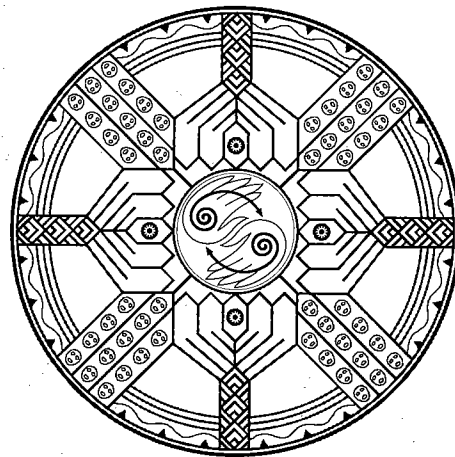


The Greening of  
Government Taxes and  
Subsidies

*Protecting the Environment and Reducing  
Canada's Deficit*

**Where to Start** .....

A.M. GILLIES



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SUSTAINABLE DEVELOPMENT

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## PREFACE

The International Institute for Sustainable Development (IISD) is a private non-profit corporation whose mandate is to promote sustainable development in decision making.

IISD believes sustainable development can help guide Canada and other countries into a new era of greater fiscal responsibility while at the same time building a much healthier relationship between environment and economy. "Sustainable development" captures in a phrase the positive message that economic, environmental and social goals can be pursued in a mutually supportive fashion.

We launched work on sustainable development budget reforms, including case studies on "leading practices" within North America and Europe, over the past year. IISD's Board believes such work should be a high priority for nations in all parts of the world. Those countries which successfully tackle the problem should be well placed for the competitive pressures of globalization while better meeting the well-being of both people and the environment.

This *Action Plan For Protecting The Environment and Reducing Canada's Deficit* has been prepared as a Discussion Paper for consideration by governments and

concerned citizens alike. As an organization receiving public funds it is our responsibility and wish to engage in what is likely to be a difficult but exceedingly worthwhile endeavour. The report highlights what we believe to be a reasonable approach which could demonstrate significant results over the coming five years.

Arthur J. Hanson  
President and CEO  
International Institute for  
Sustainable Development

## ACKNOWLEDGEMENTS

The author would like to gratefully acknowledge the assistance he received from a number of sources during the writing process.

This report is the offshoot of a larger study initiated by IISD which is focusing on "leading edge" budget reforms in Europe and North America. In this work, which will culminate in the *International Casebook on Leading Practices*, I have the pleasure to chair a working group which includes a number of distinguished organizations, including The Centre for Global Change (Washington, USA), The European Institute for Environmental Policy (Paris, France), the KPMG Environment Group (The Hague, Holland), CSERGE (London, England) and Resource Futures International (Ottawa, Canada).

For this report, François Bregha of Resource Futures International provided a very helpful first draft. Subsequent drafts were aided considerably through the kind efforts of Kevin Doyle, Garry Beatty and Peter Hardi. Paul Graham was an inspiration throughout the process. Among IISD staff, Robert Gale, Haydée Deras, Cynthia Pollock-Shea, Stephan Barg and Rob Kerr have been especially helpful with the

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A.M. Gillies  
Winnipeg, Canada  
February 1994

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## EXECUTIVE SUMMARY

Sustainable development creates — better jobs — and creates much more sound economic growth.

[But sustainable development will never be achieved] unless we significantly re-deploy the financial resources ... within government budgets.

Our studies indicate that literally billions of dollars are now being utilized by governments to subsidize non-sustainable activities ... if those funds were shifted, you'd save money and improve the sustainability of economic growth.

— Maurice Strong

The budget is without a doubt the most important statement of environment policy that any government makes.

— Jim MacNeill  
Secretary-General  
"Our Common Future"  
(Report of the Brundtland Commission)

From the outset, it should be admitted that reducing the federal government deficit will not be easy, no matter what plan or method is selected. There is no magic bullet.

This should not be taken as an argument for not having a plan. In fact, quite the contrary. There needs to be a sound plan with clear and explicit goals which can guide the difficult decisions ahead. Random cost-cutting might simply aggravate the nation's problems, not solve them.

### A GREEN DEFICIT STRATEGY: THE GOALS

So, where to start? Given the battered state of our economy and our environment, this *Action Plan* is guided by three goals which will remain essential over the next decade. Cutting the deficit should be done in such a way as to first, strengthen the economy, second, create jobs, and third, restore the environment.

