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CONSUMPTION AND SUSTAINABLE DEVELOPMENT:

THE ROLE OF PERVERSE SUBSIDIES

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CONTENTS

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THE ROLE OF PERVERSE SUBSIDIES

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It is often asserted (e.g. Brown et al., 1997; Myers, 1997; Serageldin, 1995; United Nations Development Programme, 1997) that:

(a) Sustainable development cannot be achieved with the present patterns and trends of consumption, or rather over-consumption on the part of affluent societies and under-consumption on the part of impoverished societies.

(b) Both forms of mis-consumption, and most especially the first, are stimulated by widespread subsidies in countries West, East, North and South.

Apart from their adverse impact on consumption behaviour, many subsidies are harmful economically, environmentally and/or socially. They are often adverse in two of these three respects, sometimes in all three. In this paper, we shall accept that when a subsidy militates against the long-term interests of the community at large by being harmful in both environmental and economic/social senses, they will be termed "perverse" subsidies.

This paper examines the phenomenon of subsidies and particularly perverse subsidies, in order to assess how far they are a major roadblock on the way to sustainable development. We shall look at four prominent sectors of development that have long been subjected to an array of subsidies: agriculture, fossil fuels, road transportation, and water.

I. CONCEPTUAL BACKGROUND

Subsidies are a prime feature of our economic landscape. They have long been thought (Panayotou, 1993; Roodman, 1996; see also de Moor, 1997) to total around $1 trillion worldwide per year, which means they play a prime role in the functioning of economies with a global aggregate of $28 trillion. If perverse subsidies amount to a sizeable proportion of subsidies overall, they exert a significantly distortive impact on the global economy. They can also be environmentally detrimental. Subsidies for agriculture foster over-loading of croplands, leading to erosion of topsoil, pollution from synthetic fertilizers and pesticides, and release of greenhouse gases among other adverse effects. Subsidies for fossil fuels aggravate pollution effects such as acid rain, urban smog and global warming. Subsidies for road transportation promote some of the worst forms of pollution, plus excessive road building with loss of landscape amenity and other environmental ills. Subsidies for water encourage mis-use and over-use of supplies that are increasingly scarce in many lands. Subsidies for fisheries foster over-harvesting of depleted fish stocks.

This is not to say that subsidies cannot serve many useful purposes. They can overcome deficiencies of the marketplace, they can support disadvantaged segments of society, and they can promote environmentally friendly technologies. Despite their distortionary effects in many instances, there is nothing necessarily bad about subsidies. Sometimes we need a bit of positive distortion, otherwise we might never get as much as we want of e.g. non-polluting and renewable sources of energy with their many benefits--economic, environmental, political, social and even security benefits. True, these energy sources should be able to make their way in the

marketplace when once they become established. But without help in their opening phase, they might never become established at all because of competition from entrenched energy sources. The same applies to recycling, dematerialization, agricultural set-asides, and a host of other subsidies beneficial to both the economy and the environment.

The key question is: which subsidies, of what sorts, of what scope and with what impacts, can be viewed as "perverse", i.e. adverse to society's overall interests? The answer to this key question is the purpose of this paper.

Subsidies come in many shapes and sizes. They range from financial transfers to opportunity costs, and they can be both direct and indirect. Any conventional subsidy is a form of government support to an economic sector (or institution, business, individual) with the aim of promoting an activity that the government considers beneficial to the economy overall and to society at large. Indeed, this is one of the main roles that governments are created to perform: to encourage activities which, if left solely to markets, would occur in unfavourable quantities--or, to use the economist's phrase, less than socially optimal amounts. The subsidy can be supplied in the form of a monetary payment or other transfer, or through relief of an opportunity cost (Keppler, 1995; Michaelis, 1995).

Alternatively defined, a subsidy amounts to any government expenditure that makes a resource such as energy or water cheaper to produce than its full economic cost. Conversely, a subsidy can make a product, notably food or education, cheaper to consumers. Energy can be made to look cheaper than it really is if subsidies pay some of its cost. Many developing countries offer "lifeline rates" for electricity, i.e. subsidized discounts on the first increment of

electricity bought each month, thus constituting an implicit expenditure. These subsidies are directed at the poor, and the electricity is made cheaper on the grounds that all citizens, no matter how impoverished, should be able to enjoy a modicum of convenient energy. Those people who cannot be reached by electricity are often given a kerosene subsidy instead. Most energy subsidies in developing countries assist consumers, whereas in developed countries they usually support producers.

