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A New Philosophical Approach to Social Transformation for a “Green Economy”

Tim Jackson

Context

Economic transformation is crucial to the project of sustainable development. The emerging concept of the “green economy” is, potentially, a powerful way to articulate the economic changes needed to achieve sustainability. But the underlying philosophical and social foundations for the green economy depart significantly from the foundations of the conventional economy.

The concept of the green economy emerged, in part, as a response to the financial crisis of 2008–9. Talk of a “green new deal” during late 2008 began to align the interests of economic stimulus with the need for low-carbon transition—and indeed with the “greening” of the economy more generally. Since investment is required for both, it made sense to target some of the stimulus investment toward green technologies and infrastructures. Many nations—most notably South Korea—did exactly that. And there is a sense in which the “green economy” has provided a useful input to the debates about economic renewal.

At the same time, there are clearly some dangers in assuming that the concepts of “green economy” and sustainable development are perfectly aligned. At the very least, there is a need to outline more clearly the relationship between them. Is a green economy a necessary condition for sustainable development? Is it a sufficient condition for sustainable development? Might the introduction of a new language around the green economy support the pursuit of sustainable development? Or does it have the potential to undermine specific aspects of sustainability such as social justice. Could it emerge perhaps as a language that

threatens or displaces the political weight that sustainable development has developed around the world?

It is beyond the scope of this paper to answer those questions definitively. In fact, it is impossible to answer them definitively, since language itself is always contested. Everything depends on how the international community ends up defining “green economy,” how it decides to frame and build the economics that underpin the green economy, and how it decides to articulate the relationship between green economy and sustainable development.

None of this is very surprising. Sustainable development itself has contested meanings. Some see sustainable development as a new framing concept, a potentially radical philosophy for redefining progress. Others see it as a practical tool for achieving incremental improvements in social justice and in environmental protection. Others again have argued that sustainable development is a conservative project, flawed by the aim of trying to protect an economic paradigm, which is itself the cause of so many environmental and social problems.

Trends toward the goals of sustainable development in the twenty years since the Rio Conference on Environment and Development—and indeed in the forty years since the Stockholm Conference on Human Development—might appear to support this view. In certain key respects, environmental and social progress has been going in the wrong direction. Carbon emissions have increased, biodiversity has diminished, and resource extraction has not slowed down. Inequalities—even in Organisation for Economic Co-operation and Development (OECD) nations—are higher than they were two decades ago.¹ And the global financial system, which seemed secure twenty years ago, is still reeling from a crisis that engendered near collapse.

Yet the visionary potential of sustainable development remains intact: its insistence on the importance of human needs, its sense of social justice, its unequivocal support for future generations, its identification of human dependency on the environment, its characterization of limits. The challenge of sustainability is somehow to “live well”—to create “strong, healthy and just societies,” and yet remain within the ecological limits of a finite planet (Figure 2.1). This vision still provides a guiding framework for social progress.

Neither is there any doubt that a strong and resilient economy is a vital prerequisite in this task. When economies collapse, bad things can happen. Economic success brings social stability. Indeed, as Keynes once argued, the principal task of economics is to ensure social stability. Economics in the service of human well-being is an idea with a long pedigree and is worth hanging onto.

Figure 2.1 Principles for sustainable development

Source: DEFRA (2005).

In short, the language of “green economy” could in theory provide a way to articulate the economic underpinnings of sustainable development.

That, at least, is the premise of this chapter. Starting from this basic understanding—that a green economy provides the economic underpinnings of sustainable development—the chapter aims to sketch the philosophical, social, and psychological aspects of a transformation of the global economy toward sustainability. It situates the green economy as a critical component in that transition. Further, it elaborates the elements on which green economy must focus if it is to provide a useful underpinning for the task of transformation.

First though, we need to sketch out the philosophical elements of a “conventional” approach to economic progress. It is only from an understanding of the key tenets of this approach that it is possible to identify the distinguishing features of a different kind of economy—a “green economy.” Central to the conventional approach is the premise that social progress depends on economic growth. The next section in this paper explores this idea explicitly, expanding the rationale for economic growth, and drawing out its implications in ecological, technological, social, and institutional terms.

Chasing progress

The modern idea of progress can be traced to the Enlightenment—a period of intense intellectual and philosophical creativity concentrated mainly in Northern Europe during the sixteenth and seventeenth centuries. This period gave rise to enormous technological creativity and provided the foundations for the industrial revolution. It was also accompanied by new moral and prudential speculations about the nature of the “good life”—ideas about how individuals and

societies can and should thrive. Some of these ideas provided the foundations for classical and later neoclassical economics. Perhaps most notable among these were concepts of utilitarianism and libertarianism.²

While utilitarianism held that progress consists in ensuring the greatest happiness for the greatest number, libertarianism suggested that this could best be achieved by delivering people the freedom with which to pursue their own happiness. The libertarian focus on individual freedoms was adopted by the classical economists as an organizing principle of the market economy—formulated as a belief that individual self-interest was the principal motivation underlying human behavior. A key element in this philosophy was the belief—articulated in particular through Adam Smith’s much cited doctrine of the “invisible hand”—that the pursuit of individual self-interest gave rise to the social good. So the recipe for social progress was to give these individual interests free rein through the market.

Over the next two centuries these broadly democratizing philosophies slowly began to dissolve conventional hierarchical divisions in the societies of emerging industrialized countries, a process that was accelerated by industrialization itself. Improved access to natural resources, more efficient conversion technologies with which to manufacture material goods, and the rising incomes associated with industrial livelihoods: all of these contributed to a profound technical and societal transformation.