These are ambitious goals. Achieving all three simultaneously while reducing the deficit will not be easy, but it is not inconceivable. Properly designed and carefully carried out, a green deficit-cutting strategy could play a role in removing some of the major structural weaknesses affecting our economy and our environment. In

order to do this, a green deficit-fighting strategy must include these elements:

- ❖ tax reform, specifically one emphasizing the realignment of the tax system to weigh more heavily on the very things holding back economic and environmental recovery, namely waste, pollution and inefficient energy and resource use. Added "green" taxes on wastes, toxic discharges, pollutants, and inefficiency would create a continuous incentive for industry to develop cleaner and more efficient products and technologies — giving them a competitive edge in the global marketplace.
- ❖ green taxes could also produce new revenues for the government, some of which could be devoted to paying off the accumulated debt. But there could be other dividends. A portion of the revenues could also be used to lighten the tax burden on incomes, savings and small businesses — the very factors needed for recovery. These are also the things now being driven into the underground economy — reducing government

revenues by an estimated \$20 billion a year.

- ❖ the third element of reform should be in the area of subsidy programs. Subsidy programs which distort and artificially underprice our natural resources should be scaled back. Such subsidy programs have historically been justified in the name of jobs. But while there is usually a short-term boom in jobs, it is followed by a "bust" (witness the Atlantic fishery). This boom and bust pattern is undermining the goal of long-term sustainable job and economic growth.

A green deficit fighting plan along these lines is not without international precedent—at least in bits and pieces. Eco-taxes are now a feature of most European tax systems: A 1989 survey of OECD members identified more than 50 environmental taxes and charges, including levies on air and water pollution, waste, and noise, fertilizers and batteries. As one recent example, in 1989, the U.S. Congress passed a \$4.3 billion tax on ozone-depleting chlorofluorocarbons (CFCs), which played a large part in hastening their phase-out and subsequent replacement by environmentally-benign alternatives.

### **The Liberal Election Promise**

The *Action Plan* presented here could dovetail very nicely with the recent election of the new Liberal government. In what was one of

the most important but overlooked planks in their election platform, the Liberals promised a fundamental stocktaking of the government's budget, tax and subsidy policies from an environmental point of view.

*"A Liberal government will establish a framework in which environmental and economic policy signals point the same way.*

*Our first task will be to conduct a comprehensive baseline study of federal taxes, grants, subsidies, in order to identify barriers and disincentives to sound environmental practices. We want to promote, not hinder, the research, development, and implementation of clean and energy-efficient technologies; renewable energy use; the sustainable management of renewable resources; and the protection of biological diversity."*

— Liberal Party of Canada  
1993 Election  
"Red Book"

### **WHERE TO START**

For the new Liberal government — indeed any government — a "sustainability audit" of government spending and taxation will by no means be easy. In many cases there is no consensus of what constitutes a "sustainable" practice. What constitutes "overuse" of pesticides and chemical fertilizers in farming for example. What is the precise measure of sustainable forest cutting, and how much pollution is too much? While there are no clear-cut answers to these questions, there is now a body of evidence which allows us to be

A 1989 survey of OECD members identified more than 50 environmental taxes and charges, including levies on air and water pollution, waste, and noise, fertilizers and batteries.  
— OECD, 1989

THIS **ACTION PLAN** ADVOCATES THAT TAXES ON INCOME, SAVINGS, AND SMALL BUSINESSES BE SCALED BACK, AS THESE ARE THE VERY FACTORS UNDERLYING LONG-TERM ECONOMIC EXPANSION.

indicative, if not definitive, about where government spending and taxation is both fiscally and environmentally unsound.

### Subsidy Reform

Some analysts have suggested that subsidies which are both financially and environmentally counter-productive now amount to between \$5 to \$10 billion per year. These subsidies affect energy, transportation, forestry, and agriculture, to name just a few areas. It has been estimated, for example, that subsidies to the fossil fuel industry now amount to \$4 billion per year, adding to inefficient fuel use, loss of competitiveness, global warming and our debt problem. This is one area of potential subsidy reform. There are others which should also be scrutinized carefully.

*Irrigation subsidies.* Subsidies for the provision of irrigation can encourage excessive water use, change groundwater flows, and cause environmental damage downstream such as increased salinity. In the United States irrigation water supplied by Bureau of Reclamation is heavily subsidized at an estimated cost of \$1 billion a year.