The subsidies above are all direct subsidies. There can be indirect subsidies too. Consider road transportation in the United States, where direct subsidies for roads, related infrastructure, etc., totalled around $90 billion in 1990 (MacKenzie et al., 1992). If the value of free employee parking--largely stimulated in the first place by the car culture, dependent in turn on direct subsidies for road transportation--is included, the figure rises to roughly $140 billion, while some economists would add in the costs of traffic congestion, estimated to be at least $100 billion.

Subsidies can foster not only economic efficiency (at least, that is one of their purposes, however they turn out in practice). They can also promote social equity. Subsidy support for one activity will cause countervailing effects for other activities: this is a built-in factor. A subsidy is like a cake of limited size, and if one person enjoys a larger slice, other persons have to make do with smaller slices. If everybody receives a subsidy, nobody does. By their very nature, then, subsidies have a marked distributional effect. This means in turn that subsidies carry all manner of equity implications, as would apply to any situation where a group receives financial assistance from the government. Similarly, subsidies can be supplied for social rather

than economic reasons, e.g. to relieve unemployment, to offset disease (notably black lung disease in miners), or to correct regional disparities in the notable cases of Canada and the European Union.

It is these equity concerns that make subsidies a politically contentious issue. Whom should governments aim to assist through subsidies: the poor, the unemployed, the socially disadvantaged, rural residents, entrepreneurs in general and innovators in particular, and both sunrise and sunset industries? The list can be long. Should the government target many or few? Future equity questions are equally important. Do we owe anything to our descendants in terms of securing their livelihoods, especially if that is at the expense of our own?

Regrettably, experience shows that in virtually all societies, it is often the powerful who obtain subsidies by causing weaker groups to shoulder some of the costs of their activities: "To him that hath shall be given." In the case of U.S. agriculture, huge subsidies go to a few "farmers" who are actually millionaire industrialists and rarely set foot on a farm. In Colombia, the largest 1 percent of farmers receive 50 percent of public credits, while the smallest 50 percent of farmers receive little more than 4 percent (Dasgupta, 1994). In Indonesia, kerosene subsidies are supposed to help the poorest people, yet nine- tenths go to richer people (Hope and Singh, 1995). In an international context, annual subsidies for a dairy cow in the United States exceed the per-capita income of individuals who make up half the world's population (Bovard, 1996).

In addition to subsidies of conventional type, there is a host of implicit subsidies, especially in the form of environmental externalities. Car drivers pollute everyone's atmosphere without compensating everyone, so they effectively gain a benefit at everyone's expense. Much the same applies when farmers spray pesticides which then extend their toxic effects into everyone's ecosystems; and when industrialists fail to clean up and recycle water taken from everyone's water supplies, which are becoming increasingly scarce in many lands. However little it is acknowledged, these activities amount to uncompensated services from society to individuals. They should count as implicit subsidies in both spirit and substance, even though they are not dispensed by a government department. They are as economically distorting and socially unfair as any financial subsidy.

Environmental externalities are widespread and significant, and growing fast. The current level of environmental injury is ample evidence that they should be included in a comprehensive assessment of subsidies. In Costa Rica, for instance, the depletion of soils, forests and fisheries results in a 25-30 percent reduction in potential economic growth. Soil erosion worldwide levies unintended costs on society of around $150 billion per year, while pesticides harm society's interests to the extent of $100 billion per year--and these two items alone mean that such hidden subsidies are almost as large as the formal subsidies in agriculture. Environmental externalities are adverse by definition, and their societal costs make them economically adverse too.

II. LEADING DEVELOPMENT SECTORS: THEIR PERVERSE SUBSIDIES

Let us now consider the role of perverse subsidies in the four development sectors designated above. There is not space in this short paper to examine all four of them in detail. Better to take an extended look at the first one, agriculture, and to use that as an illustration of how the various subsidies can affect the other three sectors.

1. Agriculture

Over the past several decades, higher harvests have been achieved by more irrigation, pesticides and chemical fertilizers among other forms of modernized farming; and these measures have been widely fostered by subsidies. Many if not most such subsidies appear to be costly to the economy, and are often harmful to the environment, including the natural-resource base that underpins agriculture. For instance, pesticides and chemical fertilizers severely contaminate water supplies; short-rotation cropping and reduced fallows exacerbate soil erosion; high-yielding monocultures causes genetic wipe-out among old varieties of food plants; land clearing for agriculture is the largest single cause of deforestation; and many agricultural activities release greenhouse gases (Batie, 1996; Faeth, 1995; Gardner, 1996; OECD, 1997; Runge, 1994).

