Economic Vitality in a Transition to Sustainability

by Neva Goodwin

Growing the Economy Through Global Warming Solutions

Global warming is one of the most urgent problems of our time.

The good news is that many of the solutions to this extraordinary problem are within reach. Many of the solutions to global warming are not only feasible, they are economically and socially beneficial. While some claim that addressing global warming will have a negative impact on the economy, the most recent report by the Intergovernmental Panel on Climate Change ("IPCC") asserts that there is substantial economic potential for the mitigation of greenhouse gas emissions over the coming decade. In fact, there is a growing global market to address global warming, and the United States must act now or risk being left behind.

Growing the Economy through Global Warming Solutions sets forth the steps we can take to curtail global warming, the governance models needed to encourage such a transition, and the economic benefits of doing so. By taking these steps as soon as possible, we not only will minimize the grave risks of global warming, we will position the United States as the leader in the clean industries and technologies that are emerging as the key growth engine of the Twenty-First Century.

It is now a given that global warming is happening. It is caused by the emissions of greenhouse gases – primarily carbon dioxide released during the combustion of fossil fuels -- and already has begun to inflict harms on climate, ecology and people. The most recent IPCC report confirms that global warming is here and will accelerate in the future with serious harms and risks if greenhouse gas emissions are not promptly limited. Dr. James Hansen, of NASA's Goddard Institute for Space Studies, warns that a global average warming of 3.5 degrees Farhenheit will produce a "different planet" by taking us over dangerous climate thresholds that greatly magnify the risks of disintegrating the great ice sheets on Greenland and West Antarctica, an event that would cause massive and rapid sea level rise. Dr. Hansen emphasizes that we can keep the planet within the known boundary conditions by limiting the future global temperature increase to no more than 3.5 degrees Fahrenheit.

To do so, we must stop the business as usual approach in which carbon dioxide and other greenhouse gas emissions increase every year. One of the primary obstacles to moving from this business as usual approach to a problem solving approach is the argument that mandates to limit emissions will cripple the U.S. economy and that the market will produce all necessary solutions on its own. But this argument focuses too narrowly on the economic impact to "big energy", which for too long has dominated the political discussions in Washington. Growing the Economy through Global Warming Solutions asserts that we cannot afford to wait for voluntary market solutions. We must either invest now to implement solutions, or we will pay much more later as we have to adapt to the growing impacts of global warming. Many mitigation strategies, those that will help reduce emissions now, will not only be cheaper to implement, they will stimulate the economy.

Government has an essential role to play in developing a strong governance model – those procedures, rules and regulations that can work to bring greenhouse gas emissions under control. In fact, with the right set of government incentives to help focus their attention, the business community, which is already beginning to recognize challenges and opportunities - and looking to both adapt and innovate - will see even more possibilities for capitalizing on economic opportunities while achieving environmental gains. The good news is that, if we get started right away, we can rapidly move to this solutions-oriented approach in which emissions are limited and reduced in time to avert the worst risks of global warming.

Growing the Economy through Global Warming Solutions is a series of papers written by experts in the fields of economics, public policy, energy policy, architecture, insurance, investment, transportation, and agriculture. It details the solutions that can be taken off the shelf today. While there is no single silver bullet for addressing global warming, there are a wide variety of solutions that, taken together, will lead to a reduction of carbon dioxide emissions, the key to stopping global warming. These promising solutions must be phased in as we phase out our outmoded reliance on foreign oil and coal. Along with its companion reports, *Economic Vitality in a Transition to Sustainability, by Neva Goodwin*, sets out important next steps that can and should be taken in the near and medium term to ensure that we do everything possible to address the challenges of global warming.

We have the know-how and it is the American Way to innovate and problem solve. We have time.

We have to get started now.

"We have at most ten years—not ten years to decide upon action, but ten years to alter fundamentally the trajectory of global greenhouse emissions." – *Jim Hansen, Director of the NASA Goddard Institute for Space Studies, and Adjunct Professor of Earth and Environmental Sciences, Columbia University's Earth Institute.*

Executive Summary

This paper assumes, but does not re-state, the scientific evidence that business-as-usual economic activities are leading to dangerous changes in the Earth's climate. It distinguishes between the mitigation activities that can reduce the extent of expected climate change, and adaptation activities that will be needed in response to climate-related events that cannot, or will not, be prevented.

In general, mitigation activities can be profitable and job creating within currently existing economic regimes. The more effort is put into appropriate mitigation activities, the less costly (in terms of human suffering as well as resource diversion) will be the requirements for adaptation. Mitigation activities must not only bring about rapid reduction in emissions of greenhouse gasses; they must also encourage greater social resilience, to enable people to minimize the suffering from climate-related emergencies.

Social resilience requires poverty alleviation, widely available education, robust social systems for emergency health and other relief responses, and reduction in large inequalities of access to power and resources. As economies make the necessary transitions – from business-as-usual to a focus on climate change mitigation to adaptation – a number of systemic changes will be required.

Most of all, it will be necessary to create institutional and regulatory structures, as well as financial and cultural incentives, that will align the goals of corporations with the common good.

1. Profitable Activities Now Can Avoid Some Future Loss

The business-as-usual approach to growing GDP contains many elements that are not sustainable. The challenge, therefore, is to promote changes in how the economy works that will accomplish the following:

- Reduce to an acceptable level, as quickly as possible, the environmental harms that result from economic activity
- Maintain or increase human well-being in the present
- Preserve and, where necessary, rehabilitate, the productive resources required to maintain or increase human well-being in the future
- Cope with unavoidable harm to the natural and social environments

This challenge is especially important in relation to the economic activities that are significant in causing climate change, which has potentially enormous disruptive consequences for human well-being and ecological health.

When we think about achieving the four goals just listed, we find that they suggest two distinct kinds of activities.

The first is **mitigation – activities that will reduce or halt the sources of additional climate change**. Efforts to mitigate the present and future impact of climate change must be our major concern, especially over the next 5-10 years. The second aspect of the challenge ahead is **adaptation – activities designed to cope with immediate, harmful impact of climate changes**. The effects of climate change are beginning to be felt in many parts of the world, and will be felt with increasing force in years to come, even under the most optimistic scenario for successful mitigation efforts. Attention and resources will increasingly need to be directed toward coping with the harms we have not been able to avoid.

If ever there was a time in the world to store up resources and build up resiliency against future dangers, now is that time.

Many of the activities required for mitigation (as detailed in other chapters of this report) will create good, new jobs. They will also spur technological, cultural, political and other innovations with potentially large positive effects on the economy and society. A properly designed and implemented massive climate change mitigation effort – on the scale of mobilizing for a major war or space program – can also be a highly successful economic development strategy. The macroeconomy of the United States will benefit from vigorous, well-designed mitigation policies. The same will be true of other countries that join in this mobilization.

That's the good news. However, as the effects of global warming set in motion by past lack of attention to climate change mitigation come home to roost, the U.S. must consider how to cope with years in which two or three of our cities are hit with storms as devastating as hurricane Katrina; steeply rising cost (or unavailability) of home insurance for people living in areas increasingly prone to fire, flooding, or high winds; or decisions about building expensive dikes or abandoning airports near the shore and other important coastal structures. The costs of future adaptation will be minimized by taking strong and effective action today, but some painfully high human and financial adaptation costs are already in the cards.

Globally, adaptation will be much more difficult for poor developing countries, which may, for example, suffer from droughts and food deficits beyond anything experienced in the last century. The international community may face myriad regional conflicts over increasingly scarce resources of fresh water or arable land. The concept of "environmental refugees," familiar now to only a few people, could become part of the common language.

It is worth emphasizing that there is a critically important link between the good and the bad news on climate change. **Appropriate mitigation activities undertaken in the next few years can strengthen the world's economies and make them better able to face the future burden of adaptation to climate change.**

If ever there was a time in the world to store up resources and build up resiliency against future dangers, now is that time. And the bonus is that **the more mitigation is done, the less adaptation will be necessary**. It is true that some amount of climate change is already on its way. Gases already built up in the atmosphere and a warming trend in the oceans' waters are among the unstoppable forces whose effects will be felt for a long time to come. But it is also true that we can put on the brakes, and keep the damage to a much lower level than we will face if we fail to take appropriate action. By acting strongly and effectively to mitigate future climate change we will also be enhancing our ability to cope with the impacts we cannot prevent.