These subsidies artificially lower the cost of water, so farmers apply it inefficiently. At the same time, large-scale diversions and storage have brought about extensive ecological changes that threaten the survival of several species.

*Agricultural subsidies.* In Western Canadian agriculture, for example, the heavy bias towards specific

crops remains evident; attempts at a more sustainable and diversified agricultural base are hampered by the subsidy structures implicit in such programs as Food Freight Assistance, the Western Grain Transportation Act, the Western Grain Stabilization Act, the Agricultural Stabilization Act, the Federal Fertilizer Act, crop insurance programs, and major crops and livestock production subsidies. Some of these will have to be altered in any case. There is a major opportunity now to align environment and economy considerations.

*Transportation subsidies.* Work done in Canada by Pollution Probe indicates automobile travel is now subsidized at an estimated rate of almost \$5 billion a year. That's the difference between all revenues from cars and gas (\$3.5 billion) and the costs associated with dependence on cars, estimated by Pollution Probe at \$8.3 billion. (The Pollution Probe estimate covers such items as health costs arising from car accidents and smog, police employed at traffic control, and removal of prime foodland from production.)

### TAXATION REFORM

This *Action Plan* advocates that taxes on income, savings, and small businesses be scaled back, as these are the very factors underlying long-term economic expansion. Where would the loss of revenue be made up? By taxing the things that we are trying to discourage through the use of various environmental taxes or



charges. A charge can be considered as a 'price' that is paid for polluting the environment. Charges provide an incentive for reducing pollution. Greater use could be made of various types of charges.

*Effluent charges:* these are based on the content and amount of industrial discharges into the air, water, or sewerage system. In the OECD countries, they have been used mainly in the area of water pollution control.

*User charges:* these are fees charged for using a resource or for being provided with a service. They are commonly used for the collection and treatment of municipal solid waste and wastewater discharged into sewers. Royalties on resource use— such as timber, minerals and oil — are another form of user charge. Such charges can encourage people to be more efficient in using resources, since the less they use the less they will have to pay.

*Product charges* are charges added to the price of products: they can be used to discourage disposal or encourage recycling. For example, a charge could be made according to how much packaging a product uses. A product disposal charge could be made on paper to encourage waste-paper recycling. In Scandinavia, charges are imposed on new cars to cover the cost of their eventual disposal; in Germany, charges are imposed on lubricating and other mineral oils to cover the costs of their collection and disposal.

*Differentiated sales taxes.* A sales tax is generally paid by consumers. They have the ability to affect buying patterns, and create incentives for consumers to buy environmentally friendly products. This can be done by imposing different amounts of sales tax on different goods or services so that environmentally friendly products have a price advantage over polluting products.

Preliminary studies done in the U.S. and Germany imply that green taxes can play a potentially large role in the overall tax system — up to between 5 and 10 percent of a country's Gross National Product (GNP). With Canada's GNP an estimated \$720 billion this would amount to between \$36 — 72 billion. These estimates are admittedly very crude. Estimates of the anticipated revenues would be affected by the tax rates that were levied and the effects of the tax. (Indeed as eco-taxes are effective in reducing pollution, then revenues will decline as the pollution is scaled back). Nonetheless, the potential for eco-taxes to play a role in deficit-cutting, while at the same time creating over the longer term a cleaner, more competitive, and more sustainable economy, cannot be overlooked.

### **The Costs and Benefits**

A strategy such as this *Action Plan* proposes will shift costs and reduce subsidy benefits. This will provoke opposition from those affected. The added charges on waste and pollution will affect

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## Competitiveness

Michael Porter, Harvard economics professor and author of *The Competitive Advantage of Nations*, has shown that stringent environmental policies actually enhance industrial competitiveness by triggering cost-cutting innovations. The short-term added costs related to product and process redesign are outweighed (often very significantly) by the long term cost-savings associated with energy efficiencies, low wastes, and higher quality products.

waste- and pollution-intensive industries, and will evoke resistance on the grounds that this added burden will threaten profitability, competitiveness, and jobs. Those industries and sectors whose subsidy benefits are reduced will argue that jobs and livelihoods are similarly affected.

Those concerns are genuine. This *Action Plan* does not shrink from these issues but tries to address them fairly. While there will be a shift in costs, there will also be significant, overall benefits. Properly designed and implemented, this *Action Plan* could yield significant benefits related to: jobs, competitiveness, energy efficiency, material efficiency, water efficiency, waste reduction and pollution reduction.