What is the rationale for agricultural subsidies? Why should farmers need a helping hand at all from the government? There are several arguments. First is that governments consider it a prime responsibility to keep their citizens fed, so they feel duty bound to support farmers. Secondly, farmers worldwide have often been among the poorer segments of society, so they have been thought to deserve "a little extra". This applies especially in developing countries,

where farmers generally form the majority of the population and governments are keen to keep them in favour. Thirdly, and again in developing countries, many subsidies have been justified in times past as vital foundations of the Green Revolution; they enabled the one third expansion of irrigated lands and the tripling of fertilizer use, thus helping to double crop yields. Overall, subsidies aim to guarantee food supplies, to keep farm prices stable, to maintain farming as a vibrant economic sector, and to support rural communities.

For all these reasons, financial support to agriculture has become an ancient and entrenched tradition in countries right around the world. Farmers have become extremely powerful politically, leaving governments feeling that to reduce agricultural subsidies would be to forfeit a pivotal part of the electorate.

Agricultural subsidies come in many shapes and sizes. As well as the obvious practice of encouraging farmers to use more inputs (fertilizers, pesticides, irrigation, machinery, etc.), subsidies can simply boost farm incomes by means of price supports. Less directly, they can facilitate marketing of crops by enhancing transportation networks. They can relieve weather problems and other risks by providing insurance. They can foster credit flows. They can stimulate conversion of wetlands to agriculture. In developed countries, governments typically guarantee minimum prices for crops at levels above the market, while in developing countries governments primarily suppress farm prices in order to keep city communities happy with cheap food. Many governments subsidize artificial pesticides and fertilizers.

Certain of these subsidies are well and good within particular perspectives. Not so justifiable are subsidies fostering crops grown in regions that would not have grown them at all had a free market existed. Notable examples are ultra-thirsty crops such as alfalfa and rice in California's desertlands. Also irrational are those many subsidies that may have made sense when they were first established but have since become obsolete or bloated, or both. In the European Union, excess production has lead to milk and wine lakes and butter and beef mountains (not to mention a manure mountain in the Netherlands). In early 1993 cereal surpluses of 30 million tonnes would have been enough to provide an Italian-style diet to 75 million people for one year (Ritson and Harvey, 1995). Taxpayers footed the bill to supply the subsidies that boosted these crops in the first place, then they paid again to store the excess stockpiles.

Subsidies generate absurd outcomes in other ways too. Many countries pay their farmers to leave land fallow, whereupon they subsidize them to engage in directly conflicting activities, e.g. to plant crops and practice fallowing simultaneously. Or consider the travels if not the travails of materials needed to make the 150g of daily yoghurt beloved by many German consumers. To reach one of the main distribution outlets in southern Germany, ingredients are transported from all around the country, even from Netherlands and Poland. To do the job, a theoretical truck must travel 850 kilometres. It is enabled to do so in part by bountiful subsidies from the European Union's Common Agricultural Policy (Hird and Paxton, 1994). Much more efficient in both economic and environmental terms would be for yoghurt producers to utilize local ingredients, but they have no incentive to do so as long as subsidized supplies can apparently do the job more cheaply.

In addition to economic dislocations, subsidies cause much environmental injury. Pesticides under conventional application regimes cause well-known hazards to human health even as they undermine their own usefulness. Excessive applications of nitrogenous fertilizers lead to washed-off nitrates contaminating drinking water supplies with threats to human health. Intensified farming with heavy machinery aggravates soil erosion, as does the decline of crop rotations.

Irrigation agriculture is far and away the largest user of water worldwide, and subsidies encourage farmers to mis-use and over-use water on a grand scale, despite the growing evidence of sizeable water shortages impending (Engelman and LeRoy, 1995; Gleick, 1997; Postel, 1997). Many agricultural activities contribute to global warming through emissions of carbon dioxide from fossil fuels, methane from ruminant livestock and rice paddies, and nitrous oxides from disturbed soils. These environmental externalities are widespread and unusually significant, and they merit detailed examination later in this chapter.

In 1996, financial transfers to agriculture in OECD countries amounted to around $300 billion (OECD, 1997; see also de Moor, 1997). While this was higher than the 1986/88 average, it was down from the 1993/95 level by $30-40 billion. This recent fall reflected higher grain prices on world markets rather than government efforts to reduce subsidies. When prices slip again, subsidies may well revert to their former level if not higher. These subsidies exerted profound impact on not just the agriculture sector but on the economy at large. They equated to 1.3 percent of the collective GDPs of 24 OECD "core" countries, to more than 2 percent of GDP in Norway and Switzerland, more than 1 percent in the European Union as a whole, and

1.5 percent in Japan (OECD, 1997; see also Hepher, 1997).

