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**Sustainable Development:
Tackling Problems--Or Sources Of Problems?**

Norman Myers*

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* The author is Visiting Professor at Oxford University.

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SUSTAINABLE DEVELOPMENT: TACKLING PROBLEMS--OR SOURCES OF PROBLEMS?

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ABSTRACT

There has been little progress toward sustainable development since the Rio Earth Summit. In many respects, indeed, our economies are worse placed than before, and much the same applies to most governments, many international agencies, and virtually all businesses--also to our lifestyles, our social paradigms, even our value systems. Yet this is not entirely due to ignorance, myopia and other well known shortcomings. It is also due to deficiencies in our institutional structures that persuade governments, etc., also individual citizens, to behave in ways that run counter to sustainable development, unwittingly harmful though their practices may be. There is need to expand our analytic purview beyond conventional problems of pollution, waste, over-exploitation of resources and the like. We need to address sources of problems by e.g. devising substitutes for GNP as indicators of economic wellbeing, engaging in full-cost pricing, shifting the tax burden, eliminating perverse subsidies, and eliminating other institutional roadblocks that stand in the way of the many eco-technologies that could go far to help us squeeze through the environmental bottlenecks ahead. These measures would lead to more productive economies as well as environmental safeguards, also to emphasis on quality of life as well as quantity of livelihood: a win-win outcome.

1. INTRODUCTION

As a critic pointed out, the Rio Earth Summit assembled more leaders than any other conference in history, yet it produced less leadership than any other conference. Alas for the Earth and the world, that such an opportunity was missed in such spectacular fashion. True, Rio generated two global conventions on climate and biodiversity, plus a set of principles on forests, but on-ground progress on any of these three fronts has been marginal at most. Nor has there been much prominence, let alone sufficient action, for Agenda 21. The record since Rio has been far from promising, especially given what is at stake.

What is at stake is sustainability for our Earth, our world, our peoples, our countries, our future, in fact "our whatever." If we persist with business as usual we shall end up with some very unusual forms of business, as with virtually all aspects of our livelihoods and our lives. The costs look sizeable, fully \$1 trillion per year right away and several times more in decades ahead (Myers, 2001; Pimentel, 2001; see also Brown et al., 2001; Hawken et al., 1999). Why, then, is there not more recognition that sustainable development is not so much an option as an imperative? People are not myopic, still less are they stupid. What holds them back? Could it be that we should seek change not only in the way we "play the game" but in the very rules of the game? Do we find that the playing pitch is tilted against reason and common sense--tilted by our institutions and their distortive structures rather than by the players and their inadequate skills?

This paper proposes that while we need to tackle problems with much more vigour and urgency, we also need to tackle the sources of problems. That is, we should do more to ask why problems arise in the first place. How can we cut them off at the pass before they do their damage? If we were to figure out ways to tackle problems at source, we could devise plenty of policy leverage, often with multiplier effects too. The aim of this paper is to examine some of these wider dimensions.

The reader is asked to note that the author does not try to cover the entire agenda of Working Group 3 with its focus on "the concepts of Sustainable Development, the state of implementation and acceptance of the concepts, and the benefits and pitfalls encountered by institutions in trying to include the concepts within their programmes." This is far too broad a remit to address in a single paper. Rather--and insofar as the paper is intended to serve as no more than a personal reflection on the issues involved--it is a statement of one observer's view of our problems and their opportunities.

II. ALTERNATIVES TO GNP AS AN ECONOMIC INDICATOR

Gross National Product (GNP) is deemed by political leaders to be the highest boon this side of heaven. But GNP is a gross measure indeed. For instance, the Exxon oil spill off Alaska cost \$3 billion in cleanup activities. According to the indiscriminating calculus of GNP, the cleanup boosted society's wellbeing just as much as growing a field of wheat or educating a child, even though the cleanup was

merely restoring American society to its level of wellbeing before the oil spill occurred. Instead of being added on to GNP as a "good," the costs should have been subtracted as a "bad." Similarly, increases in pollution of household water has helped boost sales of bottled water to unprecedented heights, which likewise adds to the blessed growth of GNP. Similarly again, over half of Americans are overweight, whereupon GNP includes both the billions of dollars they spend on food they wish they did not eat and the billions of dollars they spend on diet and weight-loss schemes to take off the resulting fat. GNP further adds on the \$120 billion annual costs of obesity-related health problems, workdays lost and the like (Gardner and Halweil, 2000).