Even at the time, there were critics of this transformation. For instance, it was argued that the Industrial Revolution was built on an access to material resources that was secured only by an expansion of military power. Britain, France, Germany, Japan, Portugal, and Spain all developed strong imperialist ambitions, competing for the rich resources and cheap labor to be found in the still-undeveloped nations around the world. Colonization and slavery, it was claimed, provided the energy and material resources that powered the new industrial economies. Some even suggested that it was the clash of imperial ambitions among the emerging superpowers that led directly to the First and indirectly to the Second World War.

There were also criticisms of the impact that the process of industrialization was having on the working populations of the newly industrialized countries. Working conditions in the early mill-towns were often harsh. Life expectancy was sometimes brutally short. There was evidence that health outcomes actually worsened over the early years of industrialization. Rather than improving the lives of everyone, industrialization bettered the lives of some at the expense of others. There were certainly huge divisions still between the rich—the owners

of land and capital—and the poor who still struggled for livelihoods, land, food, health, and a share of the political voice.

A particular criticism of these new arrangements was that the emerging capitalist economy had “disembedded” economic activities from social relations, simultaneously undermining community and social capital and leading to a loss of accountability in economic relationships.³ This erosion was thought to flow in part from the underlying philosophical idea that individual self-interest should be the driver of social progress. As individual identity became a stronger and stronger force in modern society, the strength of social identities and social ties began to diminish, threatening social cohesion.

In spite of these criticisms—and the disruptions of two World Wars and the Depression—the emerging, predominantly capitalist, form of social organization had dramatically improved the lives of many ordinary people in the industrialized nations by the middle of the twentieth century. The prevailing, increasingly global, notion of economic progress was one that assumed that these advances would continue in much the same way into the future.

The setting up of the UN System of National Accounts (SNA) in the early postwar years provided the institutional bedrock for this view, and through it the gross domestic product (GDP) became the single most important arbiter and indicator of progress. Growth in the GDP emerged as the key political priority in all the advanced Western nations. With the collapse of the Soviet Union and the opening out of trade with Southeast Asia, by the end of the twentieth century, the paradigm of economic growth achieved near global significance.

The SNA established three parallel—and in principle equivalent—measures of GDP. First, the sum of “value added” by all productive activities in the economy; second, the sum of all wages and profits earned in the production of goods and services; and third, the sum of all public and private consumption and investment expenditures in the economy. It is the last measurement that provides the strongest justification for the use of GDP as a measure of social progress.

To the extent that GDP is the sum of all market and nonmarket expenditures on goods and services, as long as markets are free and governments are democratic then expenditures reflect what people value and want. Or, in other words, if we are spending our money on more and more commodities, it’s because we value them. We wouldn’t value them if they weren’t at the same time improving our lives. Hence a continually rising per capita GDP ought to be improving our lives and increasing our well-being.

This model of progress goes some way to explaining why the pursuit of GDP has become one of the principal policy objectives in almost every country in the

world in the last few decades. Rising GDP traditionally symbolizes a thriving economy, more spending power, richer and fuller lives, increased family security, greater choice, and more public spending. A declining GDP, by contrast, is bad news. Consumer spending falls, businesses go bust, jobs get lost, homes are repossessed, and a government that fails to respond appropriately is liable to find itself out of office.

In short, modern society is now organized around a particular model of how to pursue human well-being. Baldly stated, this model contends that increasing economic output—growth in the GDP—leads to improved well-being: a higher standard of living and a better quality of life across society. Economies are organized explicitly around the need to increase the GDP; business models are predicated on maximizing profits to shareholders; people are inclined to believe that the more disposable income they have—the more they consume—the better off they are.

Since the global GDP has risen more or less consistently over the last fifty years, aside from the occasional recession, the comforting logic of the conventional view suggests that we have been pretty successful in delivering an increasing standard of living and, by proxy, an improving quality of life over recent decades. Furthermore, if our concern is to ensure that well-being continues to reach new heights, the conventional view provides a ready and familiar formula for achieving this end: to ensure high and stable levels of economic growth across the world.

Limits to growth

In spite of its success in delivering improved access to goods and services, at least to the advanced nations. This model of progress has not gone unchallenged. There has been a growing concern over the ecological and resource implications of an ever-expanding economy. How—and for how long—is continued growth possible without coming up against the ecological constraints of a finite planet?

Concern over limits was raised by Thomas Robert Malthus in his enormously influential *Essay on Population*, first published in 1798. His argument (massively condensed) was that growth in population always runs faster than growth in the resources available to feed and shelter people. So sooner or later the population expands beyond the “means of subsistence,” and some people—the poorest inevitably—will suffer.

The global population is now more than six times the size it was in Malthus' day. And this is partly because the means of subsistence expanded considerably faster than population did—completely counter to Malthus' premise. The global economy is sixty-eight times bigger than it was in 1800.⁴ Malthus missed completely the longer term implications of technological change and a considerable slowing down of the rate of population increase that accompanied development. Today, the means of subsistence more than kept pace with people's propensity to reproduce, largely because of the easy availability of cheap fossil fuels.

The question was raised again in a different form in the Club of Rome's *Limits to Growth* report.⁵ First published in 1972, *Limits to Growth* argued that resource scarcities would inevitably push prices up and slow down the possibilities for future growth.

Eventually, if material throughput isn't curtailed, the available resource base would collapse and with it the potential for continued economic activity. Collecting together as much data as they could find on resource extraction rates and available reserves, they set themselves the task of figuring out when the turning points would arrive—the points at which real scarcity might begin to bite.

The Club of Rome predictions were remarkably accurate as the basis for predicting actual resource consumption rates, as a recent Commonwealth Scientific and Industrial Research Organisation CSIRO report attests.⁶ *Limits to Growth* foresaw significant resource scarcities emerging during the first few decades of the twenty-first century. In the first decade of this century the question of pressing resource limits has already been raised in relation to oil, phosphate, rare earth metals, and other strategic resources.