These government outlays were sizeable for individual farmers. In 1996, the OECD average was almost $14,500, in the United States $27,240, in the European Union $17,474, in Japan $30,090, and $42,700 in Switzerland (though in New Zealand only $1825, for reasons explained below). For details of all leading OECD countries, see Table 1. The payments amounted to 30 percent of farmers' revenues in the United States, 45 percent in Canada, 48 percent in the European Union, 65 percent in Japan, and 77 percent in Norway, with an average of 44 percent in OECD countries as a whole (though only 15 percent in Australia and 4 percent in New Zealand) (OECD, 1997). They were sizeable too for consumers because of increased food prices and taxes. In a Western industrialized country in 1996, consumers paid an extra food bill of at least $350; in the United States, $259; in the European Union, $322; in Norway, $767; in Switzerland, $935; and in Japan, $617 (contrast Australia, only $89 and New Zealand $66) (Hepher, 1997; OECD, 1997).

Regrettably the environmental resource base underpinning agriculture is being widely degraded (Pimentel et al., 1996; Scherr and Yadav, 1996; Swaminathan, 1996). Much of this degradation can be ascribed in part at least to agricultural subsidies that foster over- exploitative agriculture (Bonnis, 1995; MacNeill, 1994; Maier and Steenblik, 1995). Consider soil erosion. During the past 20 years some 500 billion tonnes of topsoil have been eroded away, roughly equivalent to all the topsoil in India's croplands. Currently somewhere between 25 billion tonnes and 75 billion tonnes (Pimentel et al., 1995) of topsoil are lost each year, two-thirds of it from agricultural lands. During the past 40 years, at least 4.3 million square kilometres of

Table 1

AGRICULTURE SUBSIDIES IN OECD COUNTRIES,* 1996

Country/Region	Subsidies**	Subsidies ($)		
	(billion $)	Per full-time farmer	Per hectare of agricultural land	Per consumer
European Union	120.3	17,474	825	322
Japan	77.4	30,090	15,107	617
United States	68.7	27,240	161	259
Switzerland	6.7	42,701	4,213	935
Canada	4.8	11,225	66	161
Norway	3.4	40,362	3,287	767
Australia	1.6	4,205	4	89
New Zealand	0.2	1,825	14	66
OECD	297.1	14,493	254	334

Source: Organisation for Economic Cooperation and Development, 1997

*excluding Mexico and other recent members.

**including increased food prices for consumers.

croplands have been abandoned because of soil loss, an expanse equivalent to 30 percent of today's croplands. Without better soil-conservation practices, between 1.4 million and 2.0 million square kilometres (the smaller expanse is equal to Alaska) will lose most of their good-quality soil over the next two decades--and this will apply in parts of Indiana and India alike. If soil erosion is allowed to continue virtually unchecked, it could well cause a decline of 19-29 percent in food production from rainfed croplands during the 25 years 1985-2010 (Greenland et al., 1994).

The on-site costs of soil erosion are borne by farmers themselves, so they are not considered to be a cost pushed off onto society and hence a hidden subsidy. Of course the loss of cropland productivity results in higher food costs for consumers, so to that extent society eventually pays part of the on-farm cost. In the longer run, moreover, soil erosion will impose much bigger costs on society if the world without enough topsoil finds itself unable to grow enough food: that would be an externality indeed. Let us limit the calculation, however, to costs borne by off-farm society, these being costs that sooner or later must be picked up by the public at large. Upshot: soil erosion costs are an implicit subsidy from society to farmers. According to recent research (Pimentel et al., 1995), the off-farm costs worldwide can be put at $150 billion per year, being just under two-fifths of total costs.

According to on-going calculations (Myers and Kent, 1997, in prep.), conventional subsidies to agriculture in OECD countries now amount to $300 billion per year, and $25 billion in non-OECD countries, for a total of $325 billion per year. In addition, there are the environmental externalities of soil erosion, $150 billion per year, and pesticides, $100 billion per

year; total, $250 billion per year. This makes for a grand total of $575 billion per year.