2. Conceptualizing the Paths Ahead

Suppose that, for any given mix and character of economic activity (including all the different activities of extraction, production, exchange, consumption, disposal, and resource maintenance), there is a level that is sustainable. "Overshoot" then occurs when the actual level exceeds the sustainable level at the given mix. Overshoot causes degradation of productive resources – most obviously natural capital (forests, fisheries, etc.). But it can also harm manufactured, human, and social capital. When critical resources are degraded, the sustainable level of economic activity is reduced. If the same mix of economic activity continues to be pursued, the level of economic activity that is sustainable will continue to decline, forcing actual levels of economic activity to fall over time.

Ecologists are familiar with a simple, dramatic graph that portrays exactly this scenario. A particular example can be used to concretize generalizations about an entire economy. In Figure 1 the solid line portrays the total catch of a particular fishing fleet, while the dotted line symbolizes the stock of fish that they seek. The crossing of the two lines indicates that the catch has surpassed the sustainable limit; fish are being taken out faster than they can regenerate themselves.

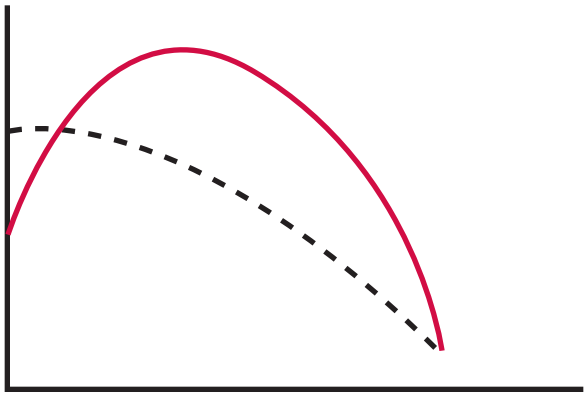


Fig 1: Overshoot and Collapse

If the catch were immediately to be reduced, the stock might be able to rebound, but in this depressing picture the unfortunate fishermen keep trying harder and harder to catch whatever they can, and the species is driven close enough to extinction that the fishery collapses.

Defining the elements of the problem:

In Figures 2 through 4,

- The vertical axis represents quantity; the higher up a line goes, the higher the level of activity it represents.
- The horizontal axis represents time.
- The thin vertical line is the time ("now").
- The dotted line in Figures 2 and 3 represents what I will refer to, for short, as *eco-health*; by this I mean the amount of economic activity that a given ecosystem can support. On a global level "eco-health" would include the amount of greenhouse gasses that the atmosphere and the oceans can absorb and neutralize.
- The solid line will represent "*Ecosystem-or-Resource-Degrading Economic activity*" – "ERDE activity" for short. Emission of greenhouse gases is the example most central to our discussion In these simple conceptual graphs it is reasonable to interpret each downward plunge of the ERDE line as "economic recession" (perhaps even as "economic collapse"), and each significant upward turn as "economic recovery."

Figure 2 depicts a society that waits to reduce ERDE activity until eco-health has declined so much that change is forced upon it. Hence the plunge in eco-health is deep, and both ecological and economic recovery are slow. ERDE activity can recover to the eco-health level, but that level is now much lower (due to degradation of the ecosystem) than it was before ecological capacity was exceeded.

The society depicted in Figure 3 reduces its ERDE activity below the sustainable level, but does not allow time for ecosystem restoration. Instead, it keeps attempting to ratchet up ERDE activity, repeatedly surpassing the sustainable level, and then being forced to fall back. Accordingly the amount of economic activity the ecosystem can support keeps declining.

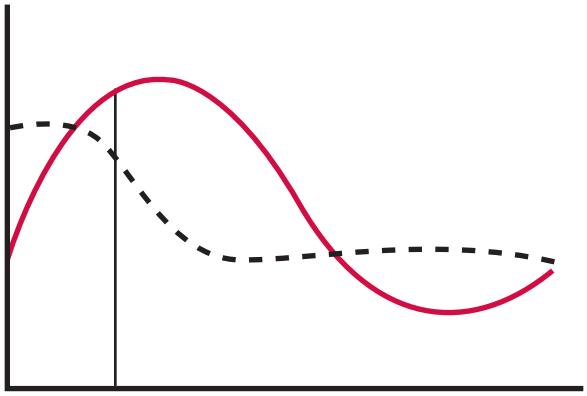


Fig 2: Ignoring Limits

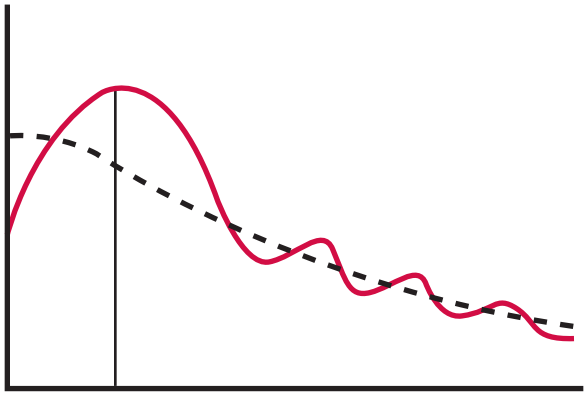


Fig 3: Repeated Recovery and Collapse

Figures 2 and 3 each start at a time (probably at least a few decades behind us) when economic activity in general, and ERDE activity in particular, was generally below the supportable level for the global ecosystem, and many subsystems. However, as we move to the right on the time axis, there comes a point when ERDE activity crosses the eco-health line. Then eco-health begins to decline. This has already happened in a number of critical ecosystems. (That is why the "now" line is positioned to the right of the crossing of eco-health and ERDE activity.) Critically, once this crossing occurs, the eco-health line starts to go down, because the eco-system and resource base has been stressed by more activity than they can absorb, and they become less able to support the kind of economic activity that degrades them. Figures 2 and 3 simply illustrate two possibilities as to what might happen once that point has been passed.

3. What is the Best we Can Do?

Figure 4 depicts a situation in which,

• At the time labeled "now" humanity mobilizes for effective action to mitigate climate change. But while the industrialized nations begin to reduce their GHG emissions very rapidly, global emissions continue to rise for some period due to increased output from developing countries.

• Alternative energy sources are developed and put into use at a rate that approximately equals the rate at which the global economy ceases to use fossil fuels.[1]

• The costs associated with adapting to the effects of climate change rise rapidly, and there is a lag between the time that Climate Stability levels off and the time that Adaptation Costs begin to do the same.

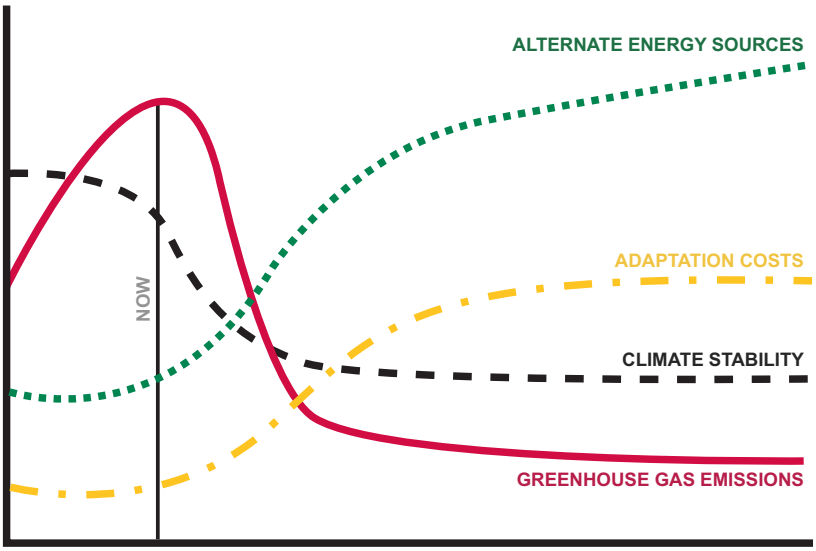


Fig 4: The Optimistic Scenario

• Given the long lag times for climate perturbations to play out, the best that might be hoped for is that the climate will stop getting worse (i.e., the Climate Stability line levels out).

• A leveling out of Climate Stability implies that climate events settle down to "fluctuations around a natural equilibrium" rather than "fluctuations around a human-made trend line." This will require drastic reductions from present levels of emissions of CO_2 and other greenhouse gases.

