inherently individualistic in nature; it accrues to individuals, and thus, must be expected to accrue during an individual's lifetime. It makes no economic sense to invest anything for the sole benefit of someone else, certainly not an unknown someone of some future generation. Even the solar energy captured through agriculture and forestry is put in the marketplace for consumption rather than used to regenerate and renew energy resources for the future. An economy driven by economic self-interest, as is increasingly the case in all modern capitalist economies, actually accelerates the natural tendency toward entropy. Such economics are not ecologically sustainable.

Less appreciated but no less important, capitalist economies also dissipate *social* energy because they weaken human relationships. Economic efficiency requires that people relate to each other *impartially*, which means *impersonally*. People must compete rather than cooperate, if markets are to work efficiently. Competition degrades relationships. Economic efficiency encourages family members to work away from home and shop outside of their local communities. The family may make more money but there's less time and energy to spend on sustaining their families and communities. Modern capitalist economies turn human relationships into economic transactions, depleting social energy needed to create productive people, and accelerating the tendency toward social entropy. Such economies are not socially sustainable.

All economic value comes either from nature or from society. An economy creates nothing; it is simply a means of facilitating individual relationships with each other and with the earth. If we continue to extract from nature and to exploit society, eventually there will be no remaining source of economic value. Capitalist economies keep on taking without giving anything back, accelerating the tendency toward economic entropy. Today's capitalist economies quite simply are not economically sustainable.

Creating sustainable economies will require new ways of thinking. Industrial economic development, which has dominated thinking for the past two centuries, is based on a mechanistic view of the world. We humans are but cogs in giant, complex machine. Sustainable economic development must respect the fact that the world is a living natural ecosystem, of which we humans are a part and within which we are integrally connected. A sustainable economy must then mimic the natural processes of living, biological systems. Living plants have the capacity to capture and store solar energy to offset the energy lost to entropy. They have the capacity to be useful to other species – to be productive – and at the same time, to devote a significant portion of their energy to their own needs for renewal and regeneration. Obviously, an individual life is not sustainable because every living thing eventually dies. But communities of living individuals clearly have the capacity to be productive while devoting a significant part of their life's energy to conceiving and nurturing the next generation.

Even we humans are capable of capturing and storing solar energy; we just do it with windmills, dams, and photovoltaic cells. Humans also have an inherent tendency to produce and reproduce, even when we have no economic incentive to do so. Otherwise, few of us would choose to raise children. To achieve sustainability, we must respect this basic human tendency by diverting a significant portion of the earth's energy from economic uses to renewal and regeneration. It will take energy to rebuild and redesign the windmills, dams, photovoltaic, and other solar collection systems needed to sustain future generations. And perhaps most important, we must continue to divert a significant portion of our human energy from economic uses to renewing families, communities, and civil societies, to ensure that whatever energy is available in the future is put to constructive rather than destructive uses. Sustainable economies must function according to the principles of regenerative, living systems.

The fundamental question facing global society today is whether people will be willing to forego some level of individual economic self-interest to ensure the long run sustainability of humanity. If we continue to behave like non-thinking animals, following our most basic instincts and urges, our species will suffer the same fate as any other non-thinking species that finds itself in a position of dominance in its ecological environment. We will continue to expand our population and consumption until we degrade and deplete the resources that must sustain us. Our society will degenerate into chaos, we will suffer mass starvation and epidemic disease, and the human population will plummet to a small fraction of current levels and possibly to extinction. We humans are not exempt from the fundamental laws of nature, regardless of how much we think we know or how technologically advanced we may become. Unfortunately, the ecosystem dominated by we humans today includes the entire biosphere of the earth.

So where is the hope for the future of humanity? The hope is that society will continue to grow in its awareness of the consequences and challenges of economic sustainability. We are in the midst of a great transition, moving out of the old era of industrialization and into a new and different period of human history. The hope is that we will make the new era one of sustainable development, an era of continued human progress. During times of great societal transformation, the old ways of thinking are obsolete and new ways of thinking have yet to be fully developed. During such times, societies have always had to rely on their common sense – their shared sense of what's true, what's right, and what's good. To create a sustainable economy and society, we must return to our common sense.