Most significantly, the peak oil debate had already emerged as a fiercely contentious issue by the year 2000. The "peak-ists" argued that the peak in oil production was only a matter of years away, possibly already on us. Their opponents pointed to the massive reserves still lying in the tar sands and oil shales. Getting the oil out might be costly and environmentally damaging, but absolute scarcity was still a long way away, claimed the optimists.

Meanwhile the price of oil rose steadily. Oil price hikes had already shown they have the potential to destabilize the global economy and threaten basic securities. Fears peaked in July 2008 when oil prices reached \$147 a barrel (Figure 2.2). Though they fell sharply in the following months, the threat of peak oil hasn't gone away. The rising underlying trend had returned by early 2009 and continues to pose a threat to global economic security.

Figure 2.2 Global commodity prices: January 2003—July 2010

Source: Data are from *The Economist* dollar-based Commodity Price Index. Retrieved at: www.economist.com.

The International Energy Agency has suggested that the “peak” could arrive as early as 2020. Oil will not disappear beyond that peak, but it will be significantly more costly to extract, both in economic and in environmental terms. The era of cheap oil would to all intents and purposes be gone and the economics of energy would be irrevocably altered as a result.⁷

Oil is not the only commodity for which resource scarcity has already become an issue. Food prices also rose sharply leading up to July 2008 (Figure 2.2), sparking riots on the streets in some countries. Beyond the spike, the underlying trend rose once again. Conflicts over land use, particularly related to the use of land for growing biofuels, were certainly one of the factors pushing food prices up through 2008.

The trend in mineral prices has been rising too as demand is growing and even at current extraction rates, a number of important minerals measure their time to exhaustion in decades rather than centuries. If the whole world consumed resources at only half the rate the United States does, for example, copper, tin, silver, chromium, zinc, and a number of other “strategic minerals” would be depleted in less than four decades. If everyone consumed at the same rate the United States does today, the time horizon would be less than twenty years. Some rare earth metals will be exhausted in a decade even at current global consumption rates.⁸

Resource scarcity—the problem of “sources” in the language of environmental economists—is only part of the concern. The debate is driven even more

strongly by the problem of “sinks”—the capacity of the planet to “assimilate” the environmental impacts of economic activity. “Even before we run out of oil,” explains ecologist Bill McKibben, “we’re running out of planet.”⁹

In 2009, the Tällberg Foundation convened a group of distinguished scientists, led by Johan Rockström, to examine a variety of global ecosystem limits, which they described as “planetary boundaries” (Figure 2.3). Rockström’s team concluded that humanity was already operating beyond the safe space defined by at least three of these boundaries: climate change, global nutrient cycles, and the loss of biodiversity. It’s now widely acknowledged that an estimated 60 percent of the world’s ecosystem services have been degraded or overused since the mid-twentieth century.¹⁰

During the same period of time the global economy has grown more than five times, a rate of growth that has no historical precedent and at odds with our scientific knowledge of the finite resource base and the fragile ecology on which we depend for survival. Most telling of all, even as the richest nations achieve unprecedented material affluence, the poorest still struggle for survival.

Figure 2.3 Planetary boundaries and “safe operating space”

Source: Rockström et al. (2009).

Making room for growth

Among the charges against growth is that it has delivered its benefits, at best, unequally. A fifth of the world's population earns just 2 percent of global income. The richest 20 percent by contrast earn 74 percent of the world's income. Huge disparities characterize the difference between rich and poor. Basic aspects of human flourishing such as life expectancy still vary widely between the richest and the poorest nations (Figure 2.4).

Life expectancy is as low as forty years in parts of Africa and almost double that in many developed nations (Figure 2.4). Such disparities are unacceptable from even the most basic humanitarian point of view and they also generate rising social tensions.¹¹

The conventional growth-based paradigm suggests that the best way to address this problem is through growth itself. As the world economy grows, according to this conventional view, it will inevitably lift the poorest out of poverty and perhaps even become more equal as it does so. Simon Kuznets famously hypothesized that inequalities grow at first as nations develop, but after a while a peak of inequality is reached, and then inequalities begin to decline.

It has to be said that evidence in support of this hypothesis is hard to find. Even within the advanced economies, inequality is higher than it was twenty years ago.¹² Middle-class incomes in Western countries were stagnant in real terms long before the 2008/9 recession and still show little sign of recovery. Far

Figure 2.4 Life expectancy at birth versus average annual income

from raising the living standard for those who most needed it, growth let much of the world's population down over the last fifty years.

But the question of ecological limits raises another more fundamental challenge to this conventional viewpoint; continuous economic growth pushes inexorably against ecological limits. If the economy continues to grow at the same rate that it has done in the last fifty years, it will be eighty times bigger in 2100 than it was in 1950.¹³

A world in which things simply go on as usual is already inconceivable. But what about a world in which 9 billion people all achieve the level of affluence expected in the OECD nations, with incomes still growing at 2.5 percent per year?¹⁴ Such an economy would need to be fifteen times the size of today's economy by 2050 (seventy-five times what it was in 1950) and forty times bigger than today's (by the end of the century).¹⁵ The resource and environmental implications of such an economy are staggering.

The only possible answer to this conundrum would be to achieve substantial technological improvements in the efficiency with which material resources are converted into economic output. In a later section of this chapter, we will explore the potential for such a technological "decoupling" of economic growth from material throughput in more detail. But for now, it is clear that the question of limits fundamentally changes the moral dimensions of social progress.

In a world without limits, it would be acceptable to lift the poorest out of poverty by growing the entire economy. But the existence of ecological or resource limits poses a more pressing moral question. How much of the world's resources any one nation or individual has a right to in the pursuit of human well-being?