In short, GNP reflects all expenditures, including not only environmental safeguards but other corrective measures such as unemployment payments, medical services, policing and prisons, also private expenditures that are likewise "defensive" such as lawsuits (just the last item is worth \$300 billion per year in the United States). According to the innovative analyst Paul Hawken (Hawken et al., 1999), over one fifth of the U.S. economy does nothing to enhance Americans' lifestyles: "Where economic growth is concerned, the government uses a calculator with no minus sign", ignoring the difference between the supposed wealth of nations and the true welfare of people (Hawken, 1997). Rising output means rising incomes--not always the same as rising living standards. GNP measures quantity of livelihood but ignores quality of life (Davidson, 2000; Jacobs, 2000;).

Meantime the onwards-and-upwards rise of GNP presumes that the more people spend and consume, the better their lives must inevitably become, even though GNP makes no distinction between desirables and undesirables, only more and less (Cobb et al., 1999; Daly, 2000; Dasgupta and Maler, 2000). The citizen much admired by GNP devotees is one who has recently been through a mugging, a burglary, a car crash, a costly divorce, and has been diagnosed with long-term cancer. According to one economist, the Kobe earthquake left the national economy slightly ahead of the game because of the massive reconstruction activities it generated.

A few innovative economists, notably Herman Daly (2000; see also Ayres, 1998; Chung, 1999; Loh et al., 1999) even ask whether we may have reached a stage where an incremental advance in the economy can lead to a retreat in human wellbeing, due to increased overwork, daily frazzle and declining leisure time, plus greater pollution, waste and a host of other "diseconomies."

GNP should be replaced with a measure such as Net National Product to offer a more realistic indicator of how we are doing (Dasgupta and Maler, 2000). Better still would be a Genuine Progress Indicator (GPI) which would include activities that are overlooked by GNP since they are not marketed, notably housework, child care and do-it-yourself efforts. During the period 1980-98 the United States' per-capita GNP registered an increase of 38 percent, yet a per-capita GPI decline of 25 percent (Cobb et al., 1999). At least eleven countries--Britain, Germany, Austria and Sweden among others--are working on a form of GPI, which shows that European measures have posted steady declines over the last 30 years. In Britain during 1980-1996, GNP rose by one third, whereas another indicator, the Index of Sustainable Economic Welfare, declined by one fifth (Jackson et al., 1997).

Well might citizens ponder whether their contributions to GNP are bringing them the benefits promised by this highly misleading measure of how we are faring in both economic and lifestyle terms. They might also heed the critique of former Senator Robert Kennedy: *"GNP does not allow for the health of our children, the quality of their education, or the joy of their play. It does not include the beauty of our poetry or the strength of our relationships; the intelligence of our public debate or the integrity of our public officials. It measures neither our wit nor our courage; neither our wisdom nor our learning; neither our compassion nor our devotion to country; it measures everything, in short, except that which makes life worthwhile."*

III. FULL COST PRICING

While the open marketplace offers many benefits, it also features marked deficiencies. Prices are often far from reflecting all costs, especially those of externalities. The result is that consumers are encouraged to pursue forms of consumption that are artificially cheap and unwittingly harmful.