*Jobs.* Canada's job creation strategy over the next decade must be concerned not only with new jobs in new areas, but also sustaining Canada's many resource-based jobs. These jobs must be sustained for the long term. Subsidy and grant policies which artificially stimulate and accelerate rates of resource depletion must be avoided. The collapse of the East Coast fishery is a case in point. In terms of new jobs the international market for environmental goods and services is as large as the aerospace market: valued at \$280 billion a year today, and expected to reach US \$580 billion a year by the end of the decade. The United States spent more than \$170 billion on pollution control in 1990. In Asia, the money spent on controlling

pollution is expected to reach \$30 billion annually by the year 2000. In Western Europe, where the existing pollution control market has been estimated at \$50 to \$100 billion per year, demand may approach \$150 billion by the year 2000.

*Competitiveness.* Michael Porter, Harvard economics professor and author of *The Competitive Advantage of Nations*, has shown that stringent environmental policies actually enhance industrial competitiveness by triggering cost-cutting innovations. The short-term added costs related to product and process redesign are outweighed (often very significantly) by the long term cost-savings associated with energy efficiencies, low wastes, and higher quality products.

*Reduced waste and pollution.* North Americans account for only 7 percent of the world's population, but 50% of its waste. The costs of dealing with the growing volume of waste are rising steadily. Some costs are private, such as the costs of waste collection. Others are external, such as the aesthetic costs suffered by people living next to landfills and incinerators. A unit tax or charge on each trash bag set out for collection creates economic incentives for households to dispose of less trash (and recycle more, for example), but lowers the overall costs of trash disposal. Some countries like Sweden are using tax policy as an instrument in planning for low/zero pollution in selected industries by the year

2000. For example acid rain is caused by emissions of sulphur dioxide (SO<sub>2</sub>) and nitrogen oxides (NO<sub>x</sub>). Due in part to the introduction of taxes on these emissions, Sweden slashed levels of sulphur dioxide by 75 percent between 1965 and 1985. The country is committed to reducing what is left by another 75 percent.

### The Way Ahead

This *Action Plan* is intended to:

- ❖ spell out the goals of a green deficit-reduction strategy
- ❖ identify the specific areas where subsidy reform is warranted, from both an economic and environmental point of view
- ❖ identify the specific areas when tax reform is warranted, from both an economic and environmental perspective

The *Action Plan* is not presented as a short-term quick fix. No realistic deficit-cutting strategy can be a quick fix. It is however, presented as a place to start, a practical and concrete starting point for deficit reduction which sets as its specific goals the restoration of both a robust economy and a healthier environment.

Some of the changes involve fundamental shifts. Others require considerably more research and planning. In our opinion, however, neither the magnitude of the changes nor the amount of additional work that will ultimately be required should

serve as a reason not to start immediately. The general approach that is required is twofold. The first step is to stop sending producers and consumers the wrong signals through environmentally-damaging subsidies. The second is to start sending positive signals by incorporating environmental considerations explicitly in prices.

The immediate priority should therefore be to study the environmental impact of subsidies, to ask whether the objectives for these policies are still valid, and if so, whether they can be achieved in a more sustainable fashion. The second area for action should be increased experimentation with ecological tax reform. There are many obvious areas where environmental taxes could be applied. In addition to immediate economic and environmental benefits, this should help to increase our understanding of many of the more fundamental issues that will have to be resolved in order to green the budget process as a whole.

There are always technical and political difficulties to changing taxes and subsidies. But with increased effort, and the knowledge that our current tax and subsidy regime, created in an earlier time, may now be serving to dig us in deeper — both financially and environmentally — these difficulties should not be insurmountable.

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# 1. INTRODUCTION

## **Long-run Success**

Fortunately, a higher standard of living does *not* need to be based on unchecked toxic waste and bloated consumption of energy and material resources. Headlong pursuit of this kind of "growth" offers only the self-destructive and blackened industrial wasteland now revealed in Eastern Europe. On the other hand, a model of responsible economic growth, which is less energy, resource, and waste intensive, offers a far more attractive future, and ensures that the progress of the 20th century will be more than a brilliant short-run success.

A world of limitless resources and boundless spaces.

This is the vision that has driven the phenomenal economic and industrial expansion of the 20th century. All nations on earth shared in this vision. The industrialized nations were first off the mark, but the rest of the world is now awaiting its turn.

