Consumption: Challenge to Sustainable Development . . .

Norman Myers

The problem triad of population, environment, and development is now being joined by consumption. This could prove the least tractable of the four interlinked problems since consumption patterns and expectations are deeply entrenched in most societies and cultures. But change will come, whether by design or default. Present consumption—or rather, excessive and wasteful consumption—by rich communities cannot be sustained, if only for environmental reasons. This is exemplified by carbon emissions, and hence global warming, which stem from the fossil-fuel energy underpinning our economies. The artificially cheap price of fossil fuels encourages profligate use. During 1996, the United States contributed one-fifth more carbon to the global atmosphere than the 4.5 times more populous China. All nations will be affected by global warming, whether they are major or minor sources of carbon dioxide (*1*). The winds carry no passports.

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Industrialized-world citizens overall generate three-quarters of other wide-ranging pollutants, also toxic chemicals and hazardous wastes. Much the same applies to the depletion of many of the world's nonrenewable natural resources (*2*). Hence the consumption problem lies primarily with affluent communities, and they bear a responsibility to pioneer a path toward sustainable consumption. This is all the more pertinent insofar as sizable communities in Eastern Europe and the former Soviet Union, as well as in China, India, Southeast Asia, and Latin America, are entering the consumption classes. Already this group totals 750 million people, or as many as the long-established consumers in rich nations. In 1995, more new cars were sold in Asia than in Western Europe and North America combined (*3*). While poor communities certainly need to increase their consumption, they might consider less wasteful and polluting forms of consumption than those that characterize rich nations.

Consumption is here taken to mean more than total spending on consumer goods, just as it is more than "consumerism" or the excessive use of goods and services to satisfy needs that could be met with less environmental impact. Rather, consumption consists of "human transformations of materials and energy, [and it] is environmentally important to the extent that it makes materials or energy less available for future use, and . . . through its effects on biophysical systems, threatens human health, welfare, or other things people value" (*4*, *5*).

There is nothing intrinsically wrong with rich communities consuming a disproportionately large percentage of natural resources if those resources remain plentiful and can be recycled, as in the case of iron and steel (85% of which are consumed by the richest 20%, who do not thereby limit the consumption of the poor). Indeed, the rich nations' conversion of natural resources into human capital can enhance welfare everywhere. It is of scant consequence that the average American consumes 115 times as much paper as the average Indian, provided the American recycles most of the

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. . . or Distraction?

Jeffrey R. Vincent and Theodore Panayotou

Political and economic liberalization have spread rapidly around the globe in the past decade. Although it may be too early to proclaim the "end of history" (*1*), the world has undeniably become more democratic and more market-oriented. These trends have coincided with a third: rising awareness of the connections between environment and development. Sustainable development—"meet[ing] the needs of the present without compromising the ability of future generations to meet their own needs" (*2*)—has become a familiar phrase.

Few argue that democratization is inconsistent with sustainable development. Many, however, have a less sanguine view of economic liberalization. In their view, market-led economic growth has yielded levels of consumption in developed countries that cannot be sustained, much less attained by developing countries. They see consumption as being inherently linked to environmental degradation and resource depletion. The implication is that sustainable development is a zero-sum game: Raising the standard of living in developing countries requires concomitant reductions in developed countries.

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In many ways, the consumption debate is a continuation of the *Limits to Growth* and *Global 2000* debates of the 1970s and 1980s (*3*), except that much more information is now available on the global environment. This Policy Forum reviews information on the links between consumption and sustainable development. It concludes that the problem is not consumption levels, but rather consumption patterns. Achieving more sustainable consumption patterns requires policies to overcome market and policy failures, not a cap on global consumption.