Unquestionably, Figure 4 portrays a highly optimistic scenario. Technology, regulations and prices would have to coordinate remarkably well to create such a smooth transition from fossil fuels (whose reduced use is implied in the reduction of Greenhouse Gas Emissions) to renewable alternatives. It assumes that GHG emissions not only can but will be reduced dramatically, and in time, to allow a return to climate stability, though at a less benign level than that experienced through most of the twentieth century. It ignores the potential for abrupt change, such as that which would be caused by a huge release of methane into the atmosphere from melting permafrost.[2] It also ignores other dangerous possibilities, such as a reversal of the Gulf Stream (which would take Great Britain and parts of Western Europe back to an ice age), or rapid melting of the Greenland and West Antarctic ice sheets.[3] Finally, adaptation costs refer only to those directly related to climate change.[4]

You may argue that the probability of the optimistic Figure 4 scenario is 1%, or 5%, or 25%, but it should be evident that, for most people, this approximates the best scenario, and is therefore the one most worth working toward.[5]

How then do we get there? The most general answers are obvious: take all the climate change mitigation actions that are immediately available, while investing heavily in research and implementation of additional mitigation options, as well as a multitude of strategies for adaptation. In the short term – the next fifteen years or so – this approach can work well within existing economic structures. For the longer term, however, it will be necessary to undertake more basic changes in how we think about and carry on economic activity. All economic systems should be considered fair game for review and restructuring, including the patterns of production, financing, ownership, consumption, maintenance, and responsibility that are now taken for granted in industry, housing, appliance life-cycles, waste disposal, agriculture, resource extraction, and all other major aspects of economic life. Changes will be needed; ultimately they are likely to be as much social and institutional as they are economic and technological.

The next section will provide some specifics, in summary form, regarding the first phase in the needed transitions, from business-as-usual to a focus on climate change mitigation, and then to adaptation.

4. A Summary of Solutions

The essential question facing humankind is: how can we define and shape a healthy path of economic development for the 21st century? An obvious first answer is that any healthy kind of development must be "sustainable." Definitions of sustainable development require, among other things, that *economic activities are undertaken in ways that maintain or increase the essential capital stocks that are necessary for production*. A sustainable socioeconomic system creates a flow of desirable goods and services by using its renewable capital stocks without depleting them. Although some portion of some (especially nonrenewable) capital stocks may be used up in the process of production, the overall quantity and quality of the resource base for sustaining life and well-being must be preserved.

The resource base that is critical for sustainable development includes the *natural capital* resources of soil, plants, fish, water, ores, etc., as well as the *manufactured capital* elements of the built environment that allow people to work with efficient (i.e., labor and materials saving) machines, in healthy environments, aided by effective communications and transportation infrastructure. There is increasing recognition, as well, of the importance of human and social capital. *Human capital* refers to the productive capacities of individuals: inherited, acquired through education and training, and maintained by supporting physical and mental health. *Social capital* includes such cultural attributes as trust, socially held knowledge, mutual understanding, and constructive shared norms and values. It is critically important to sustain and build human and social capital where continued economic development faces challenges as great as those now confronting humanity.

The activities included in the following "A" list are essential for mitigation, and will also lay the groundwork for adaptation. They all offer opportunities for profitable investment and for job creation. The "B" list activities do not directly offer opportunities for investment, but alter or create the institutional and regulatory environment within which businesses will operate in ways that are relevant to both mitigation and adaptation. The political/institutional changes in the "C" list, and the cultural changes suggested in the "D" list, are geared toward the creation of the social resilience required for adaptation.

A Summary of Solutions

A - Massive shifts in investment priorities [6]will be needed to:

1. Develop renewable energy sources and apply energy conservation technologies.
2. Develop sustainable cradle-to-grave technologies and systems for the activities involved in production, transportation, domestic life, entertainment, etc..
3. Replace (and where possible withdraw) toxic substances that have, over the last century, been introduced widely throughout the world's ecosystems.
4. Develop methods of restoring productivity to land and water areas.
5. Rebuild cities to include public transportation, low energy use buildings, and excellent public amenities, with the triple goals of improved livability, cost control, and reduced environmental impact.

B - To reduce the use and alter the cost structures of ERDE energy and materials:

1. "Internalize externalities," including, in the costs of all raw and produced goods, the costs that are born by society and the environment in the extraction, production or use of the goods. For example, if all the costs of burning petroleum were internalized, a gallon of gas would cost a large multiple of the present price, discouraging its use.[7]
2. A variety of market (price based) and other incentives will be required, to influence the decisions of producers and consumers away from ERDE activities, such as the climate changing impacts of energy production and use.
3. Research and planning are needed to anticipate where, in different economies, the requirement to reduce climate-altering activities suggests a shift toward relatively more human inputs (including those that are "information intensive"), and less material and energy inputs, in the production of marketed or non-marketed goods. (Goodwin 1991).

C - Political/institutional changes will be needed to:

1. Increase the activity and influence of entities representing the social interest (such as NGO's) relative to those (such as corporations) that pursue a narrow or short-term interest.
2. Create a substantial floor under the political, economic, and decision-making power of individuals and communities, e.g. through legal instruments such as trusts, charters, and ordinances.
3. Intensify efforts to move toward more equal power and access to resources, within nations and among them, in order to increase system resilience.
4. Create appropriate means of managing assets which are defined as "common wealth." (See below)

D - Necessary cultural changes will likely include:

1. Recognition of and adaptation to changing demographics, in both developed and developing countries.
2. Changing attitudes toward work and leisure, along with possibly changed definitions of "work" or "a job," which may be necessary concomitants to an economy with reduced material and energy-related throughput.
3. Revised understanding of what contributes to well-being. The culture of consumerism includes beliefs that "more is better," "happiness can be bought," etc. There is much evidence that these beliefs are false, but they are actively fostered by the many businesses that perceive a consumerist culture as in their interest.

5. Tensions Leading to a New Economic Transition

The broad systemic challenge facing the United States and the rest of the developed world is to find a way to glide off of the present path, in which virtually the whole society is organized around the need of business to sell more things, onto a different path, where *business success is tied to achieving the social goal of sustainable well-being for all.* There are good reasons to believe that the structural changes related to this requirement need not decrease well-being in the rich countries – which is, of course, where such changes must begin. At the outset of the Industrial Revolution, it was not at all obvious whose well-being would be enhanced in what way by the great increase in productivity due to innovations in technology, infrastructure, management and institutions. The ability to produce ever more goods and services could have tended toward any of three extreme results:

1. The increased output could be absorbed solely by elites, as had usually been the case in the past. The majority of the people would continue to consume only enough to survive.
2. The growth in output could be accompanied by a widespread growth in income, and hence in consumption.
3. People who could produce more per hour might simply work fewer hours. Consumption growth would therefore be restrained by increased leisure and lower national output.

In the United States, and most (but not all) other advanced countries, option 2 was widely adopted.[8] The key to option 2 is the creation of a consumer-oriented society: *what is produced must be purchased.* As long as there is ready-made demand for everything the producers make, there is no problem. When demand lags, they must persuade consumers that they want more.[9] If the producers fail to do this, firms will collapse and jobs will be lost. Lost jobs means lost income, which means a reduction in what can be purchased. If this occurs on a macroeconomic scale, the output of the whole society declines, and society experiences the suffering associated with recession or depression. And now, of course, this mechanism operates in a global system, where the workers of many other countries also depend on the American consumerist ethos.

The growth in labor productivity that accompanied the Industrial Revolution was based on many things; cheap, available energy was a major element. Now, because of the previously unsuspected relation between CO_2 emissions and climate, the huge dependence on fossil fuels has become a serious weakness in the global economic system.

Sooner or later fossil fuel use will decline. Most likely this will occur because of rising prices for oil, gas and coal. These could be caused by political disruptions of supply, oil-field depletion with rising costs of extraction, or national or international regulation (e.g., carbon taxes, or a cap-and-trade system). Few people are optimistic enough to believe that alternate, sustainable energy sources will become available in time to take the place of fossil fuels without any significant disruption. New technologies for producing energy will also require new systems of distribution, and many types of machinery of all types will have to be retrofitted or replaced to use the new systems.

The world's socio-economic systems are on the brink of another period of transition... and humanity again faces important choices.