Consider the case of gasoline. In the United States gasoline is cheaper than bottled water and cheaper in real terms than at any stage in the last sixty years, yet many Americans view it as "too expensive." Were the cost of Americans' consuming gasoline to be re-calculated by internalizing just the externality of air pollution, the price would immediately rise by the equivalent of a \$2 tax per gallon (Nadis and MacKenzie, 1993). If Americans were to cover all the costs of their car culture, including non-fuel externalities (though not counting global warming), plus traffic congestion and road accidents, they would be paying at least \$6-7 per gallon for gasoline or three times more than they now pay for their largely "free ride" (Cobb, 1998; Delucchi, 1997; Lee, 1995; Litman, 1999). These are actual costs, to be paid by someone, usually by the car driver's fellow citizens. If the driver were to pay full costs, he might feel inclined to leave his car at home, and instead to use the bus and rail systems that would instantly spring up on every side to meet the sudden increase in marketplace demand for public transportation. The person concerned would have to face up to his fixation with the car culture. There are few better educators than the wallet.

In any case, the car increasingly fails as an icon of convenience. Way back in the mid-1990s traffic jams caused Americans to lose time worth around \$50 billion a year (Arnott and Small, 1994; Paarlberg, 1996).

Much the same applies to the cost of a banana, a shirt, a cup of coffee, a fridge, a personal computer, a unit of electricity, or a vacation trip. In fact, many of the things we buy cost more, often far more, than we actually pay for them. If the difference is not large, that may not matter. But in those many instances where the difference is great (as with gasoline), an artificially cheap price may stimulate consumers to still greater consumption. Markets are not always invisible hands, they can be invisible elbows and feet.

IV. SHIFTING THE TAX SYSTEM

Governments mainly tax people for their work and businesses for their profits. Since both are major supports of our economies, they should not be penalized. Why not tax people for downside activities such as pollution, waste and other

environmental sins that undercut our economies? At least nine countries, including such major players as Britain, Germany, France, Italy and Spain, have begun to shift the tax burden (Roodman, 2000). Sweden's taxes to combat acid rain have been the main cause of a two-fifths fall in sulphur emissions, while Denmark's taxes on waste have reduced the volume by one fifth and increased recycling by almost one third. Both countries are taxing carbon emissions as a way to internalize environmental costs (Roodman, 1998 and 2000).

Note too how far the strategy could relieve the over-burdened taxpayer. Of global taxes totalling \$7.5 trillion in the mid-1990s, 90 percent constituted a burden on individual work and business investment, thus slowing economic growth. If governments had been taxing, for instance, pollution more fully, they could have raised at least \$1 trillion a year worldwide, which could then have been used to cut taxes on wages and profits by a whacking 15 percent (Roodman, 1998).

There could also be scope for progressive consumption taxes on luxuries. Such taxes would encourage people to spend less conspicuously and more beneficially, freeing up money to spend in ways that will create lasting improvements in the quality of their lives (Frank, 1999).

Conversely it is efficient for consumers to be rewarded for being environmentally virtuous. Belgium has cut sales taxes on energy-saving materials from 22 to 6 percent and has made drivers of gas guzzlers pay \$1500 more in road tax than owners of fuel-efficient cars (Sachs et al., 1998). Denmark and Norway have long imposed taxes that reduce the size of vehicles bought (Schipper and Erikson, 1995). Other countries exempt the smallest and most fuel-efficient vehicles from sales tax altogether while imposing higher taxes on models with poor fuel performance.

Tax shifting does not necessarily change the overall level of taxation and thus does not materially alter a country's overall competitive position in the world market. This means that in many instances it can be undertaken unilaterally.

V. PERVERSE SUBSIDIES

There can hardly be a policy intervention with greater potential payoff than cutting "perverse" subsidies. These are subsidies that are harmful to both our economies and our environments (Myers and Kent, 2001). A notable example lies with marine fisheries, which have left numerous fish species on the verge of commercial if not biological extinction. The fisheries catch--generally way above sustainable yield--costs around \$100 billion a year to bring to dockside, whereupon it is sold for around \$80 billion, the shortfall plus profits being made up with government subsidies. The result is depletion of major fish stocks and endangerment of certain species, plus bankruptcy of fishing businesses and much unemployment.