Alongside this moral issue lies a prudential one; beyond a certain point at least, continued pursuit of economic growth doesn't appear to advance human well-being. As shown in Figure 2.4, as incomes rise, the additional benefits in terms of increased life expectancy are markedly reduced. Very similar patterns can be found in relation to infant mortality, participation in education, and even happiness or life satisfaction.

If the returns to growth in the richest nations are lower than they are in the poorest nations, the best way to improve human well-being overall would clearly be to redistribute growth from the richest to the poorest part of the population. Or in other words, there is a moral pressure on the rich nations to make room for growth in the poorer parts of the world.

To the extent that they can achieve this through technological efficiency, the conventional paradigm might attempt to defend continued growth even in the

richest nations. But if there are limits to this technological capacity, then the moral imperative on the rich is to curtail further increases in levels of economic throughput.

Beyond, this moral imperative, however, lies a puzzle that will need to be solved if any moral progress is to be made in terms of distributing limited economic output to places where it is needed most. Why is it that rich countries continue to pursue economic growth, even after the point at which material needs are satisfied? It is clear that a meaningful approach to the green economy must certainly address the plight of the 2.5 billion people across the world still chronically undernourished, living on less than \$2 a day. But does the same logic hold for the richer nations, where subsistence needs are largely met, human development outcomes (life expectancy, for instance) are already high, and increases in availability of consumer goods add little to social well-being? Talk of a growing “social recession” in advanced economies has accompanied the relative economic success of the last decade.¹⁶

In spite of these apparent costs from “uneconomic growth,” it appears to be impossible simply to halt the growth process. Why does enough never seem to be enough? Is it that human needs are somehow insatiable after all? Or is it something to do with the structure of economies that forces them to grow? To answer these questions, we must explore a little further the underlying dynamics of the modern economy.

The dilemma of growth

Capitalist economies place a high emphasis on the efficiency with which inputs to production (labor, capital, and resources) are utilized. Continuous improvements in technology mean that more output can be produced for any given input. Efficiency improvement stimulates demand by driving down costs and contributes to a positive cycle of expansion. But crucially it also means that fewer people are needed to produce the same goods from one year to the next.

As long as the economy grows fast enough to offset this increase in “labor productivity,” there isn’t a problem. But if it doesn’t, then increased labor productivity means that someone somewhere loses their job.¹⁷

If the economy slows for any reason, then the systemic trend toward improved labor productivity leads to unemployment. This in turn, leads to diminished income, a loss of consumer confidence, and further reduces demand for consumer goods. From an environmental point of view, this leads to lower

resource use and fewer polluting emissions. But it also means that retail falters and business revenues suffer. Investment is cut back. Unemployment rises and the economy falls into a spiral of recession.

Recession has a critical impact on public finances. Social costs rise with higher unemployment, but tax revenues decline and lower expenditures risk real cuts to public services with negative impacts on well-being.

Governments must borrow more not just to maintain public spending but to try and restimulate demand. But in doing so, they inevitably increase the national debt. The best that can be hoped for here is that demand does recover and begin paying off the debt. This could take decades. It took Western nations almost half a century to pay off public debts accumulated through the Second World War. It has been estimated that the “debt overhang” from the financial crisis of 2008 could last into the 2030s.¹⁸

There is little resilience within this system. Once the economy starts to falter, feedback mechanisms that had once contributed to expansion begin to work in the opposite direction, pushing the economy further into recession. With a growing (and aging) population these dangers are exacerbated. Higher levels of growth are required to protect the same level of average income and to provide sufficient revenues for (increased) health and social costs.

In short, modern economies are driven toward economic growth. For as long as the economy is growing, positive feedback mechanisms tend to push this system toward further growth. When consumption growth falters, the system is driven toward a potentially damaging collapse with a negative impact on human flourishing. People’s jobs and livelihoods suffer. The capitalist model has no easy route to a steady state position. Its natural dynamics push it toward one of two states: expansion or collapse. Capitalism has a structural reliance on growth, thus the high emphasis placed on labor productivity in the modern economy. Continuous improvements in technology mean that more output can be produced for any given input of labor.

As long as the economy expands fast enough to offset labor productivity there isn’t a problem. But if the economy doesn’t grow, people lose their jobs, output falls, public spending is curtailed, and the ability to service public debt is diminished. A spiral of recession looms. Growth is necessary within this system just to prevent collapse.

As a result society is faced with a profound dilemma. To resist growth is to risk economic and social collapse. To pursue it relentlessly is to endanger the ecosystems on which we depend for long-term survival. This dilemma looks at first like an impossibility theorem for sustainable development. But it cannot be

avoided and has to be taken seriously. The failure to do so is the single biggest threat to sustainability.

The arithmetic of growth

The conventional response to the dilemma of growth is to appeal to the concept of “decoupling.” Production processes are reconfigured. Goods and services are redesigned. Economic output becomes progressively less dependent on material throughput. In this way the economy can continue to grow without breaching ecological limits—or running out of resources.

It’s vital here to distinguish between “relative” and “absolute” decoupling. Relative decoupling refers to a decline in the ecological intensity per unit of economic output; resource impacts decline relative to GDP. The situation in which resource impacts decline in absolute terms is called “absolute decoupling.” This is essential if economic activity is to remain within ecological limits. In the case of climate change, for instance, absolute reductions in global carbon emissions of 50–85 percent are required by 2050 in order to meet the IPCC’s 450 ppm stabilization target.¹⁹

The prevailing wisdom suggests that decoupling will allow us to increase economic activity indefinitely and at the same time stay within planetary boundaries. But the evidence is far from convincing. While global primary energy efficiency has increased by a third since 1980 and the carbon intensity of each dollar of economic output has fallen by about the same amount, absolute reductions in impact have been elusive. Global primary energy use, carbon emissions, biodiversity loss, nutrient loadings, deforestation, global fossil water extraction are all still increasing. Carbon dioxide emissions from fossil fuel consumption increased by 40 percent between 1990 and 2009.