Private Consumption and Environmental Quality

In economics, "consumption" spans the full range of goods and services that contribute to human well-being. It includes not only items produced by households or purchased in markets, but also amenities and a variety of nonuse values, many pertaining to the environment. "Private consumption" as conventionally defined in national income accounts is a narrower measure, which encompasses only marketed (priced) goods and services. It measures material standard of living. If increases in material standard of living are indeed associated with increased environmental degradation, then observed increases in private consumption overstate increases in true, economic consumption

The hypothesis that environmental degradation is linked to private consumption, while seemingly logical, is not well supported by cross-country data on environmental quality compiled since the early 1970s by the Global Environmental Monitoring System (GEMS) of the U.N. Environment Program and the World Health Organization. Comparison of GEMS data (*4*) to World Bank data on per capita private consumption (*5*) reveals that countries with higher per capita private consumption levels have lower atmospheric concentrations of particulates and sulfur dioxide, lower aquatic concentrations of suspended solids and nitrate and nitrite, and higher aquatic

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velopment. We do not need to expand the Earth in order to develop it; and ultimately, additional economic growth can bring less rather than more human welfare (*21*). Economic advancement of innovative forms can be based on, for example, electronics technology with its potential for enriched lifestyles and environment-friendly products. Whereas materials account for 40% of the value of the industrial age's icon, the car, they make up 0.3% of the value of a microchip—and all the microchips in the world would fit inside a jumbo jet.

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Response to Myers: In a welcome shift toward the views of mainstream economists, Myers emphasizes full-cost pricing as the principal means of addressing environmental degradation. He has not, however, fully expunged traces of limits-to-growth thinking or taken his economic arguments to their logical conclusions. The former is evident in his worries about the depletion of nonrenewable resources, which is contradicted by data on economic availability; his call for recycling, which is often inferior to substitution; and his concerns about the planet's carrying capacity, which is of questionable policy relevance given that it is not fixed and that environmental degradation is not strictly proportional to economic activity. The latter is evident in his call for research into "why people overconsume and misconsume," when he has already provided an explanation—market and policy failures; and in his recommendations that governments encourage industry to use fewer material inputs and subsidize renewable, nonpolluting activities. Such actions are unnecessary if prices are right.

We are left uncertain just what the consumption "challenge" is. Myers defines consumption as "human transformations of materials and energy." But this describes all human activities. In our view, there is no distinct consumption problem, only institutional failures that reduce human well-being in both the short and long runs. These failures affect both production and consumption, and they occur in poor as well as rich countries. Harnessing the price mechanism is the most cost-effective means of addressing them. The fact that several OECD (Organization for Economic Cooperation and Development) countries have held total energy consumption approximately constant since the early 1970s while doubling their gross domestic product—all without mandating lower consumption levels or subsidizing "better" lifestyles—suggests that this is true even of CO_2 emissions, Myers's prime example.

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concentrations of dissolved oxygen (which is ecologically beneficial). Similarly, deforestation rates during 1980 to 1990 were lower in countries with higher consumption levels (*5*). Forest cover actually increased between 1980 and 1990 in many countries with consumption levels above U.S.$7500 (1987 price levels).

This evidence is consistent with econometric studies that have found per capita income to be positively associated with many indicators of environmental quality, at least beyond certain income thresholds (*6*). While such correlations are not necessarily causal or optimal (*7*), they do indicate that it is *possible* for private consumption to be associated with improving environmental quality and that this is what has happened historically for several key environmental indicators.

An obvious objection is that countries with higher private consumption levels might have simply shifted environmental degradation to poorer countries by enacting more stringent environmental regulations. Studies on this issue have found that industrial location decisions are driven much more by factors like political stability and labor costs than by environmental regulations (*8*). The evidence also rejects the notion that export-oriented production is the driving force behind environmental degradation in developing countries. Malaysia has one of the most export-oriented economies in the world, but industry generated barely a tenth of total air pollution emissions in 1995 (vehicles were the primary source) (*9*). Throughout the developing world, inadequate sewerage, not industry, is the principal cause of water pollution harmful to human health (*10*). More than 90% of the 1994 roundwood harvest in developing countries was ultimately consumed within developing countries, not exported to rich countries (*11*).