Common sense is not a refutation of science, but it is a rejection of the belief that there is only one way of knowing or understanding reality. Accepted ways of thinking, including those of today's science, have always been built upon foundations of first principles that cannot be proven but require no proof, because all thoughtful people accept them as true. Such basic assumptions or axioms underlie all scientific reasoning. Thomas Huxley, a noted English biologist, once wrote, "All truth, in the long run, is only common sense clarified." Albert Einstein wrote, "The whole of science is nothing more than a refinement of everyday thinking." We must use science to "clarify and refine" our common sense, but we cannot allow science to replace it.

The hope for humanity is in a grudging public acceptance of the need for a new post-industrial concept of reality – a new ecological understanding of how the world works and of our place within it. We are beginning to realize that everything in nature is interconnected; everything affects and is affected by everything else. We are beginning to accept the fact that society is a subsystem of the earth's natural ecosystem. We are beginning to understand that everything we do individually somehow affects the whole of nature. We can see that healthy ecosystems are inherently diverse and that each species gets its food from and provides food for other species. We have learned that each species also depends on the others to assimilate its wastes and it assimilates their wastes in return. Our common sense tells us that if we continue to do things that make the earth's climate inhospitable for other species, the earth eventually will become inhospitable for humans. And we know intuitively, if not intellectually, if we continue to degrade nature, we ultimately will destroy ourselves. As we take from nature, we must also give back to nature, so nature will have the ability to continue giving to us. It's all common sense.

With this common sense understanding of ecological sustainability, we can begin to address the real problems of global warming. The current threat of global climate change is widely attributed to a buildup of greenhouse gases in the atmosphere – in particular, carbon dioxide. To address the problem, rather than just treat the symptom, we must recognize that atmospheric carbon is a natural component of the global ecosystem. Carbon dioxide is released into the atmosphere anytime energy is released from any biological source, including all fossil fuels. The current buildup of atmospheric carbon is almost certainly related to the dramatic increase in use of fossil energy over the past several decades, as industrial economic development has grown in magnitude and has spread around the globe. Industrial development takes from nature but gives little back, other than pollution and waste. It is not sustainable.

The buildup of greenhouse gases is also attributable to destruction of natural ecosystems, particularly old growth forests. Trees and other living plants sequester carbon from the atmosphere as they transform solar energy into biological energy. As forests have been cleared and used for paper and building materials, the quantity of carbon released into the air has increased while the total biomass of living organisms sequestering atmospheric carbon has declined. Modern tree farming systems, while highly productive, have not replaced the biomass removed by previous generations of extractive forestry. Industrial forestry is not sustainable.

Conventional agricultural practices also have contributed to the buildup of greenhouse gases. Carbon is released from soil organic matter when it is exposed to the air by agricultural tillage. Carbon is also released into the atmosphere as plants and animals are consumed by other

species or die of natural causes and then decay. Historically, much of the carbon from decaying plants and animals was returned to the soil and stored as soil organic matter, as in organic farming. Conventional farming, however, relies on chemical fertilizers for plant food rather than soil organic matter, accelerating the depletion of organic matter and release of carbon. Chemical fertilizers also require fossil energy, offsetting much of the potential benefits of carbon sequestration. Industrial agriculture takes from nature but gives little back. It is not sustainable.

To address the root causes of global warming, we must develop a fundamentally different approach to economic development. We already know the basic strategies we need to use; we just need to put them into the larger context of ecological, social, and economic sustainability. We can start with the three Rs of environmental stewardship: reduce, reuse, and recycle. Remember, everything we do uses energy and most energy uses release carbon into the atmosphere. When we reduce our use of energy, we are not only conserving energy resources for future use, we are helping to reduce global warming. Waste is simply energy that we don't know how to use. So when we reuse or recycle things after we use them, we are saving the energy and the reducing greenhouse emissions that would have been involved in producing replacement products. Pollution is “negative energy,” in the sense that it takes energy to mitigate the negative impacts of polluted air or water. Anytime we reduce pollution we are also saving energy and reducing carbon emissions. In addition, reducing toxic wastes also reduces risks to living species, including humans. The sustainability of the natural carbon cycle depends on the biological diversity – microorganisms, plants, animals, and people. When we reduce, reuse, and recycle we are helping to restore ecological sustainability.

Our individual acts of stewardship are important. Everything we do affects everything else and we simply have no way of knowing how important our individual decisions might be. Our greatest impacts on global warming, however, may be our economic choices concerning what we buy, where we work, and where we invest our money. At times, we may seem to have few real choices, but more sustainable alternatives are becoming more available all of the time. Farmers markets, roadside farm stands, and sustainable/local food retailers are becoming more common in most areas of the country. In fact, organic and locally grown foods are the fastest growing segments of the retail food market. Some timber companies have abandoned clear-cutting and a growing number are making commitments to sustainable forestry practices. And manufacturers are under increasing public pressure to adopt more “socially responsible” methods of production. Some companies are beginning to respond to these pressures by changing not only their production practices but also by changing their relationships with their employees.