Thus energy, overall, is likely to be more expensive during the period of transition—which could last a few years, or a century. The relative prices of many goods and services will alter dramatically: those whose production takes longer to adapt to the new circumstances will become more expensive. Increased energy costs will ripple throughout the economy, raising other costs.[10] Moreover, it will be necessary to divert large amounts of available effort and resources to adaptation – more so to the extent that we fail, now and in the future, to take effective action to mitigate climate change.

The world's socio-economic systems are on the brink of another period of transition – one that is likely to occur even more rapidly than the original Industrial Revolution – and humanity again faces important choices. One choice relates to the issue that classical economists used to refer to as "the division of society's product." When economies become increasingly capable of producing a quantity of output that is ever more above the bare minimum needed for survival, will the "extra" go mostly to elites (the owners of capital resources), or be more widely distributed among the labor force? This question becomes even more urgent if the "extra" begins to shrink, as it could do with rising energy costs. Unequal sharing of a growing pie may not be too painful, but if the pie is shrinking, the fate of those who begin with a smaller share can become dire indeed.

U.S.-type market economies are extremely good at producing wealth. Building on how the first Industrial Revolution proceeded – making of workers the consumers who would absorb a large portion of the increased output – this wealth was widely spread, to create a norm of material well-being beyond the wildest dreams of the elites of just a few centuries ago. It turns out, however, that there are a number of conditions under which increased wealth may not translate into increased well-being. (The Appendix applies the findings of recent social science research – especially in the field of hedonic psychology – to an understanding of how economies contribute to well-being.)

- The *ultimate goal* for most people can be summarized as well-being, generally understood to include *security, happiness fairness, freedom,* and *participation*. The *intermediate economic goal* that is most often seen as the economy's contribution to well-being is improvement and/or adequacy in the material conditions of life for all people. *But this intermediate goal is valuable only to the extent that it serves the ultimate goal.*

- People who have insecure access to the basic requirements for survival suffer reduced well-being, by any standard. However, for the people who live securely above poverty, the influence of wealth or consumption on their happiness is, to a surprisingly high degree, a relative matter. To the extent that their comparison group is their neighbors, only some people can derive their happiness from superior wealth, while others must suffer from having, relatively speaking, less. As the globalized world encourages more of the human population to take wealthier Americans as their comparison group (through, for example, TV shows), there is reason for ever-growing dissatisfaction.

- Wealth very much beyond basic needs, when it belongs to and is spent on behalf of individuals, operates within a zero-sum game wherein success creates envy, and overall Well-being is not increased. By contrast, wealth that belongs to, and is spent on behalf of, a whole society can be used to promote public goods such as environmental protection and restoration, to protect the Well-being of future generations. (See Frank, 1999).

- *Social cohesion* (meaning the extent to which people identify with larger social goals than their own immediate interest) is stressed and damaged by wide inequalities. Income and wealth inequality in the United States are at about their high-water mark for the last hundred years; inequality is also high in many other parts of the world.

- *Resilience*[11] means, among other things, that the least advantaged groups in society will not be crushed by the requirements for adaptation. The disaster of New Orleans, so ill prepared to respond to Hurricane Katrina, is a dramatic reminder of the importance of resilience. The April, 2007 report from the Intergovernmental Panel on Climate Change describes many ways in which poverty, especially in the tropics, spells disastrously low resilience against the likely effects of climate change.[12]

Fourteen years ago I wrote a paper describing the "nightmare scenario" "in which redistribution does not occur; ecological collapse hits the poor soonest and hardest, causing third World famine and disease on a scale surpassing anything ever experienced by our species; and the wealthy countries learn enough from that to reform their ways—not in terms of helping the poor, but in reducing their own throughput." (Goodwin, 1994) What I left out of this nightmare scenario was the "gated community" aspect that is already appearing within countries and on their borders, as individuals, communities and nations consciously or unconsciously lay the groundwork for the use of violence by the rich to repel a possibly violent influx of the desperate. Equality is a requirement for resilience, on a global as well as local level. The rich nations and people of the world face a stark choice: to give the assistance required to increase resilience among the poor, or to let them die – or shoot them – when they arrive at the gates. If morality is not sufficient to make the choice obvious, there is also the consideration of how unpleasant it would be, even for the rich, to live in such a world.

Human well-being – the ultimate purpose of any economy – is not only tied to what people have, but also to how they feel about it, and what they do with it. Leisure to enjoy the riches that advanced economies have accumulated in the last century is becoming one of the most significant scarce resources; for many, well-being will be better served by more *time* than by more *products*. This gives credibility to a scenario in which some systems of production and consumption could be modified to produce less output (thereby mitigating climate change) but more well-being.

In sustainability terms a critical difference between rich and poor is that, while it seems possible that the rich portions of the world could actually be happier and healthier while producing and consuming less, the point of sufficiency is far from achieved in very poor societies. There most people need greater access to consumption goods and to the resources needed to protect their lives and health from the catastrophes – including war, drought, plagues, floods and famine – that have been the scourge of the poor for throughout human history.

6. Conflicts in the Macroeconomic System

The ecological challenge of climate change mitigation requires decreased material and energy throughput in the economy. The diversion of resources to adaptation activities, along with likely increase in energy costs, may also reduce the quantity (and raise the prices) of consumer goods. Moreover, the message of hedonic psychology (see Appendix) is that, in wealthy countries, *this does not need to cause a reduction in well-being if these changes are accompanied by decreased inequality and increased availability of social goods.* But these three complimentary currents run into strong opposition from those who believe that only a continually rising Gross Domestic Product (GDP) can maintain a strong and vital economy.

Simon Kuznets, the originator of the GDP (and GNP) measure, recognized that it was not a measure of well-being – just a measure of economic activity. And economic activity can produce wealth, or "illth": better medical care or more environmental causes of sickness; better jobs, or more time spent commuting; more good food, or more land-mines. The relation of output of goods and services to quality of life is not simple or monotonic. Qualitative improvement of goods and services determines material well-being as much as or more than physical quantity of output (especially in the more developed economies).

It is a central conundrum of the industrialized world that we can actually be happier, healthier, and better protect our environment by producing and consuming less stuff – but there appears to be an inherent conflict between a fairly clear vision of a better world, where people enjoy life and preserve and heal our natural environment, and the requirements of our economy.

Other seemingly intractable contradictions include:

- If the rules of the market encourage competition that cuts the money costs of production without regard to the pay or health of workers, or the impact on the environment, or on other stakeholders, then corporations who do not engage in these competitive, cost-externalizing practices cannot be viable.
- If the structure of the economy and the polity permits enormous concentrations of political and economic power in corporations, movement towards sustainability will be hindered by corporations' ability to persuade governments to act in the narrow (and short term) corporate interest.
- If the viability of many businesses depends on persuading people to set their sights on a luxurious life-style, it will remain exceedingly difficult to counter the prevailing messages that people hear from infancy on; messages designed to make them believe – against the evidence of their own experience as well as the results of good research – that happiness is usually or best achieved by more stuff.

Ecological constraints, supported by a closer look at the final human goals that should provide the organizing principle for any economy, require reduction in throughput. This may mean, at least for a time, reduction in many kinds of consumption in the richer parts of the world. While it is not certain that such a reduction in consumption will be needed, we cannot begin to think our way through to constructive scenarios so long as we face a set of contradictions that makes it impossible even to consider a reduction in economic growth as now defined.

Given these contradictions, we must go at least one level up, to consider the other systems within which the economic system is embedded. The most obvious of these are the natural world – the ecological systems – and the societies whose well-being is supposed to be the goal of the economy.

7. Externalities and Meta-Externalities

It is not inherent in market systems that they will orient towards social goals. It is a half-truth that market capitalism is the best economic system yet invented. The other half of the truth is that, when markets are allowed to work as though they were self-contained systems, operating within a vacuum, they become increasingly self-destructive, because they degrade the social and environmental contexts in which they exist, and upon which they are entirely dependent.

Meta-externalities are unwanted side-effects of the whole economic system on its physical and social contexts—effects in which the economic culture fouls its own nest, if the "nest" is understood broadly as all the contexts for economic activity. Markets, in their present form, are creating meta-externalities that degrade natural, human and social capital, and they often provide inadequate maintenance for the shared manufactured capital (e.g., transportation, communications, and municipal infrastructure).

When markets transgress the limits that they need in order to keep from harming their social and physical environment, they generally lack the ability to self-heal. It is becoming evident that the present mix of economic activities, globally and in large economies, is not ecologically sustainable; it is creating the conditions for future disaster. But the future (even as it looms very near) is not adequately represented in the systems of market incentives that motivate many economic activities.