The former East Bloc illustrates perhaps most dramatically that environmental degradation is not proportional to private consumption. Communism was institutionally biased against consumption, yet the fall of the Berlin Wall revealed that it had generated the world's most polluted landscape (*12*).

Private Consumption and Resource Depletion

A second way that private consumption might undermine sustainable development is by accelerating the depletion of energy and other natural resources. But cross-country data do not show that energy consumption rises inexorably with private consumption (*5*). In 1993, per capita energy consumption was higher in countries with higher per capita private consumption, but only up to a per capita consumption level of U.S.$10,000 (1987 prices). Thereafter, per capita energy consumption was lower. Moreover, in most countries with per capita private consumption levels of U.S.$5000

and above, per capita energy consumption was substantially lower in 1993 than in 1971. The data show similar relations between consumption of wood products and private consumption during 1961 to 1994 (*5, 11*).

Of course, the gap in energy consumption between rich and poor countries remains large. Have the development prospects of poor countries been compromised by the disproportionate share of the world's fossil fuels and other nonrenewable resources that rich countries have consumed? Mineral reserves are defined by the U.S. Bureau of Mines as identified resources (deposits) that are recoverable given current prices and technologies. Mechanically dividing reserve estimates by current global mineral production, and adjusting for production trends, suggests that reserves of most minerals will indeed be exhausted within a few decades (*13*).

Depletion dates estimated this way are probably centuries too early, however, for two reasons. First, production trends have been slowing down. Growth in global production of most minerals has been much slower since 1970 than before (*14*), and it has been well below the global population growth rate since that date, 1.7% per year (*10*). This reflects more efficient utilization, increased recycling, and substitution, and these processes have not reached their thermodynamic or economic limits. Second, reserves of fossil fuels and most minerals have risen substantially (*14*), owing to discoveries of new deposits and improvements in mining technologies. In many cases, the increase in reserves has outpaced the increase in production, so that nonrenewable resources are physically less scarce in both absolute and relative terms today than they were two decades ago. This is true, for example, of key fossil fuels like petroleum, coal, and natural gas. Continued increases in reserves are likely, as identified resources are many times larger than reserves for most minerals, and new deposits continue to be identified.

Declining physical scarcity would not provide much solace to developing countries, however, if it were a consequence of higher mineral prices bringing previously uneconomic deposits into production. But this is not the case: Reserves have risen despite declining mineral prices. Nordhaus (*15*), updating Barnett and Morse (*16*), found that mineral prices deflated by unit labor costs in the Unites States fell exponentially from the late 1800s to 1989. For example, the average U.S. worker had to work only about one-fifth as long in 1989 as in the late 1800s to earn enough to purchase a barrel of oil.

Have workers in the rest of the world been as fortunate? Due to limited data on labor costs, the longest period one can analyze for developing countries is from the early 1960s to the early 1990s (*17*). With one exception (petroleum in India), world prices for several natural resources (petroleum, coal, aluminum, copper, iron ore, nickel, phosphate, potash, tropical logs) (*18*), deflated by annual earnings per manufacturing worker in Brazil and India (*5*) (the largest developing countries in Latin America and Asia for which data are available), either declined or did not change significantly. In Kenya, however, the largest country in Africa with sufficient data, prices rose in five of the nine cases. In economic terms, most natural resources are either more available or no less available to developing countries today than 30 years ago, except to countries such as Kenya that have mismanaged their economies and failed to raise incomes.