Massive investments in new technology and rapid improvements in resource productivity could, in theory, redress this situation. But the sheer scale of the challenge is daunting. In a world with 9 billion people with the level of affluence expected in the OECD nations as argued above, we would need an economy forty times bigger than today’s by the end of the century. What on earth does such an economy look like? What does it run on? Does it really offer a credible vision for a shared and lasting prosperity?

Arithmetic is key here. A very simple mathematical identity, put forward almost forty years ago by Paul Ehrlich and John Holdren, governs the relationship between relative and absolute decoupling. The impact (I) of human activity is the

product of three factors: the size of the population (P), its level of affluence (A) expressed as income per person, and a technology factor (T), which measures the impact associated with each dollar we spend.

For as long as the (T) factor is going down, we have relative decoupling. But for absolute decoupling we need (I) to go down as well. And that can only happen if (T) goes down fast enough to outrun the pace at which population (P) and income per capita (A) go up.

Over the last five decades both affluence and population have gone up substantially, each being about equally responsible for the overall five-fold growth in the economy. In recent years, the affluence factor has exceeded the population factor in driving growth. But both are clearly important, as Ehrlich himself recognized.²⁰ And neither has proved particularly tractable to policy. Increasing affluence has been seen as synonymous with improved well-being. Advocating limits to population growth has been seen as contravening basic human liberties.

Ironically, both these preconceptions are wrong. Increasing incomes don't always guarantee well-being and sometimes detract from it. And the fastest population growth has occurred in the developing world—driven not by liberty but by a lack of education and inadequate access to contraception.²¹

Nonetheless, the intractability of addressing both population and income has tended to reinforce the idea that only technology can save us. Knowing that efficiency is key to economic progress, it is tempting to place our faith in the possibility that we can push relative decoupling fast enough that it leads in the end to absolute decoupling. But just how feasible is this?

Carbon intensities have declined on average by 0.7 percent per year since 1990. That's good; but not good enough. Population has increased at a rate of 1.3 percent and average per capita income has increased by 1.4 percent each year (in real terms) over the same period. Efficiency hasn't even compensated for the growth in population, let alone the growth in incomes. Instead, carbon dioxide emissions have grown on average by 2 percent per year, leading over seventeen years to an almost 40 percent increase in emissions.²²

The IPCC's Fourth Assessment report suggests that achieving a 450 ppm stabilization target means getting global carbon dioxide emissions down to below 4 billion tonnes per annum by 2050 or soon after. This would be equivalent to reducing annual emissions at an average rate of 4.9 percent per year between now and 2050.

But income and global population are going in the opposite direction. According to the UN's mid-range estimate, the world's population is expected

to reach 9 billion people by 2050—an average growth of 0.7 percent each year. Under business as usual conditions, the decline in carbon intensity just about balances the growth in population, and carbon dioxide emissions will end up growing at about the same rate as the average income (1.4% a year). It might not sound like much, but by 2050, under these assumptions, carbon dioxide emissions will be 80 percent *higher* than they are today. Not quite what the IPCC had in mind.

To achieve an average year-on-year reduction in emissions of 4.9 percent with 0.7 percent population growth and 1.4 percent income growth (T) has to improve by approximately $4.9 + 0.7 + 1.4 = 7\%$ each year—almost ten times faster than it is doing right now. By 2050 the average carbon content of economic output would need to be less than 40 g CO₂/\$, a twenty-one-fold improvement on the current global average (Figure 2.4, Scenario 1).

Notably, this would still be a deeply unequal world. Business-as-usual income growth is usually taken to mean a steady 2 percent growth rate in the most developed countries, while the rest of the world does its best to catch up—China and India leaping ahead at 5–10 percent per annum at least for a while, with Africa, South America, and parts of Asia languishing in the doldrums for decades to come. In most of these scenarios, both the incomes and the carbon footprints of the developed nations would be more than an order of magnitude higher by 2050 than those in the poorest nations.

If we're really serious about fairness and want the world's 9 billion people all to enjoy an income comparable with EU citizens today, the economy would need to grow six times between now and 2050, with incomes growing at an average rate of 3.6 percent a year. Achieving the IPCC's emission target in this world means pushing down the carbon intensity of output by 9 percent every single year for the next forty or so years.²³ By 2050, the average carbon intensity would need to be fifty-five times lower than it is today at only 14 g CO₂/\$ (Figure 2.4, Scenario 3).

And this scenario still hasn't factored in income growth in the developed nations. Imagine a scenario in which incomes everywhere are commensurate with a 2 percent increase per annum in the current EU average income. The global economy grows almost fifteen times in this scenario and carbon intensity must fall by over 11 percent every single year. By 2050 the carbon content of each dollar has to be no more than 6 g CO₂/\$. That's almost 130 times lower than the average carbon intensity today (Figure 2.5, Scenario 4).

Beyond 2050, if growth is to continue, so must efficiency improvements. With growth at 2 percent a year from 2050 to the end of the century, the economy in

Figure 2.5 Carbon intensities now and required to meet 450 ppm target

Source: Jackson (2009).

2100 is forty times the size of today's economy. And to all intents and purposes, nothing less than a complete decarbonization of every single dollar will do to achieve carbon targets. Under some more stringent stabilization scenarios, by 2100, we will need to be taking carbon out of the atmosphere. The carbon intensity of each dollar of economic output will have to be less than zero. Or in other words, each \$ of global economic activity will on average need to be taking carbon out of the atmosphere rather than adding carbon to it.

This may not be strictly impossible, in purely technical terms. But it clearly implies a transformation well beyond the scale or speed of dematerialization achieved during the history of industrial society. A critical question here is whether this scale of transformation is feasible within the economic and social dynamics of modern society. Does this kind of economy really allow for levels of dematerialization an order of magnitude greater than anything witnessed hitherto? What about the social dynamics of the consumer society? Is this kind of society capable of delivering radical reductions in carbon intensive consumption?