To some extent markets can be made more efficient by a stringent insistence on internalizing negative externalities—that is, finding ways to make polluters, for example, pay for the harm they do. Clever regulations can find ways to include, within the market (as long as the regulations stay in place and are obeyed), more complete feedback which forces economic actors to pay for the social and ecological costs of their actions. (This is the point of "internalizing externalities.") However such feedback can probably never be perfect; it certainly cannot be perfected (though it can be improved) in time to be the only force inducing adequate climate mitigation. And, most important, the incentives to internalize externalities must come from outside the system. Cost-internalization is a way of making the system work better for the whole society, but is not in the interest of the individual actors who – if they can shift to others the true costs of production, marketing or other activities – will gain a market advantage and/or larger profits. It is even harder for a system to block its own meta-externalities.

Markets have wonderful abilities to self-regulate – but only within certain parameters. As Steven Lydenberg puts it,

> *Under the right circumstances, marketplace forces can help direct corporations to the public interest. Ensuring that those circumstances are in place, however, is crucial. In particular, there must be widespread availability of data on corporations' social and environmental records, analysis and debate about the significance of that data, and the mechanisms to allow the marketplace to reward and punish corporations appropriately when they succeed or fail in achieving societal purposes.* (Lydenberg, p. 1)

One Solution: Solar Energy Panels

7. Solutions from Inside and Outside the System

Some of the investment priorities needed to shift the economy towards sustainability can be expected to emerge organically – if and only if the regulatory and institutional structures are in place to make it likely that these investments will be profitable.[13] A market system uses prices to indicate the presence of potentially profitable investment opportunities. Unless the cost of releasing carbon into the atmosphere is internalized, the price structure will not suggest that it is profitable to invest in alternative technologies until so much of the Earth's available fossil fuels have been burned that scarcity does the job of increasing price. By that time the human race (and other species) will be bearing horrendously high adaptation costs – costs so high that many species, and many individuals and communities, will simply be unable to adapt, and will perish.

"Ephemeralization" is a term that has been used for the process wherein technology evolves to reduce the material content of products while maintaining or increasing their desirable characteristics; this has been going on for decades, driven largely by market forces. Greater emphasis needs to be given to applying this process to the energy (as well as material) inputs to production, but there is reason to be optimistic that the ingenuity which has miniaturized and improved so many products over the last half-century can continue this trend while also increasing the energy efficiency of products.

Critically, markets do not exist in a vacuum. Climate change is a force that will dramatically affect economic realities – at worst in the form of emergency adaptation, and at best in the form of intelligently planned mitigation activities. Within the social context many forces shape markets. As investors, for example, individuals and significant holders of capital such as pension funds influence what gets produced, how, where, and by whom, when they undertake "SRI" (socially responsive investing) activities. These can include voting for shareholder resolutions that express their values, microlending or community investing, or channeling investments into social venture capital funds or screened funds.


Electric Vehicle Fueling Statio

Individuals and groups can also shape markets when they act consciously as consumers. Hybrid vehicles and organic foods are among the successes of efforts to mobilize their environmental consciences. A consumer movement that takes seriously the dangers of climate change seems poised for lift-off since the wide viewing of Al Gore's film, "An Inconvenient Truth"—this is showing up in rapid growth in the manufacture and sale of items such as energy-efficient light bulbs and solar panels.

Businesses, universities and government entities are also major purchasers of "green" or "fair trade" products. For example, major retailers that demand sustainably harvested wood have pressured forest industries to move toward certification of their products, and many cities are requiring agencies to use environmental and social criteria in their selection of vehicles, building materials, office supplies, etc.

All of these efforts can have some effect as purely individual choices, without other extra-market assistance. They can be far more effective in moving the economy to produce lasting well-being when extra-market forces provide coordination and information. As an example of information made available by forces outside of the market, we note the existence and constant upgrading of appliances subject to the US government's "EnergyStar" ratings, and the responsiveness of consumers to this information. Other critical forces include systems of corporate reporting, and the assessment, analysis, and dissemination of the information contained therein. These systems are still at an early stage of being developed to give consumers, investors and regulators better information about the way different business is affecting our world.

If a changing cost structure is combined with reduced inequality then consumer behavior might change to make a significant difference.

Given the current culture, increased costs in themselves will only make people feel poor. If, however, a changing cost structure is combined with reduced inequality, and with public messages that are effective enough to counterbalance the corporate pressure toward extravagance and luxury, then there are ways that consumer behavior might change to make a significant difference.

Robert Frank (1999) has argued persuasively that, for people comfortably above the level of basic needs satisfaction, the value of social or "public" goods compares favorably with the well-being increments provided by additional individual consumption.[14] Examples of public goods include a system of laws and courts which provide the basic infrastructure on which all business contracting depends; the safety provided to a neighborhood by a police force; public health services which improve the general level of health; the advantages to society at large of a good educational system; and any activity that protects and rehabilitate the qualities of the Earth's atmosphere that provide a stable and hospitable climate.

Those who have little faith in markets to solve critical problems traditionally turn to the alternative of government. In order to have the resources to supply public goods – or to subsidize or otherwise motivate businesses to supply them—governments have to tax or otherwise extract money from profitable businesses or individuals. This has always been unpopular with those who pay the taxes. In recent decades there have been many theories and opinions put forward as to why government should neither tax, on the one hand, nor spend money on public goods, on the other. Government inefficiency is the most often cited reason; other arguments stem from a variety of ideological positions regarding the rights of property-ownership, etc. Over all of this has been spread a patina of generally received wisdom that "markets do it better than government," whatever "it" is. This position is often upheld in spite of the well-known and irrefutable logic regarding the limitations of markets to supply a desirable quantity of public goods.

Other people, recognizing the limitations of both markets and governments, have searched for a "third way." The most common type of third alternative is referred to as the non-profit or NGO sector, comprising institutions that are both non-governmental and not-for-profit. Well-known examples of social-goods-providing NGOs include not-for-profit hospitals and universities, environmental advocacy groups, and foundations.[15]

Some other ideas may go beyond these three approaches to serving the common good. One is a property-based approach to the commons. A creative exponent, Peter Barnes, says that commons, "…refers to all the gifts we inherit or create together… A gift is something we receive, as opposed to something we earn. A shared gift is one we receive as members of a community, as opposed to individually. Examples of such gifts include air, water, ecosystems, languages, music, holidays, money, law, mathematics, parks, the Internet, and much more." (Barnes, pp 4-5)

When the atmosphere, the oceans, the Internet, etc., are defined as commonwealth they can be held in trusts, like the land trusts and forest trusts that are coming to be fairly well known,[16] or the petroleum resources of Alaska, which are managed for the enrichment of the citizens of that state (but not, unfortunately, for the well-being of citizens of the future or of the rest of the planet).

Another alternative is *rights-based*. It focuses, in the United States, on the rights that have been acquired by corporations, and uses citizen-driven democratic action to subordinate corporate decision making to local, community control. The Community Environmental Legal Defense Fund (CELDF), based in Pennsylvania, assists communities to draft and adopt ordinances which put into the hands of local people the power to prevent corporations from locating environmentally and economically unsustainable activities in resistant communities. These ordinances cover such topics as sludge dumping, corporate water withdrawal, destructive mining, and corporate farming. By now more than a hundred communities (10% of the state's municipalities) in Pennsylvania have adopted CELDF-drafted Ordinances. These include three Pennsylvania townships that have adopted binding local laws that recognize enforceable legal rights for natural ecosystems.[17]

These two approaches have in common a perception that corporations do not always serve the public good. They are backed up by research and writing on the history of corporations, describing how, in the 19th century, corporate charters in the U.S. specified the social functions to be performed by the corporations to which they were given, and often expired when a particular function was achieved, or at the end of a specified time. The concept that the legal purpose of corporations is to enrich their shareholders has grown gradually, just since the late 19th century; the idea that this is their *only* legitimate purpose goes back less than half a century. The counterweight to this has been the movement, starting in the 1970s, to attempt to balance the rights of other "stakeholders" against the rights of shareholders. This movement has been strongly reinforced by the growing urgency of environmental considerations, and has resulted in an upsurge of "socially responsible investing" (SRI) that can claim a number of notable achievements, such as the way Nike tries to improve the working conditions of its suppliers, or the recent agreement between the purchasers of TXU and Environmental Defense Fund, scrapping plans for building a number of dirty coal-burning electricity suppliers.