Patterns Versus Levels

In sum, available evidence indicates that environmental quality improves with private consumption according to many indicators and that resource constraints are unlikely to be binding in the foreseeable future. It appears that there is no inevitable tradeoff between private consumption and environmental quality or resource availability. This should not be surprising. The root cause of environmental degradation is not the level of consumption, but rather market and policy failures that cause consumers and producers to ignore the full social costs of their decisions (*10, 19*). Direct production costs are artificially reduced by subsidies, resulting in excessive use of energy, water, and other natural resources; deple tion costs are ignored because of attenuated property rights, leading to degradation of forests, pastures, fisheries, and water resources; and environmental costs are ignored because of ineffective environmental policies, leading to excessive discharge of pollutants and solid and hazardous wastes. Consequently, the composition of the consumption bundle is skewed toward environmentally and socially costly items that are produced inefficiently and without sufficient regard for their environmental impacts.

None of this is to downplay the threats that environmental degradation poses to human welfare. In fact, it is precisely because massive losses in welfare are already occurring, especially in the poorest countries of the world, that attention must not be distracted by extraneous issues. For this reason, one should not waste time on proposals to cap consumption by establishing a "plimsoll" or load line for the global economy (*20*). Although one can measure the scale of the global economy in dollars or material throughput, scale alone does not determine environmental impacts. There is no fixed relation between economic activity and environmental degradation, as there is between the weight of cargo and the likelihood that a ship will capsize.

Attention should focus on changing consumption and production patterns, not on capping consumption levels. This requires policy reform efforts at the local and national levels to promote full-cost pricing and overcome market and policy failures, including ones that contribute to transnational forms of environmental degradation such as greenhouse gas emissions and loss of biodiversity. If policies are reformed, the composition of the consumption bundle will automatically adjust to a more environmentally friendly mix, without the need for direct interventions to "fix" it. The level of private consumption may or may not change, but that is not the issue. Human well-being—consumption in the broad sense—will change, and for the better.

One reason to support economic liberalization is that it helps address subsidy and property rights problems. It is also linked to environmental policy reform in another important way: By raising incomes, it raises public demand for environmental quality and generates financial resources necessary for environmental protection. Capping consumption would undermine these benefits, by blunting incentives for work and savings. Political liberalization helps realize these benefits by ensuring that public demands for environmental protection are heeded by policy-makers. Political resistance to the types of policy reforms mentioned above is to be expected, but such examples as the successful removal of pesticide subsidies in Indonesia and ranching subsidies in Brazil, the increase in energy prices toward world levels in Eastern Europe, and growing acceptance worldwide of environmental taxation provide grounds for optimism (*10, 19*). Economic and political liberalization, combined with environmental policy reform, should make it possible for all countries to be winners in the pursuit of sustainable development.

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Response to Vincent and Panayotou: The case presented by Vincent and Panayotou, built on market prices, takes insufficient notice of externalities (the word is not even mentioned). Yet the most immediate externalities—for example, those of road transport in the United States—impose costs worth at least 5% of gross national product. Their case also ignores those who are virtually excluded from the marketplace, namely, 1.3 billion people with cash incomes of $1 per day and another 1.6 billion with incomes of $3 per day. Half of humankind accounts for one-tenth of all marketplace consumption.

Why is there no mention of superscale environmental problems such as desertification, soil erosion, water deficits, and ozone layer depletion, and only a passing mention of species extinctions and global warming? It is no contest to compare concentrations of sulfur dioxide, water nitrites, and other relatively limited pollutants, as attested by the economic realities: Desertification costs $42 billion and soil erosion $400 billion worldwide per year.

With reference to the argument that growing affluence is not generally linked with declining environments, Arrow *et al.* (*1*) propose that the converse is often true. Sure, to cite Vincent and Panayotou, "it is *possible* for private consumption to be associated with improving environmental qual ity [emphasis added]." Similarly, we *could* feed 6 billion people, yet 850 million are hungry—the worst figure ever and rising.

Vincent and Panayotou finally concede that consumption causes much environmental damage. Before we agree that all it takes to correct the problem is policy reform on a dozen sides, let us accept that political leaders do not always lead us into promised lands. If there is often a screw-up factor in policy planning, should not we constrain consumption until we can get our policy act together?

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