Perverse subsidies are prominent in six leading sectors: fossil fuels, road transportation, agriculture, water, forestry and fisheries. Subsidies for fossil fuels aggravate pollution effects such as acid rain, urban smog and global warming. Subsidies for road transportation promote pollution at local, national and global levels, plus a host of further problems such as traffic congestion and road accidents.

Subsidies for agriculture foster over-loading of croplands, leading to erosion of topsoil, pollution from synthetic fertilizers and pesticides, release of greenhouse gases, and loss of biodiversity habitat. Subsidies for water encourage mis-use and over-use of supplies that are increasingly scarce in many lands. Subsidies for forestry promote over-logging in lands from Alaska to Amazonia, and destruction of the richest concentrations of species on the planet. Not only do the environmental ills entrain economic costs in themselves, but the subsidies serve as direct drags on the efficient functioning of economies overall.

Perverse subsidies in these sectors total around \$2 trillion per year (Myers and Kent, 2001). Plainly they have the capacity to (a) exert a highly distortive impact on our economies, and (b) promote grand-scale injury to our environments. On both counts, they foster unsustainable development. Ironically the total of \$2 trillion is almost three and a half times larger than the Rio Earth Summit's budget for sustainable development, \$600 billion per year--a sum that governments dismissed as fiscally absurd.

If perverse subsidies were to be reduced, there would be a double dividend. First, there would be an end to the formidable obstacles imposed by perverse subsidies on sustainable development. Second, there would be a huge stock of funds available to give an entirely new push to sustainable development--funds on a scale unlikely to become available through any other source. In the case of the United States, for instance, they would amount to \$550 billion, or twice the Pentagon budget. An American pays taxes of at least \$2000 a year to fund perverse subsidies, and then pays another \$1000 through increased costs for marketplace goods and through environmental degradation. Were just half of the world's perverse subsidies to be phased out, just half of the funds released would enable most governments to abolish their budget deficits at a stroke, to reorder their fiscal priorities, and to restore environments more vigorously than through any other single strategy. In addition, the relief for the citizen taxpayer would be sizeable in that governments could slash taxes in e.g. the United States, Japan and Germany, where taxes average \$6000-7000 per person per year, by around \$700--with yet another boost to the economy (updated from Roodman, 1998).

Fortunately some countries have made a start on phasing out their perverse subsidies. There have been slashings of fossil fuel subsidies, as much as 40 percent or more, in countries as diverse as China, India, Poland and Russia. New Zealand has eliminated virtually all subsidies for agriculture. Brazil has ended its subsidies for cattle ranching in Amazonia. Australia, South Africa and Mexico are phasing out their subsidies for water. The European Union has halved many of its fishery subsidies.

Consider some positive impacts of cutting fossil fuel subsidies. Without its cuts, China's carbon dioxide emissions in 1997 would have been more than 50 percent higher. Better still, China has decoupled its economic growth from its CO₂ emissions growth to exceptional degree; in 1998 emissions were growing at roughly half the economic growth rate (Baumert et al., 1999). In OECD countries, removal of all fossil fuel subsidies (together with an energy tax) could cut energy demand enough to reduce CO₂ emissions by 15 percent in 2020 (OECD, 2001).

Probably the policy intervention with most immediate leverage would be a reduction if not an eventual phasing out of the many subsidies that support road transportation. In fact this sector constitutes the most subsidized and centrally planned sector in most of the world's economies. It has the least true competition among available modes of transportation, and the most misleading prices.

VI. ECO-TECHNOLOGIES

A further adverse consequence of perverse subsidies is that they close off the market to many eco-technologies that would go far to help us squeeze through the environmental bottlenecks ahead. These eco-technologies include modes for energy efficiency, materials recycling, pollution controls, waste management, closed-loop manufacturing, and zero-emissions industry. Such technologies are urgently needed. Industrial societies are absurdly wasteful, consuming almost 100 tonnes of non-renewable materials per person every year. Over 90 percent of the materials and other resources harvested or displaced in nature are wasted on their way to producing food, machines, vehicles, infrastructure and the like. A mere one percent of the materials flow ends up in products that are still in use six months after sale, the rest being junked (Hawken et al., 1999; Schmidt-Bleek, 2000).