Many companies are learning to produce in ways that significantly reduce their use of energy and raw materials and their production of harmful waste; they have discovered that much of this change is actually also good for their bottom line. However, while *how* they produce is improving, there is much farther to go on *what* they produce. Petro-chemical companies are the most obvious examples; the leaders have started to refer to themselves as "energy companies" (with the notable exception of Exxon Mobil, which proudly maintains its identity as a petroleum company) – but even the most forward-looking producers of carbon based fuels are still producing massive amounts of greenhouse-gas-emitting products.

Only a minority of investors ask whether the product of the companies in which they invest is useful, usually harmless, or usually harmful. The most common "negative screen" to be applied by investors is one that rules out tobacco companies. Fortunately, investors are not alone in accepting that tobacco is a product which, when used as intended, has serious negative health consequences. Governments in the U.S. and elsewhere have succeeded in creating, in relation to tobacco products, a very helpful model that could be called "legal but hassled."[18] This model may provide a starting point for movement on the especially knotty issue of advertising. It has been accepted that tobacco products are a serious health hazard, and their advertising is now circumscribed by the international convention on tobacco, as well as by a variety of local regulations. There have been more or less successful efforts to do the same with liquor advertising, as also with firearms. This is still a long way from grappling with other questionable products, such as small arms, Barbie® dolls (known

for creating dysfunctional body-images in girls), and foods whose nutritional value is greatly outweighed by their threats to health. Careful experimentation along these lines should be continued.

8. Going Outside of the Existing System

Clearly an economy cannot be weaned away from one focus without giving it another focus. As long as jobs depend on profitable businesses, businesses need to be profitable. But the reason we want jobs is to earn the income that will allow us to purchase the things we need and want. It is not easy define precisely what constitutes adequate food, shelter, support for health, and care for the young, the old, and the infirm; but even without precise definitions, we can at least point to these as immutable needs. Wants, however, are another matter: they are highly suggestible, and the satisfaction of wants does not always lead to well-being.

A new look at the economy requires a closer examination of which aspects contribute to well-being. There is much activity in the primary and secondary sectors – extraction and manufacturing – that supports basic needs. There are other large portions of these sectors that create profits and jobs, but do not create well-being. When thinking about an economy that could operate differently from the present, prioritizing long-term sustainability ahead of short-term profits, the tertiary sector (services) has at least as important a role to play as the other two sectors. The obvious starting point is the observation that growth in the aspects of this sector that provide the most direct benefit to human well-being – in particular, health, education, arts, and environmental preservation and restoration – could play important roles in aiding the economic transition toward sustainability. These areas are heavily labor-intensive, thus providing a potential arena for growth of jobs.

The tertiary sector is exceedingly diffuse and so is hard to generalize about, but it has tended to be the fastest growing sector in most economies over at least the last half century. In part, it is a residual of the primary and secondary sectors. More than one-fifth of U.S. GDP arises from *ownership transactions* – activities of buying and selling that transfer ownership of goods and services from producers to buyers – or from previous owners to new owners.[19] About a quarter of U.S. GDP is accounted for by marketed activities required to manage the economic system; these include information, finance and insurance, and professional, scientific and technical services.[20] A smaller portion of the service sector provides more obvious and direct sources of well-being: education, health, social services, and entertainment.[21] Depending on how one calculates government's contribution to social services, these last four elements together represent between 15-20% of GDP.

Education is an area where economic growth could be sustained for a long time, especially considering the challenges of climate change mitigation and adaptation. These challenges require new information and skills, and also a population that is better educated in the liberal arts traditions that help people to be more thoughtful and

skeptical as citizens, and more creative in finding solutions to new problems of all kinds. Environmental restoration is another such area. The national parks can have their pick, every year, of throngs of young people who are eager to work there for very low or no pay. Relatively small amounts of additional funding for many kinds of restoration work would create jobs that many people would be eager to have.

The tertiary sector contains many other potentially valuable options for throughput reduction that have yet to be fully developed. Demands for product durability and reparability are high on this list. There are certainly opportunities for business (perhaps especially small business) in the prospect of creating "repair malls" where people could take worn shoes and window-shades, non-working toasters and telephones, chipped china, and chairs that need to be recovered. Repair work of this kind is now hard to find because it requires skilled labor, and the cost of such labor has often been greater than the cost of buying new products whose prices do not include the environmental impact of either their production or disposal. As energy prices rise and measures are taken to cause the full environmental cost of products to be included in their price, the balance could shift in favor of repair and reuse over buying new.

7. Conclusions

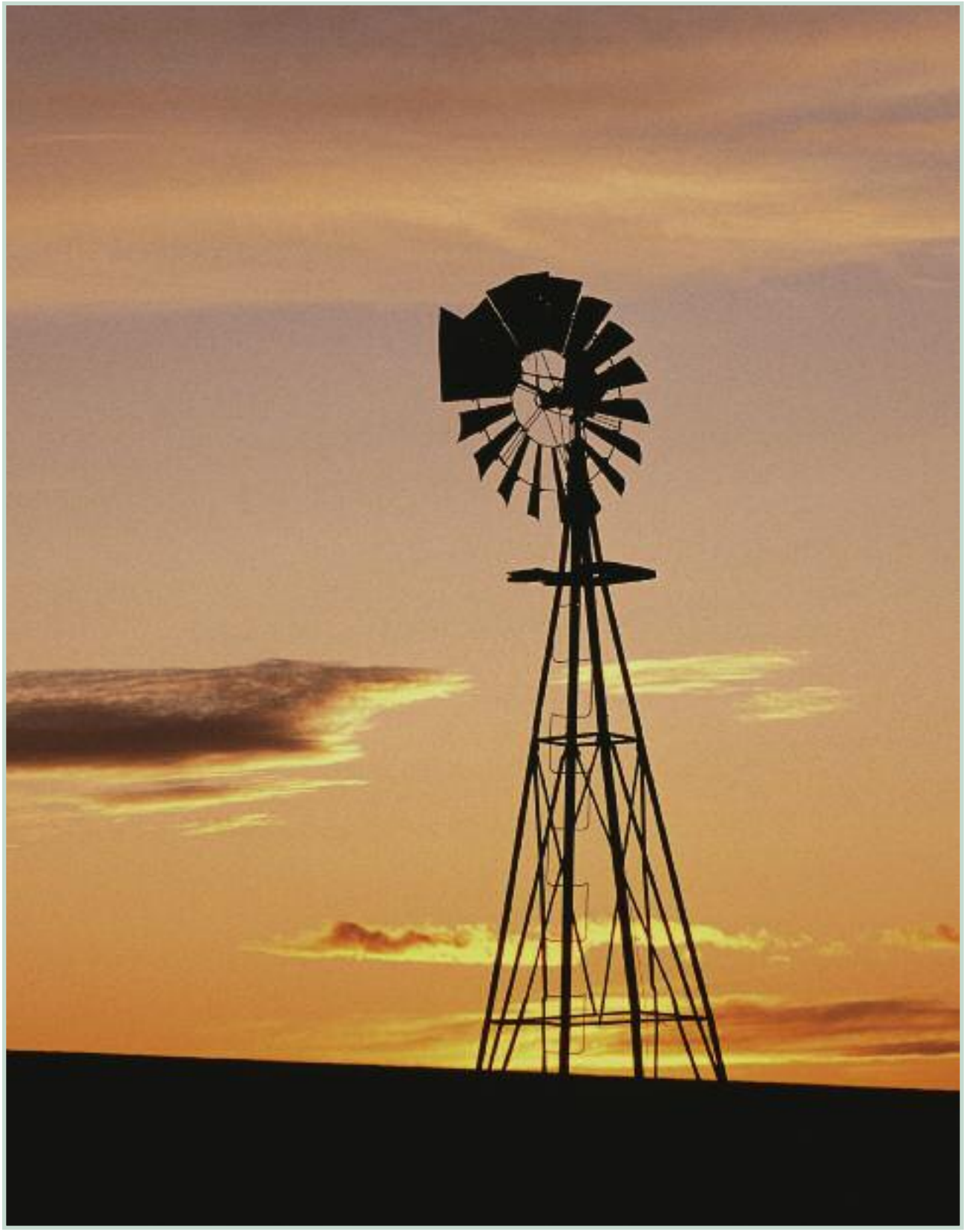
Market economies appear, thus far, to include a tendency to perpetuate and increase inequalities. Some of this can be righted through the political system, by returning to more equitable systems of taxes, along with appropriate laws and regulations on work conditions and environmental impacts. In doing so, it is necessary to look beyond the particular patches that are applied to particular flaws, and find the meta-externalities that emanate from the whole system.