The dynamics of transformation

To rely on heroic beliefs about technological or behavioral change without exploring these questions is to default to a kind of magical thinking about the

future. It would be fanciful to suppose that “deep” resource and emission cuts could be achieved without confronting the structure of market economies. It is essential to understand two interrelated issues that together drive the dynamic of modern capitalist economies.

In the first place, the profit motive stimulates a continual search by producers for newer, better, or cheaper products and services. This process of “creative destruction,” according to Schumpeter is a fundamental feature of capitalism, driving economic growth forward.²⁴ For the individual firm, the ability to adapt and to innovate—to produce cheaper and newer products—is vital. Firms who fail in this process risk their own survival.

But the continual production of novelty would be of little value to firms if there were no market. Understanding the nature of this demand is essential. It is intimately linked to the symbolic role that material goods play in our lives.²⁵ The “language of goods” allows us to communicate with each other—about social status, identity, social affiliation.

Novelty plays an absolutely central role. It carries important information about status and allows us to explore our aspirations for ourselves and our family, and our dreams of the good life. There is an almost perfect fit between the continual consumption of novelty by households and the continuous production of novelty in firms. The restless desire of the consumer is the perfect complement for the restless innovation of the entrepreneur. The economic system remains viable as long as liquidity is preserved and consumption rises.

An understanding of the social logic of consumerism suggests that it’s mistaken to assume that human motivations are all selfish. Evolution doesn’t preclude moral, social, and altruistic behaviors. On the contrary, social behaviors evolved in humans precisely because they offer selective advantages to the species. All of us are torn to some extent between selfishness and altruism.

The psychologist Shalom Schwartz and his colleagues have formalized this insight into a theory of underlying human values. Using a scale that has now been tested in over fifty countries, Schwartz suggests that our values are structured around two distinct tensions. The tension between selfishness (self-enhancement, in Schwartz’s scheme) and altruism (self-transcendence) and the tension between openness to change and conservation—or in other words between novelty and tradition.²⁶

As society evolved in groups, people were caught between the needs of the individual and the needs of the group. And as they struggled for survival in sometimes hostile environments, people were caught between the need to adapt and to innovate and the need for stability. In other words, both individualism

and the pursuit of novelty have played an adaptive role in our common survival. But so have altruism and conservation or tradition.

The point is that each society strikes the balance between altruism and selfishness (and also between novelty and tradition), and where this balance is struck depends crucially on social structure. When technologies, infrastructures, institutions, social norms reward self-enhancement and novelty, then selfish sensation-seeking behaviors prevail over more considered, altruistic ones. Where social structures favor altruism and tradition, self-transcending behaviors are rewarded and selfish behavior may even be penalized.²⁷

Thus, the searching questions about the balance of the institutions that characterize modern society are: Do they promote competition or cooperation? Do they reward self-serving behavior or people who sacrifice their own gain to serve others? What signals do government, schools, the media, religious and community institutions send out to people? Which behaviors are supported by public investments and infrastructures and which are discouraged?

The institutions of consumer society are designed to favor a particularly materialistic individualism and to encourage the relentless pursuit of consumer novelty because this is exactly what's needed to keep the economy going.

The erosion of commitment is a structural requirement for growth as well as a structural consequence of affluence. Modern structures of consumerism call on us to be myopic, individualistic, novelty seekers, because that's exactly what's needed to perpetuate the economic system.

Simplistic exhortations for people to resist consumerism are destined to failure. Under current conditions, it's tantamount to asking people to give up key capabilities and freedoms as social beings. Equally, changing the social logic of consumption cannot simply be relegated to the realm of individual choice. It's almost impossible for people to simply *choose* sustainable lifestyles, however much they'd like to. Even highly motivated individuals experience conflict as they attempt to escape consumerism. And the chances of extending this behavior across society are negligible without changes in the social structure.

Conversely, social structures can and do shift people's values and behaviors. Structural changes of two kinds lie at the heart of any strategy to address the social logic of consumerism. First, dismantle or correct the perverse incentives for unsustainable (and unproductive) status competition. Second, establish new structures that provide capabilities for people to flourish, and particularly to participate fully in the life of society, in less materialistic ways.

In practice, this second avenue requires a more detailed exploration than is possible here. It will require policy attention to what flourishing means,

particularly when it comes to questions of community, social participation, and psychological flourishing. But these outcomes cannot be delivered in instrumental, *ad hoc* ways. Policy must pay closer attention to the structural causes of social alienation and have the goal of providing capabilities for flourishing at its heart.

This strategy rejects the centrality of material commodities as the basis for profitability. It replaces them with the idea of an economy designed explicitly around delivering the capabilities for human flourishing.

More than this, of course, these capabilities will have to be delivered with considerably less material input. We will need to call on the creativity of the entrepreneur in a different way than in the past. Social innovation is going to be vital in achieving change. But so too is a closer attention to the question of limits.

A key point of influence will lie in the structure of wages. Society now rewards competitive and materialistic outcomes even when these are socially detrimental—as the lessons from the financial crisis made clear. Reducing the existent huge income disparities would send a powerful signal about what is valued in society. Better recognition for those engaged in childcare, care for the elderly or disabled, and volunteer work would shift the balance of incentives away from status competition and toward a more cooperative and potentially more altruistic society.

Increased investment in public goods and social infrastructure is another vital point of influence. A different role for investment is an essential component of an ecological macroeconomics. In addition to its role in ensuring economic resilience, social investment sends a powerful signal about the balance between private interests and the public good.

In summary, we are faced with an unavoidable challenge. A limited form of flourishing through material success has kept our economies going for half a century or more. But it is completely unsustainable and is now undermining the conditions for a shared prosperity. This materialistic vision of prosperity has to be dismantled.