Consider the many techno-breakthroughs available for clean and renewable sources of energy. A cornerstone of a "beyond fossil fuels" future lies with wind power, which has multiplied nearly four-fold during the last five years, a growth rate matching that of the computer industry. The cost of wind-generated electricity has fallen from 38 cents per kilowatt hour in the early 1980s to just six or even three cents today, until in many regions it is lower than that of fossil-fuel energy. Indeed wind power may soon rank as the cheapest energy source on a large scale worldwide. Denmark already generates 15 percent of its electricity through wind power, and aims to make it 50 percent within the foreseeable future. The greatest potential probably lies in the American Great Plains, where a wind turbine occupying one tenth of a hectare can easily produce a farmer or rancher \$2000 in royalties per year while providing the local community \$100,000 worth of electricity. Just three states, viz. North Dakota, Kansas and Texas, possess enough harnessable wind energy to meet all U.S. electricity needs (Brown, 2001).

But the most productive way for us to meet our energy needs is by making better use of what we have. The United States has been saving \$200 billion worth of energy per year compared with 1973 and its oil price hike, yet it is still wasting upwards of \$300 billion a year, a total that is climbing steadily (Hawken et al., 1999). A small example of efficiency technologies lies with the fluorescent light bulb, which uses less than one quarter as much electricity as a traditional incandescent bulb. Production of the new bulbs soared five-fold during the 1990s, and the one billion bulbs now in use have cut electricity demand each year by the equivalent output of 28 coal-fired power plants (Scholand, 2000). Americans could save \$1.8 billion per year if each household were to replace just three traditional bulbs with fluorescents (Flavin and Dunn, 1997).

Thanks in major measure to eco-technologies, the world could abandon the high-throughput, high-pollution and high-waste route of tradition. Instead we can learn how to do far more with far less, and eventually--to cite the efficiency expert Amory Lovins--"to do virtually everything with virtually nothing." Whereas raw

materials account for 40 percent of the value of that ikon of the industrial age, the car, they make up 0.3 percent of the value of that ikon of the information technology age, the microchip--and all the microchips in the world comprise so little volume that they would fit inside a jumbojet (von Weizsacker et al., 1997; Dunn, 2000). A car amounts to two tonnes of materials to get us from here to there, whereas the microchip by e.g. enabling people to work at home can often eliminate the need to go from here to there in the first place.

There is a veritable array of eco-technologies available right now, but many of them are sitting on the shelf unused. Clean and renewable sources of energy often receive only \$1 of subsidy for every \$10-15 of subsidy going to fossil fuels. Were they allowed to compete on a level playing field, eco-technologies could enable everybody to enjoy twice as much material wellbeing as today, while using only half as much raw materials and energy and causing only half as much pollution and other forms of waste. Hence the Factor Four strategy (von Weizsacker et al., 1997), which has been endorsed by Austria, Netherlands and Norway, also the European Union.

Even Factor Ten is on its way. This is not only an ideal but an imperative. It illustrates the thesis that there is a growing convergence between an idealist and a realist. A good number of analysts (e.g. Hawken et al., 1999; Schmidt-Bleek, 2000; Robins and Roberts, 1998) postulate that the global community needs to cut its use of raw materials and natural resources by 50 percent by the year 2050, even while allowing for more people with more demands. Developing countries may well lack both the technologies and the incentive to achieve the 50-percent goal, which means the developed countries--which use the great bulk of materials and resources--should aim for a 90-percent cutback. This ultra-radical goal is achievable through Factor Ten, a strategy requiring that materials-intensive products be redesigned for repair, re-use, renovation, upgrading, remanufacturing, and, as a last resort, recycling (Ayres, 1999; Hawken et al., 1999; Schmidt-Bleek, 2000; Yamamoto, 1999).