Poverty and inequality are issues for every society and are even more critical on the global level. In the global North, it is evident (to many) that the economy's throughput of energy and materials must be dramatically reduced, while in the global South economic growth – of some kind, and in some regions – is still necessary to lift much of humankind out of poverty.

The importance of equality is stressed in this paper because of its relevance to resilience and social cohesion. Many studies show that inequality, to the extent that it is viewed as unfair, or that it creates circumstances of extreme deprivation for some members of a society, degrades the social capital that is important for promoting cooperation. In actual economic life, cooperation is more important than competition for achieving efficiency and productivity, and it is harder to evoke cooperation in a situation of oppressive inequality.

Attention to improving the quality (vs. the quantity) of some goods may make it possible to maintain or increase the satisfaction received from material consumption in rich countries, while meeting the challenges of climate change. However, if quality improvements cannot overcome a cost trend in which the total available for household consumption becomes a shrinking, instead of an expanding, pie, then the division of society's product – egalitarian vs. elite – will become critical.

There is not one single answer to the question of how to define and shape a desirable and sustainable path of economic development for the 21st century. An adequate response will require myriad changes at every level, and in many aspects, of home life and work; business investment, production, sales strategies, and choice of product; in government regulations, purchasing, infrastructure development, incentives to businesses and households, and international relations; in the roles and capabilities of NGOs; and in the actions of, and the powers given to, multilateral institutions such as the World Trade Organization, United Nations, World Bank, regional development banks, and other multilaterals perhaps not yet created. Motivating government actors to serve the common good will continue, as always, to be critical and difficult, but not impossible. A similar, though usually easier, task relates to the not-for-profit, non-governmental sector. Creating incentives to orient business toward a broader definition of efficiency that takes into account the full cost of producing products (including environmental impacts) may be the most important challenge of all.



ENDNOTES

[1] This regularity is not assumed to be entirely the result of causation running in either direction – i.e., fossil fuel use declining because alternatives or being developed, or vice versa – though each change would, in fact, probably have some, direct or indirect, effect on the other; rather it is simply assumed in order to create the most optimistic possible scenario.
[2] The global warming which is already starting to release some of this methane (a greenhouse gas that is 20 times more potent than CO_2, though not so long lasting) is generally believed to have been caused by human activities, especially the use of fossil fuels. In that sense the release of methane from permafrost is also anthropogenic, but it is a second order effect, less directly under human control than the CO_2 we release into the atmosphere.
[3] The Greenland ice cap is expected to disappear under any plausible scenario generated by the IPCC, adding 7 meters to sea level. The only question is how much of this disintegration will occur by 2100. A similar, additional amount would be added if the West Antarctic ice sheet were to disintegrate; that, however, is a matter of much more scientific debate. See the Center for Global Development, at
http://blogs.cgdev.org/globaldevelopment/2007/02/the_ipcc_debate_on_sealevel_ri_1.php.
[4] The graph does not take into account the possible effects of political instability in oil-producing countries if revenues from petroleum decline; or extreme hardship and instability in other countries, if the costs of all forms of energy become very high; or the many other highly destabilizing trends or events that could be on the horizon.
[5] In any disaster there are always some who welcome it because they can gain by it – whether in terms
[6] Note: Returns to investment of financial capital have been rising over the last quarter century, in the US and Europe, as compared to payments to labor. There are equity reasons for reversing this trend, but this may contradict the need to encourage investment in new technologies. It is not clear how this contradiction should play out.
[7] In fact it is virtually impossible to identify what all of these costs will be, to people born and unborn, and beyond impossible to represent in dollar figures the "true" cost of this disruption. Estimates of the "full cost" of a gallon of gas vary widely, depending on how much the estimator discounts future costs, as well as on other variables.
[8] This was not a single decision; it emerged over several centuries, with the outcome in the United States, for example, still in doubt in the early part of the 20th century, when (prior to the Great Depression) labor unions were still arguing as much for leisure as for income. Latin American countries have suffered from a tilt toward Option 1. Western Europe has shown more of a preference for option 3 than has the U.S.; France has gone the farthest in attempts to institutionalize option 3 through legislation.
[9] Of course, governments, as end users of many products, can also be "consumers." Modern producers have become increasingly effective in the lobbying to government agencies which is the equivalent of advertising to consumers.
[10] Rising energy costs, for a few decades at minimum, seem highly likely under any mitigation scenario. The cost of materials might also rise, because higher energy costs will likely add significantly to the cost of extracting raw materials – or of recycling used materials. However, a downward trend in the costs of raw materials, and of many material products, has persisted for most of the last 50 years, and many observers expect this trend to persist.
[11] See Special Issue: "Resilience, Vulnerability, and Adaptation - A Cross-cutting Theme of the Human Dimensions of the Global Environmental Change Program". In: Global Environmental Change, Vol. 16, Iss. 3.; also Resilience Alliance: http://www.resalliance.org/1.php and Brian Walker and David Salt (2006) Resilience Thinking; Sustaining Ecosystems and People in a Changing World. Island Press
[12] Many of the communities affected by the 2004 Asian tsunami responded more effectively than did the city of New Orleans in 2005. Several lessons have been drawn from this. One is that poverty is relative; while even the very poor citizens of New Orleans generally owned what poor Asians would regard as luxuries – television sets, running water, reliable electricity, for example – given the affluence in the rest of the US, relative poverty anywhere is debilitating, while people are less disempowered when their poverty is not experienced as far outside of the norm. Perhaps more significant is the fact that New Orleans seemed to have the advantage of well-organized government forces as several levels, from local police up to the Federal Emergency Management Agency. It turned out that these government forces were either estranged from and suspicious of the people, or else incompetent; their response further disrupted the sense of community cohesiveness, which had already eroded badly, due to a number of factors, including the tendency, in this country, to assume that most public issues will be deal with by formal public agencies, rather than by community action.
[13] Rational moves to achieve this include government actions, such as commitments to purchase sustainable energy, and market interventions that will raise the price of fossil fuel.

[14] Public goods are "goods for which (1) use by one person does not diminish usefulness to others, and (2) it would be difficult to exclude anyone from benefiting." (Goodwin et al, 2005, p. 21)
[15] Other organizations categorized by the U.S. government as not-for-profit are more narrowly defined, set up to serve specific groups, not the general public (and sometimes acting against the interest of other groups). These member-serving organizations include, for example, trade associations, professional organizations, political parties, social clubs, and religious organizations.
[16] See for example www.lta.org (the Land trust Alliance) and www.pacificforest.org.
[17] See www.celdf.org.
[18] See the Introduction to Passas and Goodwin, eds (2005), It's Legal But It Ain't Right: Harmful Social Consequences of Legal Industries
[19] This includes transportation and warehousing, wholesale and retail trade, and real estate rental and leasing. BEA statistics include in the tertiary sector the imputed value, to each home-owner, of the ongoing value of being able to live in that house – an accounting oddity that will not be dealt with here.
[20] A major part of the finance industry is the buying and selling of paper or electronic claims to ownership of productive resources, such as stocks. The financial advisors, investment companies, and other money managers whose salaries, bonuses, etc., are represented as in "finance" are sometimes selling the right to own a piece of a new company; more often they are reselling previously owned stocks and bonds. If we could readily sort out these activities, it would perhaps be appropriate to move them to the category, "ownership transactions." "Managing the system" also includes the activities that the Bureau of the Census calls administrative and waste management, and management of companies and enterprises.
[21] National statistics on social services, as a portion of the tertiary sector, cover only those portions of education, health care and social assistance that are not covered by government; they do not cover the cost of materials (such as medical supplies) that would show up as products of the secondary sector. "Entertainment" covers services sold in relation to arts, entertainment and recreation, and accommodation and food services. It comprises wages for musicians, but not the sale price of a new painting (accounted as a secondary sector product); it covers payments for movie tickets and wages for hotel and restaurant personnel as well as the people working in retail and wholesale who sell DVDs or food, but not the materials or manufacturing cost of DVDs or of food (whose value is divided between the primary and secondary sectors). A significant portion of this category is also work-related, including business lunches, accommodations for business trips, etc.