How many of these subsidies shall we consider are perverse? Certain subsidies have sometimes been beneficial in certain local and short-term respects, but many subsidies reveal scope to exert long-run injury on both economies and environments writ large. The documentation above makes plain that there are many unfortunate repercussions of agricultural subsidies. Remarkably, New Zealand has eliminated virtually all its subsidies, and the country's economy and environment alike are better off, as is agreed on all sides. To this limited extent, we could reasonably assume that virtually all subsidies in agriculture anywhere are perverse. This would perhaps be pushing the point too far. For purposes of this paper and its need to come up with some concluding figure, however far from conclusive, a total for perverse subsidies is proposed that is 65 percent of the formal subsidies total, viz. $211 billion, or say $210 billion, per year. The true proportion could be 15 percent higher or lower, which postulates a range of $163-260 billion, say $160-260 billion, per year. The author believes it is unlikely to lie outside this range--unless better- judgement assessments can demonstrate otherwise.

On top of this are the environmental externalities described above, and considered to be hidden subsidies from society to agriculture. Just the two instances cited amount to $250 billion per year. Since they are adverse for the environment by definition and adverse for the economy through their quantified costs, they are all viewed as perverse subsidies.

So the aggregate total of perverse subsidies is estimated to be $460 billion per year, within a range of $390 billion to $520 billion.

Within a broader economic context, these figures must clearly rank as a low estimate. Consider some further indirect costs. Agricultural subsidies do much to distort trade patterns and even to heighten political tensions among the international community, especially as concerns North/South relationships (Legg, 1993). Subsidies in developed countries make it unduly hard for developing countries to compete in international markets, thus reinforcing the inefficiency of their agriculture (Pearce, 1995). A modicum of liberalization of agricultural trade would be worth $150 billion to the global economy by 2002, most of it due to cutbacks in farm protection; full liberalization would be worth almost $400 billion a year (1991 values). European GDP would be 2.5 percent higher, and some Asia economies could benefit by 8 percent; the United States' balance of trade would be $42 billion better off (Goldin and van der Mensbrugghe, 1996; Maier and Steenblik, 1995).

These knock-on effects of international trade deserve a further look. Subsidized exports have undermined developing-country livelihoods by flooding local markets with cheap imported food, as witness the impact of European Union beef dumped in West Africa. Pastoral farmers in Mali, Niger and Burkina Faso sell animals in local markets, which during the late 1980s were disrupted by European beef subsidized enough to be sold at one third of the normal price. Also in West Africa, cheap wheat imports have displaced traditional food staples in indigenous diets. Wheat imports into the coastal region have been increasing by over 8 percent per year for the past decade, while per-capita production of sorghum and millet has been falling. By driving down local prices, wheat imports have done much to damage rural livelihoods (Watkins, 1995).

2. Fossil Fuels, Road Transportation and Water

Now for a cursory look at the other three leading development sectors. Fossil fuels rank as one of the largest enterprises of humankind, and they are central to most economies worldwide. They can bestow abundant benefits. They also have great capacity to harm the environment through their pollution impacts, manifested through urban smog, acid rain and global warming. Urban smog leads to asthma, emphysema and a host of other respiratory ills, while acid rain imposes extensive damage on biotas. As for global warming, this is widely regarded as the most important single problem in the environmental arena. Overall, fossil fuels generate such marked pollution that some analysts (Koplow, 1995; Lovins, 1996) consider the environmental costs of fossil fuels are at least equal to and possibly much greater than the more conventional and recognized costs. Similarly, subsidies for fossil fuels can harm the economy through their markedly distortive effects. So the sector as a whole has large potential for perverse subsidies.

Energy--or rather the production and distribution of energy--is often controlled in major measure by the state. This means that many governments play a central role in setting energy prices. The failure of governments to price energy properly means that consumption is higher, grows faster, and is more polluting than it should be. All in all, fossil fuels cost society many billions of dollars more than their users pay directly. There is a plethora of hidden costs: tax policies supply credits, exemptions, deferrals, preferential rates, loans, loan guarantees, exclusions, deductions, R and D programs, depletion allowances, accelerated depreciation, risk insurance, and regulatory costs. While these tax policies may have served a productive purpose when they were first introduced, many have now exceeded their usefulness, yet they remain on

production during World War I. This was an entirely valid reason at the time, though it has long run out of rationale even while the tax subsidy persists.

Total subsidies for fossil fuels can be estimated at around $130 billion per year, and perverse subsidies at $100 billion (Myers and Kent, 1997; see also de Moor, 1997; Roodman, 1996). As for the other two sectors listed, viz. road transportation and water (there is not space to examine them even in passing--for details, see Myers and Kent, 1997), the first features total subsidies of $917 billion and perverse subsidies of $639 per year. The second features total subsidies of $233 billion and perverse subsidies of $219 billion per year.