The idea of an economy whose task is to provide capabilities for flourishing within ecological limits offers the most credible vision to put in its place. But this can only happen through changes that support social behaviors and reduce the structural incentives to unproductive status competition.

Steps toward the green economy

The policy demands of this analysis are significant but relatively clear. There is a need for a concerted and committed effort on the part of governments

to establish viable and effective policies to initiate the transition to a green economy. They can be grouped under three main themes:

- to establish and impose meaningful resource and environmental limits on economic activity
- to develop and apply a robust macro-economics for sustainability
- to redress the damaging and unsustainable social logic of consumerism

Table 2.1 summarizes specific policy steps that national governments could take.

Establishing ecological limits

The material profligacy of consumer society is depleting key natural resources and placing unsustainable burdens on the planet's ecosystems. Establishing clear resource and environmental limits and integrating these limits into both economic structure and social functioning is essential.

This means paying a much closer attention to the ecological limits of economic activity through establishing reduction targets and emission caps. The stabilization targets and emission budgets established for carbon provide an exemplar here.²⁸

Table 2.1 Steps toward a sustainable economy

Establish the Limits

Resource use, emissions caps, and reduction targets
Fiscal reform for sustainability
Promoting technology transfer and ecosystem protection

Redesigning the Economic Model

Developing macroeconomic capability
Investing in jobs, assets, and infrastructures
Increasing financial and fiscal prudence
Improving macroeconomic accounting

Changing the Social Logic of Consumerism

Sharing the work and improving the work-life balance*
Tackling systemic inequality
Measuring prosperity
Strengthening human and social capital
Reversing the culture of consumerism

Note: *Sharing the work is also an essential prerequisite for building a sustainable macroeconomy (Jackson [2009], Victor [2008], Hayden [1999]).

Source: Jackson (2009).

The conditions of equity and ecological limits, taken together, suggest a key role for the model known as “contraction and convergence” in which equal per capita allowances are established under an ecological cap that converges toward a sustainable level.²⁹ This approach has been applied, to some extent, for carbon. Similar caps should be established for the extraction of scarce nonrenewable resources, for the emission of wastes (particularly toxic and hazardous wastes), for the drawing down of “fossil” groundwater, and for the rate of harvesting of renewable resources.

Effective mechanisms for achieving targets under these caps need to be set in place. Once established, these limits also need to be integrated into a convincing economic framework.

Ecological macroeconomics

For the richest nations, there's an urgent need to develop a new ecological macroeconomics. A macroeconomy predicated on continual expansion of a debt-driven, materialistic consumerism is ecologically unsustainable, socially divisive, and financially unstable.

A new macroeconomics require changes in the configuration of key macroeconomic variables. Consumption, state spending, investment, employment still matter in a new economy, but the balance between consumption and investment, the role of public, community and private sectors, the nature of productivity growth, the conditions of profitability are likely to shift as ecological and social goals come into play. New macroeconomic variables will need to be brought explicitly into play including limits on carbon, the value of ecosystem services and the stocks of natural capital.

The role of investment is vital. In conventional economics, investment stimulates consumption growth through the continual pursuit of productivity improvement and the expansion of consumer markets. In the new economy, investment must be focused on the long-term protection of the assets on which basic economic services depend. The new targets of investment will be low-carbon technologies and infrastructures, resource productivity improvements, the protection of ecological assets, maintaining public spaces, building and enhancing social capital.

This new portfolio demands a different financial landscape from the one that led to the collapse of 2008. Long-term security has to be prioritized over short-term gain and social and ecological returns must become as important as conventional financial returns. Reforming capital markets and legislating

against destabilizing financial practices are an essential foundation for a new sustainable macroeconomy.

The question of productivity is key to resolving the dilemma of growth. The “productivity trap”³⁰ arises from the relentless pursuit of labor productivity growth. Labor productivity growth appears to offer a means to higher efficiencies in delivering economic output, but it requires continuous growth to maintain full employment. In the language of overanxious politicians, growth equals jobs. And any attempt to stabilize or reduce economic output—as a means of reducing resource throughput or environmental impact, for example—is viewed as a direct threat to people’s livelihoods.

There are two avenues through which it might be possible to escape the productivity trap.³¹ One is to accept productivity growth in the economy and reap the rewards in terms of reduced hours worked per employee—to share the available work among the workforce to retain equitable employment opportunities. The second strategy is to shift the structural composition of the economy to sectors that have lower labor productivity and lower labor productivity growth. Both these avenues have some precedence in economic thought but need to be integrated into a convincing macroeconomic policy framework.

Finally, a new macroeconomics will need to be ecologically and socially literate, ending the folly of separating economy from society and environment. A first step in achieving this must be an urgent reform of the national accounting system so that what we measure is brought more in line with what really matters. The integration of ecological variables into the national accounts and an end to the “fetishism” of GDP are essential.

Changing the social logic

The social logic that locks people into materialistic consumerism is extremely powerful. But it is also detrimental ecologically and psychologically. An essential prerequisite for a lasting prosperity is to free people from this damaging dynamic and provide opportunities for sustainable and fulfilling lives.

Structural change must lie at the heart of any strategy to address the social logic of consumerism through two avenues: dismantling the perverse incentives for unproductive status competition and establishing new structures that provide capabilities for people to flourish—and particularly to participate meaningfully in the life of society—in less materialistic ways.

Achieving this means finding new ways for meeting the desires and aspirations that are now met through commoditized materialistic consumption. One way to

achieve this is through investment in public amenities and spaces that create opportunities for leisure and self-development. An equally important strategy lies in strengthening communities and building strong social ties that enrich human life without enlarging our ecological footprint.

Even more important is developing nonconsumerist ways of being in the world—drawing on a variety of traditions that oppose consumerism.