Given the universal appeal of this vision, it is not surprising that governments have taken it as their central mission to make access to the world's resource base as inexpensive and easy as possible. Governments have spent billions of dollars in order to subsidize and accelerate the use of forests, fisheries and fossil fuels, and to allow air, soil, and water to be used as free dumping grounds for our wastes— all in pursuit of wealth, jobs, and economic progress. Deliberately, if with the best of intentions, we have used governments to shield us from the true costs of our own economic actions.

That path may be too expensive for the 21st century. Grossly artificial underpricing cannot go on indefinitely. In a world of already over-stretched public sector budgets, governments can no longer afford the expensive giveaways embedded in billion-dollar subsidy programs

and tax concessions. And in a world of already over-stressed resources, a more cautious approach to what we dump and discharge, and what we recklessly consume, is more than warranted.

## **Win-Win**

There is a win-win opportunity. We can avoid passing along both a financial and an environmental deficit to the next generation. First, by cutting back on subsidies which are leading to rates of resource depletion far in excess of what is necessary or sustainable. Second, by using our tax systems to put a realistic price tag on the use of air, land, and water. Using these as receptacles for our wastes, emissions and pollutants should carry an appropriate cost. Indeed a stiff cost will accelerate the development of low waste production systems and clean industrial technologies. Not only are these desirable in their own right, they will be universally sought after in the 21st century economy.

The opportunities we face should not be overlooked. With imagination and creativity, Canada can enter the 21st century with both its financial and environmental house in order.

## 2. CANADA NOT ALONE

Canada is not alone in facing these challenges. The global economy is now "unmaking" the natural environment through the cutting and burning of forests, damming of rivers, elimination of other species, and the injection of billions of tonnes of pollutants into the air, soil and water. Over the past 20 years:

- ❖ world population has increased by one billion — about 20 percent;
- ❖ the net amount of potential productive forests in the world was permanently reduced by nearly 10%;
- ❖ arable land, especially in Africa and India, has been permanently destroyed or lost over an area equal at least to the entire arable land in Saskatchewan;
- ❖ the water table dropped alarmingly in the southwest U.S., while salinization became a serious problem in parts of the Canadian prairies.

### WHAT GOES AROUND ...

The impact the global economy is having on the environment is now coming full circle. Deteriorating environmental conditions are now responsible for creating widespread impoverishment and economic hardship. Air pollution and acid rain

are destroying vast stretches of Europe's forests, and greenhouse gases and global warming could seriously disrupt economic activity across many regions. Four of the world's 17 fishing zones have been overfished, according to the UN Food and Agricultural Organization. Land degradation is taking a toll. In Africa, where land degradation is most visible, the annual loss of rangeland productivity is estimated at \$7 billion, more than the GNP of Ethiopia and Uganda combined. In many parts of the world, ecology and economy are now locked in an unfortunate but unmistakable lose-lose downward spiral.

### Self-inflicted?

*At the moment, world economies are moving backward at an accelerating pace. If the annual draw on the earth's stock of renewable resources is to be brought within the capacity of natural systems to generate it, the industrialized world will need to increase by several orders of magnitude its support for strategies aimed at abating pollution, at protecting and preserving essential resource capital and at restoring and rehabilitating assets that have already been depleted or exhausted.*

*It is much more important, however, to reform the {budget} policies that actively if unintentionally encourage deforestation,*

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*desertification, destruction of habitat and species, and decline of air and water quality. . . Unless and until such policies are reformed, nations will not be able to keep up, let alone catch up, with the increasing rates of depletion of their natural capital.<sup>1</sup>*

This quote from Jim MacNeill captures very well the contradiction we now find ourselves in.

Subsidies to resource industries, for example, are commonplace around the world, and greatly accelerate the rates at which the earth's forests, minerals and fish stocks are depleted, often in "boom and bust" fashion. In the same way, widespread subsidies for oil, gas, coal and other fossil fuels lead to serious underpricing, which in turn encourages profligate energy use, undermines efforts at greater energy-efficiency, and hampers the development of less-harmful energy alternatives.

It is now incumbent upon governments to develop and apply tests of sustainability to all their programs. There are many levers that governments can wield through their budgetary powers: taxes, financial assistance, subsidies, agreements, research and development expenditures, export credit, regional development grants, resource development leases, marketing policies, tariffs and depreciation allowances. The challenge of the next decade, and into the next century, will be to harness these instruments and point them squarely in the direction of a sustainable global economy.