III. OVERALL FINDINGS

The overall findings are set out in Table 2. Total subsidies are estimated to total $1,855 billion per year, and perverse subsidies $1,418 billion. Plainly, then, perverse subsidies have the capacity to (a) exert a highly distortive impact on the global economy of $28 trillion, and (b) inflict grandscale injuries on our environments. On both counts, they foster unsustainable development. Ironically the total of $1.4 trillion is almost two and a half times as large as the Rio Earth Summit's budget for sustainable development--a sum that governments dismissed as unthinkable.

Note that:

* The OECD countries account for two thirds of all subsidies and an even larger share of perverse subsidies.

* The United States accounts for 21 percent of perverse subsidies.

Table 2

SUBSIDIES: OVERALL TOTALS
(billion $ per year)

Sector	Conventional Subsidies*	Environmental Externalities documented/quantified	Total Subsidies (range)**	Perverse Subsidies (range)**
Agriculture	325	250	575	460 (390-520)
Fossil Fuels	130	***	130	100
Road Transportation	558	359	917 (798-1041)	639
Water	58	175	233	219
Totals	1,071	784	1,855	1,418

* Subsidies of established and readily recognized sorts, including both direct financial transfers and indirect supports such as tax credits.

** Ranges: some of these estimates are supported by ranges: for details, see text. In some instances, ranges are not inserted because there is simply too little agreement even about ranges!

*** Remarkably it has not been possible to come up with even a reasonably agreed estimate for this value: the data are too patchy and disparate.

* The single sector of road transportation accounts for 49 percent of all subsidies and 45 percent of perverse subsidies.

Leading instances of perversity include:

1. German coal is subsidized to the extent to $6.7 billion per year. It would be economically efficient (and would reduce coal pollution such as acid rain and global warming) for the government to close down all the mines and send the workers home on full pay for the rest of their lives.

2. The global ocean fisheries catch--well above sustainable yield--is annually worth more than $100 billion at dockside, where it is sold for some $80 billion, the shortfall being made up with government subsidies. The result is depletion of many major fisheries to commercial extinction, plus bankruptcy of fishing businesses and sizeable unemployment.

3. In the United States, one government agency heavily subsidizes irrigation for crops that another agency pays farmers not to grow. To cite the comment of an economist critic, Paul Hawken (1997), "The government subsidizes energy costs so that farmers can deplete aquifers to grow alfalfa to feed cows that make milk that is stored in warehouses as surplus cheese that does not feed the hungry."

4. Also in the United States, gasoline is now cheaper than bottled water, thanks to subsidies of many sorts. Despite the view of many Americans that gasoline is expensive, it now costs less in real terms than for 60 years. The same applies to many other aspects of U.S. road transportation, thanks to extensive subsidies. Well might it be said that Detroit and the oil

companies are on a kind of welfare. The unpaid costs of road transportation amount to $464 billion per year, which is equivalent to $1700 per American. Hidden subsidies for oil serve to create an energy policy by default--a policy that is actually the reverse of the government's stated priorities. Oil subsidies prolong the country's risky dependence on foreign supplies, especially from the Persian Gulf. Moreover, this de facto energy policy discourages private investments in new, cleaner technologies such as hyper-cars and other revolutionary forms of energy efficiency (Lovins, 1996).

All in all, a typical American taxpayer is paying at least $2000 a year in perverse subsidies, and paying almost another $2000 more for consumer goods and services with their incrased prices, or through environmental degradation.

Let us reiterate the many forms of concealed costs inherent in perverse subsidies:

* Economically they push up the costs of government, inducing higher taxes and prices for all. In turn, this means they aggravate budget deficits.

* They divert government funds from better options for fiscal support.

* They distort economies in numerous other ways. For instance, they undermine market decisions about investment, and they reduce the pressure for businesses to become more efficient.

* They tend to benefit the few at the expense of the many, and, worse, the rich at the expense of the poor.

* They can serve to pay the polluter.

* They foster many other forms of environmental degradation, which apart from their

intrinsic harm, act as a further drag on economies.

For all these reasons, perverse subsidies militate against sustainable development. They are a no-no whether economically or environmentally or socially. Despite their irrationality, however, perverse subsidies persist virtually untouched. This is because subsidies tend to create special-interest groups and political lobbies, leaving the subsidies hard to remove long after they have served their original purpose. In all major capitals, there are swarms of lobbyists, sometimes a hundred or more for each legislator. By definition, these lobbyists are bent on advancing narrow sectoral interests rather than the public good. In face of subsidy support of this scale and leverage, most efforts to cut back on even the most perverse subsidies amount to spectacular failure.