Admittedly, most corporate businesses treat social responsibility and sustainability as little more than the latest “buzz words” for use in marketing or public relations strategies. However, a few innovative corporate organizations are taking social responsibility seriously. “Triple Bottom Line” management, for example, came to widespread attention in the late 1990s and has since gained in popularity among a variety of businesses.³ This approach stresses the importance of ecological, social, and economic bottom lines in ensuring the long run sustainability of organizations. “The Natural Step” was initiated in Europe in the late 1980s and is gaining in

³ Bob Willard, *The Sustainability Advantage: Seven Business Case Benefits of Triple Bottom Line*, (Gabriola Island, British Columbia, New Society Publishers, 2002).

popularity in the United States and Canada.⁴ The Natural Step seeks to minimize the accumulation of wastes from both naturally occurring and manufactured substances while maintaining the productivity of natural ecosystems and sustaining a healthy, productive society. There is no shortage of logical strategies for sustainability; the challenge is the lack of economic motivation to adopt them.

Certainly, businesses have economic incentives to reduce wastes. However, if reusing or recycling costs more than replacing, they are not profitable strategies. Furthermore, any environmental investment that requires more than a 5-7 year payback is not seen as a good economic investment. Few businesses follow such strategies in the absence of generous tax credits, government subsidies, or government regulations backed by stiff fines or penalties. In general, those businesses that reduce, reuse, and recycle must compete with those who continue to extract, exploit, and pollute. To sustain profitability in this hostile economic environment, sustainable organizations must target those customers who are willing to pay the full costs of production, including cost of ensuring ecological and social integrity. Sustainable corporations must target those investors who share their commitment to sustainability. Those of us who are committed to helping create a more sustainable economy must find ways to become the customers, employees, and investors of sustainable business organizations.

However, sustainable businesses will not become commonplace in America until we are willing to work together, through government, to ensure sustainability. We must begin by recognizing that government cannot make sustainability profitable. On the surface, government incentives for carbon sequestration may seem to be a good way to provide economic incentives to address the problem of global warming. However, the economy simply cannot produce enough tax dollars to reward everyone for every act of environmental stewardship necessary to create a sustainable economy. So called “cap and trade” strategies – buying and selling of carbon credits – is another popular approach that may ultimately do more harm than good. Such programs make sense only if the government caps are set low enough to protect the planet from global warming, which they obviously are not. We should never allow anyone to buy the “right to pollute.” Creation of an economic industry to protect the environment is likely to have the same consequences as creation of the health care industry – rising costs and declining benefits. The primary responsibility of government is to create a legal and regulatory environment within which sustainable businesses are not forced to compete with those that extract and exploit.

The government has a legitimate and necessary role in creating a sustainable economy. Ultimately, however, a commitment to ecological and social integrity must be encoded in national constitutions as well as global agreements. This will require a fundamental change in thinking. We must begin with an understanding that sustainability is a matter of ethics and morality; it's about meeting needs of the present without compromising the future. If we are to sustain a civil society, we must treat others as we would have others treat us – with equity and justice. If we are to leave equal opportunities for those of future generations, we must do unto those of the future as we would have them do for us, if we were of their generation and they were of ours. A sustainable economy must function within the context of a moral and just society.

⁴ Alliance for Sustainability, “The Natural Step Framework Four Conditions for Sustainability,” <http://homepages.mtn.org/iasa/tssystemconditions.html>, accessed Sept. 2008.

Ironically, *classical* capitalism was built upon a solid foundation of equity and justice. *Classical* economists, including Adam Smith, David Ricardo, and Thomas Malthus, were very much concerned with social and ethical responsibility. Adam Smith wrote in his 1776 classic, *Wealth of Nations*, “improvement in the circumstances of the lower ranks” should never be regarded as “an inconvenience to the society... what improves the circumstances of the greater part can never be regarded as an inconvenience to the whole.” He also wrote that *land*, meaning natural resources, “constitutes by far the greatest, the most important, and the most durable part of the wealth of every extensive country,” suggesting that the *public* must accept responsibility for protecting their common wealth. Classical economists understood that a capitalistic economy must function within the social and ethical bounds of a moral and just society, if it is to function for the long run well-being of people.