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Appendix: *Well-being vs. Economic Growth*

Recent thinking about development starts from a broad consideration of the purposes of economic systems. The essential first step is to make the distinction between final and intermediate goals. Increased consumption, or increased GDP, are best understood as intermediate goals; that is, they are not simply good in themselves, but are desirable to the extent that they lead to what are recognized as *final goals*. Efficiency[1] and competition are then also intermediate; they are means to the (intermediate) ends of increased production and consumption.

Appropriate final goals for development have been formalized in such metrics as the Human Development Index, the Genuine Progress Indicator, and the Gross National Happiness indicator.[2] Well-being is increasingly being used as a summary term for whatever people wish to include in a list of final goals.[3] Including the future-orientation that is stressed by environmentalists, a more complete expression of an appropriate overall goal is *human well-being in the present and the future.*

Luxuries generate dissatisfactions which may partially or wholly counterbalance the pleasure they give.

Happiness is related to wealth and consumption, but not so closely as has been assumed in most economic writings. One of the newest social science disciplines, hedonic psychology, sheds some surprising light on this issue. Evolving from work begun in the 1950s by Richard Easterlin, and carried forward by Daniel Kaheneman (recently recognized with a Nobel award), Ed Diener, and others, the extensive surveys and scrupulously careful psychological analyses that are the grounding for this area of study have produced several findings with major significance for the way economic goals are formulated. These findings include:

- The largest bundle of determining factors, accounting for nearly half the difference in average happiness among individuals, are inherited personality traits; the majority of the rest of the variation among individuals is accounted for by childhood circumstances and ongoing relationships (with friends, family, etc.).
- People who cannot be sure of having the basic requirements for survival are likely to be at the relatively unhappy end of the spectrum. (Security, while often thought of as a final goal, can also serve as intermediate to the goal of happiness.)
- However, for the people who are accustomed to living above poverty, the influence of wealth or consumption on their happiness is largely a relative matter. To the extent that their comparison group is their neighbors, this is a zero sum game; only some people can derive their happiness from superior wealth, while others must suffer from having, relatively speaking, less.
- The comparison may also be temporal, a matter of whether one is on a rising or a falling trajectory in terms of wealth and income. It is clear that happiness is positively affected as people come up in the world. However, one of the strong findings of hedonic psychology is that people adjust fairly quickly to changed circumstances. A few years after having attained better (or worse) living circumstances, an individual is likely to return to the same base condition of happiness that obtained before the rise (or fall).

The findings of hedonic psychology have much to say about the fairness issues that are related to local, regional and global resource distribution. GDP growth has much to contribute when a population is living below a level of basic-needs-satisfaction, but less – indeed, it is possible to imagine circumstances where it has nothing – to contribute to the happiness aspect of well-being above that level. In rich countries, more no longer necessarily equates with better. Increasing materialism and worse eating habits are resulting in growing mental and physical health disorders. There is a growing understanding in the social sciences regarding the ways that a switch of emphasis, away from status and status goods, could produce a happier, healthier society. (Lane 1991, 2005) Luxuries not only have a lower "happiness pay-back" per dollar spent, but they also generate dissatisfactions which may partially or wholly counterbalance the pleasure they give.

Researchers in the social sciences who have been following the findings of hedonic psychology conclude that, for relatively wealthy populations, economic policies should readjust their balance of concerns, giving less weight to the issues of efficiency, growth and consumption (at least insofar as these concerns are justified as contributing to the happiness aspect of well-

being), and giving more weight to the issue of equity, or fairness (Veenhoven, 1993; Diener and Oishi, 2000). It should focus somewhat less on the well-being that is expected to result from individual spending, and more on what may be achieved through social investments (Diener 1995a; Diener 1995b; Frank, 1999).

To summarize: until basic needs for survival and minimal comfort are satisfied, it is clear that additional wealth, which allows for the fulfillment of these needs, strongly increases people's sense of well-being. After that threshold, additional wealth has diminishing marginal returns. In the United States and Japan, for example, while per capita income has increased many fold since the 1950s, it appears that the level of happiness throughout these societies has not increased at all during this period.

These implications are especially relevant for thinkers who are simultaneously concerned with *social justice, individual well-being, and environmental sustainability*. There is strong evidence that these three goals can be addressed together by policies that promote economic equality, depress conspicuous consumption, and encourage society to define success in terms other than material possessions. Wealth very much beyond basic needs which belongs to and is spent on behalf of individuals operates within a zero-sum game wherein success creates envy, and overall well-being is not increased. By contrast, wealth that belongs to, and is spent on behalf of, a whole society can be used to promote public goods such as environmental protection and restoration, to protect the well-being of future generations.

ENDNOTES

[1] Efficiency is, of course, also an important means to the end of resource conservation: an efficient procedure, designed to achieve a given purpose, will use fewer resources than an inefficient procedure. However, the fact that a purpose is achieved efficiently does not automatically mean that the purpose was a good one; and there are some cases where one purpose – such as providing the dignity of employment to more purpose – may be obscured by another, such as producing output with the fewest possible inputs (including labor). It is curious that the concept of efficiency is not applied, in the standard economic approach, to either consumption or distribution: as noted in the following text, there are ways that well-being could be enhanced by consuming things that actually make people happy, rather than things that are designed only to make people want more; the latter is surely a less efficient way of producing happiness. Similarly, well-being is more efficiently produced by making resources available to people who have few than by distributing them among the already rich. The important point to make about efficiency, then, is that it is a highly effective means to achieve given ends; its value depends, however, on whether the ends to which it is applied are "final goals" in themselves (such as well-being), or are positively contributing to final goals (as in the case of desired resource conservation) – or whether efficiency is employed in the achievement of undesirable ends, such as production of goods that have environmentally or socially undesirable effects, or creation of greater inequality.

[2] Formal attempts to measure a variety of final goal for economic systems are found in such metrics as the Human Development Index, compiled annually by the UNDP; the Genuine Progress Indicator complied by Redefining Progress (see http://www.rprogress.org/newprograms/sustIndi/gpi/index.shtml); the Gross National Happiness indicator developed in Bhutan (see, for example, http://www.bhutanstudies.org.bt/publications/gnh/gnh.htm); and The New Economics Foundation's Happy Planet Index (described at http://www.happyplanetindex.org/).

[3] To give just a few examples, this terminology is used in the writings of Amartya Sen and others who are building on the United Nations' work on "human development." It is the essential term in the new field of hedonic psychology, described below. It has been central to the work of the Global Development And Environment Institute (www.gdae.org), from its 6-volume series, Frontier Issues in Economic Thought (Island Press, 1995-2001) through its introductory textbook, Microeconomics in Context (forthcoming, Houghton Mifflin). (Final goals are discussed in the first chapter of Microeconomics in Context.) Why replace the older economic term, "utility," with "well-being"? The reasons have to do with the history of usage of these words. "Utility" has been accepted as a black box: a word that points to whatever is wanted by the person doing the wanting. Its usefulness has depended upon its not being defined. As it has become clear to some thinkers that economics needs to be concerned with actual human goals, a different word was required: one that could be taken to include what people want, but that invites investigation into both what it is that people do, actually, want, as well as what they will be glad to have if they have it. "Well-being" is being employed to fill this need.

Author Biography

Neva Goodwin is co-director of the Global Development And Environment Institute at Tufts University. She is active in a variety of attempts to synthesize and institutionalize an economic theory – "contextual economics" – that will have more relevance to real world concerns than does the dominant economic paradigm. She is also involved with efforts to motivate business to recognize social and ecological health as significant, long-term corporate goals.

As Co-Director of the Global Development And Environment Institute, she has supervised the six-volume project *Frontier Issues in Economic Thought*, and is editing the Michigan Press series *Evolving Values for a Capitalist World*. Dr. Goodwin is lead author of the introductory college-level textbook *Microeconomics in Context*, whose Transitional Economies Edition has been translated into Russian and Vietnamese, and was published in those countries in 2002. The U.S. version is published by Houghton Mifflin. She is currently working on the companion *Macroeconomics in Context*, and is leading a project that will create a 300-megabyte "Social Science Library" CD for free distribution to all university libraries in nearly 150 developing countries.

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