The perverse subsidies total of $1.4 trillion is twice as large as global military spending per year, and almost twice as large as the annual growth in the world's economy. It is larger than the top twelve corporations' annual sales. It is three times as much as the annual cash incomes of the 1.3 billion poorest people, and three times as much as the international narcotics industry. Were just half of these 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 in fundamental fashion, and to restore our environments more vigorously than through any other single measure.

IV. POLICY OPTIONS AND RECOMMENDATIONS

We may have reached a propitious time to tackle perverse subsidies. Many governments are espousing the marketplace economy with its reduced scope for government intervention. Many governments also face fiscal constraints that give them further incentive to reduce activist roles in their economies. So the political climate for radical reform of subsidies is probably better than for decades. The transition economies in particular face an admirable opportunity thanks to their political and economic liberalization. At the same time, the OECD countries have a special responsibility to set the pace in that they account for roughly two thirds of all subsidies and an even larger share of all perverse subsidies.

In addition, there is now a solid track record of countries that have greatly reduced or even abolished some of their subsidies. This should serve as a helpful precedent for other countries.

* New Zealand has eliminated virtually all its agricultural susbidies since the early 1980s, even though--or perhaps because--its economy is more dependent on agriculture than most OECD countries. Today there are more farmers in New Zealand than when the subsidy phase-out began. Several Latin American countries, notably Chile and Argentina, have recently taken to slashing their agricultural subsidies.

* Russia has reduced its fossil fuel subsidies from $29 billion in 1990-91 to $9 billion in 1995-96. China has slashed its subsidies from $25 billion to $10 billion (World Bank, 1997).

* Brazil has gone far to cut back its subsidies for cattle ranching in Amazonia, thus

reducing deforestation.

* Since the mid-1980s, Bangladesh and several other Asian countries have recognized that excessive applications of nitrogenous fertilizers, stimulated by extravagant subsidies, are wasteful in economic terms and highly polluting in environmental terms (eutrophication of waterways, threats to drinking water supplies). Indonesia has reduced its fertilizer subsidies from $732 million to $96 million per year; Pakistan from $178 million to $2 million; Bangladesh from $56 million to zero; and Philippines from $48 million to zero (World Bank, 1997).

How shall we set about the challenge of reducing perverse subsidies within the body politic? There are various policy openings available. One generalized option is to be opportunistic and to seize on emergent "windows" such as the recent strong political shift in favor of marketplace-ism. The credo of the marketplace stands opposed to subsidies, let alone perverse subsidies, as a form of government intervention that ipso facto must be distortive and counter-productive (this applies especially to the economies in transition with their switch to market liberalism). Resistance to subsidies in general also stems from the privatization ethos which is becoming widespread. There can even be opportunity in economic crisis, such as the one which spurred New Zealand's move to drop agricultural subsidies: the public economy was finally over-burdened to breaking point. India's subsidies total over 14 percent of GDP, yet the government wishes to bring down its fiscal deficit to under 4 percent of GDP, thus supplying marked motivation to cut subsidies drastically. There could be parallel scope in the wake of an environmental crisis such as another Chernobyl-type disaster.

These formidable opportunities are matched by formidable obstacles. There are the special-interest groups, which often feel so addicted to their "entitlements" that they suffer severe withdrawal pangs at talk of cutting back any subsidies, let alone perverse subsidies. They find allies in bureaucratic roadblocks and institutional inertia. Then there can be upsets to equity concerns, especially with regard to who no longer gets what. Finally there is uncertainty about how reduction of perverse subsidies, however rational in principle, will work out in nitty-gritty practice; for instance, will it mean losing a competitive edge to competitors abroad?

There are various ways to overcome these obstacles. One is to formulate alternative policies that target the same subsidy objectives better, while also compensating losers. A related measure is to develop an economic-policy context that encourages subsidy removal through e.g. reducing government controls generally and freeing up markets. A subsidiary measure is to introduce "sunset" provisions that require surviving subsidies to be re-justified periodically, thus avoiding the entrenchment problem. All these measures can be strongly reinforced by promoting transparency about perverse subsidies, especially as concerns their impacts both economic and environmental, and their costs to both taxpayers and consumers.

Perhaps the most important way of all to overcome obstacles to reform is to build support constituencies, especially among the public. The more citizens know that their tax dollars and consumer payments are going down a rathole of perverse subsidies, the more there will be political support for reform. These constituencies--with an interest in the public good rather than sectoral benefit--can engage in information campaigns about the perversity of certain subsidies. Governments cannot deal with perverse subsidies without first learning about the

nature and extent of these subsidies. Yet information, especially statistical data, is often incomplete and fragmented across agencies, if it exists at all. An information campaign stands a better chance of success when it stems from grassroots activism, i.e. from the taxpayers and consumers who are penalized by perverse subsidies.