Consumerism has been a major driver of materialism, and advertising is the most obvious attribute of the consumer society. Although advertising provides information, it is primarily a means of persuasion, one that is particularly pernicious in limiting people's mental and spiritual universe. A nonconsumerist economy will limit advertising and allied forms of manipulating people.

The advantages in terms of prosperity are likely to be substantial. A less materialistic society will increase life satisfaction. A more equal society will lower the importance of status goods. A less consumption-driven economy will improve people's work-life balance. Enhanced investment in public goods will provide lasting returns to national prosperity.

Green economy and sustainable development

A resilient economy in which low-carbon enterprises can thrive and people can find meaningful employment and flourish is a necessary precondition for sustainable development. But the structural drivers of the conventional economy are not sufficient to deliver this. Without structural change it seems unlikely that businesses, individuals, and governments will engage in the necessary transformation to a green economy.

Enterprise is constrained by performance against short-term investment conditions. People are constrained by a powerful social logic that locks them into consumerism. Governments will tend to favor conditions that promote increased consumerism over sustainability for as long as economic stability depends on consumption growth.

But it is possible to identify both general conditions and specific strategies that could transform economies and patterns of consumption. Interestingly, the foundations for such a transition draws from the philosophical foundations for the industrial economy.

The utilitarian roots of modern economies fail to capture the deeper and broader notions of human well-being. The libertarian focus on individual freedoms misses the broader social nature of human beings. Institutional

structures of the market, the legal forms of enterprise, the structure of ownership, and profit-making have all tended to focus narrowly on individual self-interest.

The vision of sustainable development in terms of a strong, healthy, and just society, able to flourish within the ecological limits of a finite planet, calls for a broadening of the social dimensions of human behavior, a strengthening of the institutions that reinforce and encourage social behaviors, and long-term investment in the structures and infrastructures that support these behaviors.

Ultimately, if the green economy is to support sustainable development, it must replace the incomplete vision of self-interested hedonism that haunts conventional economics with something more closely aligned with our broader nature as social beings.

Most crucially, the idea that the pursuit of individual interest can by itself lead to social progress is flawed and useless to the pursuit of sustainable development. The institutions of the green economy must start from our interconnectedness to each other, to our shared past, to our common future, and to the environment on which we depend for life.

Notes

- 1 OECD (2008).
- 2 Utilitarianism was first established as an idea by John Stuart Mill in book of the same name first published in 1863 (Mill 1906). Libertarianism evolved alongside utilitarianism through the writings of John Locke, Edmund Burke, Adam Smith, and others (Hamowy 2008).
- 3 Polanyi (1942).
- 4 Maddison (2008).
- 5 Meadows et al. (1972) and (2004).
- 6 Turner (2008).
- 7 The G20 group warned of the threat of rising oil prices to global economic stability as early as 2005 (<http://www.independent.co.uk/news/business/news/g20-warns-of-oil-price-threat-to-global-economic-stability-511293.html>).
- 8 On mineral reserves and extraction rates, see Turner et al. (2007), especially Tables 1–3.
- 9 McKibben (2007), p. 18. On sources versus sinks, see, for example, Common and Stagl (2006), Marglin and Banuri (2008), Turner et al. (2007).
- 10 MEA (2005); TEEB (2008).

- 11 On income inequality in developed nations, see OECD (2008); on global disparities, see UNDP (2005). On the effects of income inequality, see Marmot (2005), Wilkinson (2005), Marmot and Wilkinson (2006), and Wilkinson and Pickett (2009).
- 12 OECD (2008).
- 13 The average annual growth in global GDP in the last fifty years is just over 3 percent per year. If the economy grows at the same rate over the next ninety-one years, it will be $(1.031)^{91} = 16.1$ times bigger than it is today.
- 14 This is the UN's mid-range population estimate for 2050 .
- 15 Typical EU income in 2007 was \$27,000 per capita (in \$2000) dollars. At 2 percent average growth per annum, this reaches \$63,000 by 2050. For 9 billion people to achieve this income, the global economy must be \$573 trillion dollars. In 2007, it was \$39 trillion. This means that the economy in 2050 is $570/39 = 14.6$ times the size it is today. Assuming that population is stabilized by 2050 and that any further growth is due to income growth at the same 2 percent average rate, then by 2100 the economy is $(1.02)^{50} = 2.7$ times bigger than it is in 2050, that is, around $2.7 \times 15 = 40$ times bigger than it is today.
- 16 See, for example, Layard (2005), nef (2006), Haidt (2007), Abdallah et al. (2008). On "social recession," see Rutherford (2008), Norman (2010). On well-being and inequality, see Jackson (2008).
- 17 For more detail on this underlying model, see Booth (2004), Common and Stagl (2005), Ayres (2008), and Victor (2008).
- 18 IFS (2009).
- 19 IPCC (2007), Table SPM.6.
- 20 See Ehrlich (1968).
- 21 See, for example, APPG (2007).
- 22 Rates of change for r_a were calculated using world GDP data (at constant 2000 prices, market exchange rates) taken from IMF (2008), available online at: <http://www.imf.org/external/pubs/ft/weo/2008/02/weodata/index.aspx>.
- 23 The rule of thumb here gives: $4.9 + 0.7 + 3.6 = 9.2\%$, but the error term is slightly larger (0.4%). The actual value is a little over 8.8 percent.
- 24 Schumpeter (1934).
- 25 Jackson (2009), (2005); Douglas and Isherwood (1996).
- 26 Schwartz (2006), (1999).
- 27 This finding was first demonstrated formally by the game theorist Robert Axelrod (1984).
- 28 CCC (2008); IPCC (2007), for example.
- 29 Meyer (2004).
- 30 Jackson and Victor (2011).
- 31 Jackson and Victor (2011).

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