Only over the past half-century has free market economics abandoned its classical ethical and social roots, as capitalism has mutated into “corporatism.” Neoclassical economists, who appeared around the turn of the 20th century, wanted to be true scientists. They eventually abandoned the social and ethical foundations of classical economics in their pursuit of impersonal scientific objectivity. Over time, market economies were allowed to drift away from the necessary conditions of competitive capitalism, to the pursuit of greater economies of scale from large, industrial organizations. Eventually, publicly owned corporations, not sovereign individuals, came to dominate decisions within capitalistic economies. The corporations that dominate the global economy today are not human; they have no social or spiritual conscience to limit their pursuit of profits and growth. We, the people, must become their social conscience.

Today, many people are questioning whether a capitalist economy can ever be sustainable. Admittedly, the ecological and social risks of capitalism are real. However, no other economic system has been found that can rival its efficiency and productivity in decisions and activities that are legitimately private, personal, or individual in nature. Societies that have tried communism, socialism, and religious theocracies have never been able to meet the physical and material needs of their people. They are ultimately rejected by their people because they are not economically sustainable. Most individual economic decisions do not deprive anyone of their basic social rights or violate any moral imperative. These decisions legitimately belong in the individual, private economy, where we have no logical alternative to capitalism. Capitalism, with all of its inherent risks, is still humanity's best hope for sustainability. But the pursuit of individual wealth cannot be allowed to diminish ecological and social opportunities for all, including those of future generations.

Capitalist corporations will not make the investments in society and nature necessary for sustainability, unless they are required to do so by the people working together for the common good through government. Equity and justice are absolutely necessary for long run sustainability. Even a perfectly functioning, competitive capitalistic economy will not ensure that people are treated justly or receive equally those things to which they have equal right. The economy rewards individuals in relation to their ability to produce things of economic value, and we are inherently unequal in our productive capacities. Intergenerational equity is absolutely necessary for sustainability. The economy will not ensure equal opportunities for future generations. The economy is inherently shortsighted, in that it reflects only values expected to accrue within an

individual's lifetime. It is the responsibility of people, working together through government, to ensure the sustainability of the economy.

Fortunately, we already have the necessary institutional structures in place to create and maintain a sustainable capitalist economy. We have a constitution in place that could be amended to ensure the rights of all people of both current and future generations to a healthy and productive natural environment. Our constitution was designed for change, in order to maintain the consent of the governed. The United States is in desperate need of a constitutional convention to reestablish the consent on such divisive issues as abortion, school prayer, gun control, and gay marriage. The issue of environmental justice is just as important in reestablishing the legitimacy of our democracy. An amendment to the U.S. Constitution ensuring equal rights for those of future generations would do more to slow global climate change than all of the environmental regulations that could possibly be written within the constraints of current interpretations of our existing constitution. We have the necessary legal and governmental structures in place to interpret and enforce laws to ensure environmental justice, once the constitutional authority for such laws is in place.

We lack only the collective will to establish the national consensus necessary to ensure economic sustainability. Constitutions are ineffective unless they reflect the consent of the governed, because laws are ineffective unless they are supported by the vast majority of those affected. A consensus does not require unanimity, but it requires the consent of dissenters to abide by conclusions with which they do not fully agree. Laws only restrict the few who are unwilling or unable to conform to the consensus of society. We must create a societal consensus for economic sustainability.

Most people are more likely to respond to specific, easily identifiable issues rather than broad public questions, such as sustainability. As we focus the nation on the issue of global warming, the most important thing we may be doing is moving Americans toward a national consensus in support of economic sustainability. In the process of promoting specific decisions and actions to reduce emissions of greenhouse gases and increase carbon sequestration, we are also focusing public awareness of the broader issues of sustainability. The most powerful message we can possibly convey is that of our individual actions to reduce global warming also are helping to create a more equitable and just society and a more desirable quality of life for all people of all nations of all times. Through our individual acts of ecological, social, and economic integrity, we are helping to create a more sustainable global economy and society.

The inconvenient truth is that global warming is but a symptom of much deeper problems within the global economy which reflects still deeper problems within human society. We have all contributed to those problems and we must all contribute to their solutions. No matter how small or insignificant our individual actions may seem, we simply have no way of knowing how large their ultimate impacts may be. As we help focus the nation on global warming, we must make every decision as if it were *the* decision that will ultimately tip the social and ecological balance toward global economic sustainability.