There has been a success story on this front in the United States, where environmentalists such as Friends of the Earth, the Sierra Club and the Wilderness Society have made common cause with economic reformers such as Citizens for Tax Justice, Taxpayers for Common $ense and the Public Interest Research Group. This coalition of 22 NGOs has highlighted perverse subsidies through their periodic "Green Scissors" reports. The most recent report fingers 47 government projects worth $39 billion over five years, with items ranging from over-logging of the Tongass National Forest and price supports for cotton to a royalty holiday for deepwater oil drilling and aid to the Three Gorges Dam in China. The whistle blowing has done much to mobilize the social consensus and political will to tackle the offending subsidies.

There are supplementary measures such as (a) regulation via environmental standards, tradable quotas, limits to resource exploitation, and the polluter pays principle and the precautionary principle; (b) user charges for goods and services--whether as concerns energy, transportation, water, timber, whatever--that will encourage more careful use; (c) tradable permits, the largest inside the United States being the 1990 Clean Air Act that allows permits to emit sulphur dioxide; (d) green taxes as a prime mode to change people's behavior toward the environment; and (e) environmental subsidies in support of e.g. agri-environmental measures to support soil conservation and wetland protection.

When once we start to remove perverse subsidies, it will be essential to measure progress. To meet this purpose, a number of principles have been formulated by the International Institute for Sustainable Development (Barg, 1996). Performance assessment should (a) be guided by a clear visison of sustainable development as the justifying framework for subsidy reform; (b) include a review of the entire economic sector in question; (c) evaluate the economic, environmental and human subsystems at issue, covering all costs and benefits in both monetary and non-monetary terms; and (d) consider equity factors within communities, also between present and future generations, with focus on such concerns as poverty and over-consumption, also human rights. Taken together, these principles can constitute a "template" for measuring progress toward sustainable development. The task should be undertaken by governments that are ready to devise a consistent framework for statistical analysis of perverse subsidies in all salient sectors, through e.g. a radical revision of their national accounts. Thereafter they will need to standardize and disseminate their information as a routine practice.

If they were to be reduced, however (while still leaving lots of subsidies to placate special interests), there would actually be a double dividend:

1. There would be an end to the formidable obstacles imposed by perverse subsidies on sustainable development.

2. There would be a huge stock of funds available to give a new push to sustainable development--funds on a scale that would be unlikely to become available through any other source. In the case of the United States, for instance, they would amount to more than $300 billion. This is larger than the Pentagon budget, $240 billion, and almost twice the federal

deficit, $126 billion.

Compare the prospect to a car. Reducing perverse subsides would be like, firstly, taking the brakes off and moving into high gear. Secondly it would be like giving the engine and all the other major mechanisms such a streamlining that the car would operate with undreamed of efficiency.

At the same time, reducing perverse subsidies would help change consumption patterns, especially in affluent societies. "Affluent societies" refers to not just the rich countries, but to the newly consumerist communities in many developing countries. In southeastern China, several countries of Southeast Asia, parts of India, also Mexico and Brazil, likewise Russia and other countries of the former Soviet bloc, there are now 750 million people with enough discretionary income to allow them to engage in many of the consumerist habits that characterize the "good life" of affluent countries. In 1995 there were more cars sold in Asia than in Western Europe and North America combined. Were these 750 million people, whose numbers match the 750 million established consumers of Western countries, to seek to adopt all the consumption patterns of the long-standing consumers, there would be dire results for environmental stability and social equity in much of the world--and the Sustainable Development prospect would be severely set back.

If, by contrast, the long established consumers were obliged to pay the full social cost of their consumerism, they would have to swiftly modify their views of the good life. A prime way to achieve this shift is to get rid of perverse subsidies. Were Americans, for example, to pay the $1700 that each of them enjoys on average through the unpaid costs of their car culture, and pay

$5 a gallon of gasoline (if that were the best way to internalize the externalities), they would surely start to drive less and travel more by public transportation. In turn, this would spur a strong demand for acceptable public transportation, which could well be subsidized to reflect the social benefits (there can be "good" subsidies that support the environment, the economy, and social equity).

Indeed it is hard to think of any single measure that governments can take to better help their environments, economies and social justice, than to divest themselves of perverse subsidies. A win-win situation of exceptional capacity.

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