Factor Ten is not so way out as it might sound. When the Industrial Revolution enabled us to substitute coal and machines for human muscle, workers expanded their productivity 100 times within half a century. Factor Ten is entering the vocabulary of government officials, economist planners, scientists and business leaders around the world, and it has been endorsed by OECD, Austria, Sweden, and the World Business Council for Sustainable Development. Leading corporations such as Dow Europe and Mitsubishi Electric see it as a powerful approach for gaining competitive advantage.

Finally, eco-technologies not only show the way toward sustainable development, but they demonstrate that efficiency is the partner of sufficiency. More fulfilling development (rather than "filling up" development) will usually be economically beneficial: cutting out inefficiency saves money. Far from being a case of doing without this and sacrificing that, a reorientation of development will often prove to be a win-win affair.

VII. SUSTAINABLE DEVELOPMENT AND SUSTAINABLE VALUES

All the above is to be viewed within the over-arching context of sustainable development. As an ultimate goal, sustainable development is not only about e.g. a quantitative reduction in our use of materials and energy among other forms of

"dematerialization". It is about the ways in which we can achieve an acceptable quality of life for all in perpetuity, and exemplify it throughout our lifestyles. How can we achieve a better balance between work, leisure and consumption? How can we prevent yesterday's luxuries becoming today's necessities and tomorrow's relicts? Sustainable development entails new approaches to economies, new technologies, new configurations of markets, new types of taxation, and whatever else fosters advances in our quality of life as well as quantity of livelihood. Tackling these fundamental factors will likely prove the most productive way ahead, even though it means addressing the basic structures as well as the processes of our economies.

We should further bear in mind that the sustainability of development tends to deteriorate rapidly after a certain threshold as affluence increases. Thus far there seems to be no "saturation point," so policy interventions are necessary to halt and even reverse the trend (Princen, 1999; see also Frank, 1999). Among many communities a point can be reached when the acquisition of goods no longer reflects their utility value but their symbolic value. This means that when development is no longer for utility alone, it becomes a socio-cultural activity (Chung, 1999). It often amounts to the "keeping up with the Jones" syndrome, promoted by an aggressive advertising industry selling not only products but also the lifestyles of the rich and famous. (For some assessments of this big-picture issue, see New Economics Foundation and Friends of the Earth, 1997; Christie and Warburton, 2001; Schor, 1999; McLaren et al., 1997; Parikh, 2000.) Americans waste at least \$1 trillion per year on materials, energy, water and transportation that serve next to no long-term purpose (von Weizsacker et al., 1997). If the whole world lived at U.S. per-capita consumption levels, there would be a seven-fold increase in the use of minerals, two-fold in the case of metals, five-fold for wood products, eleven-fold for synthetics, and an overall increase of six-fold (Gardner and Sampat, 1999). Yet today's consumption patterns are wholly unsustainable. Hence there is need to tackle not only the basic structures of our economies (see above) but our very value systems as well. At the heart of the sustainable development dialogue there should be the most fundamental question of all, "Does the good life truly rest with piling up more and more goodies?"

Within these perspectives, no country anywhere is managing to practise sustainable development. It is like teenage sex: everyone says they are doing it, but most aren't, and those that are doing it aren't doing it very well. This applies especially to the many so-called developed countries which are hell bent on retreating from sustainable development. Fortunately a few developed countries are making efforts to push ahead. For instance, Netherlands has come up with a comprehensive set of action plans to be achieved by 2050, entailing cutbacks such as: freshwater use by 38 percent; timber use by over 60 percent; meat consumption by 70 percent; aluminium consumption by 80 percent; cropland use from 0.45 of a hectare per person to 0.25 of a hectare; and, most important of all, CO2 emissions from 12 tonnes per person per year to 1.7 tonnes by 2030. Thus Netherlands (a little country with big ambitions) demonstrates that the holy grail of sustainable development is attainable through eminently pragmatic measures. And--a glorious "and"--the strategy will surely lead to enriched lifestyles for all Dutch people.

This prospect makes for a heartening way to end this paper.

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