"America subsidizes the logging of its ancient forests. Britain subsidizes company cars. Germany subsidizes coal mining. Each country has its green madness, often as economically perverse as it is environmentally damaging."<sup>2</sup> Collectively, government spend tens of billions of dollars a year supporting environmentally unsound economic practices. Subsidized irrigation services, biased utility regulation, and below-cost timber sales are but a sampling of the numerous public programs that result in wasteful resource use and environmental damage. Often just where taxes are justified to reduce a harmful activity, a public subsidy instead promotes it.

The opportunities are limitless for using these instruments to promote sustainable aims: greater input efficiencies, lower wastes, recycling, reduced reliance on toxic chemicals, increased land reclamation, alternative energies, conservation and the like. In the industrialized countries alone \$2.1 trillion is raised and spent each year by the countries of the EC, and \$1.6 trillion is raised and spent by the U.S. and Canada. Harnessing this enormous spending power to promote "change for the better" is essential if sustainable development is to be achieved.

## 3. Billion Dollar Subsidies

### ARE WE PAYING FOR OUR OWN IMPOVERISHMENT?

Government subsidies have played an enormous role in creating our modern economies. Public expenditures and subsidy programs have underwritten large-scale road building, railroad expansion, and mass systems of education and health care, to name only a few examples.

Subsidy programs have also opened access to the world's resources. Indeed public subsidies are now so massive and so pervasive — from forest clearing, to pesticides, to fossil fuels — that scaling back will be difficult. Yet the vast scale at which we are depleting our resource base — wastefully and unnecessarily — requires that a scaling back take place.

#### 3.1 FOREST LOSS

Probably the most visible of the pressures facing the planet is forest loss. Each year the world loses some 17 million hectares of tropical forest alone, adding up over a decade to an area the size of Malaysia, the Philippines, Ghana, the Congo, Ecuador, El Salvador, and Nicaragua.

Clearing forests is, in effect, the loss of a highly productive ecosystem in exchange for a

short-term economic gain. The reasons for this are not hard to understand. The cutting of timber for the purposes of logging, pulp and paper, and making way for agriculture are all regarded as necessary economic activities. As of course they are. But there are serious questions as to whether the benefits are outweighing the costs. Laden with debt and looking for quick revenues, many tropical-country governments — often aided by international donors — have instituted tax credits and other fiscal incentives to encourage the conversion of forests to pasture, cash crops, and other land uses that may earn short-term profits but rarely prove sustainable on poor tropical soils. Generous harvesting contracts have fueled short-lived "timber booms", which leave little behind when they collapse. Once tropical forests are gone, the land rapidly loses its fertility. These soils can be farmed for three to five years and can be grazed for five to ten years before becoming wasteland, but they typically will not sustain productivity over the long term.<sup>3</sup>

Forestry is still too often a cut-and-run operation in which the forest is not helped to regrow. Worldwide, 10 trees are being cut for every one planted; in Africa the ratio is 29 to 1. A program of

SOME NATIONS NOW HAVE AN APPROPRIATE PRICING STRUCTURE THAT PROVIDES FOR ADEQUATE REFORESTATION. THESE NATIONS ARE EXPANDING THEIR FOREST COVER AND GETTING WELL-POSITIONED FOR AN EXPANDING FORESTRY SECTOR. FINLAND'S FOREST RESOURCE IS PROJECTED TO EXPAND FROM 55 MILLION CUBIC METRES IN 1989 TO 75 MILLION CUBIC METRES IN 2005. SWEDEN'S ANNUAL FOREST GROWTH IS 100 MILLION CUBIC METRES PER YEAR. IT IS CURRENTLY HARVESTING 70 MILLION CUBIC METRES ANNUALLY.

reforestation is a worldwide priority. *Our Common Future*, the Report of the Brundtland Commission said the world needs to plant trees on an area the size of Saskatchewan every year.

Commensurate with that priority those same grants, subsidies, and tax concessions which encourage forest "giveaways" must be suspended, or at least be rebalanced and aimed in favour of tree-planting, so that reforestation matches or exceeds de-forestation.

### Canada

Canada's dependence on forests is well known. Canada is a forest nation, ranking third in the world in forested land, after the (former) USSR and Brazil. Canada's forest products are its single biggest export, worth approximately \$25 billion (and earning Canada the reputation of being the world's largest exporter of wood products). The industry employs over 900,000 people, one-tenth its labour force. Over 350 communities are almost solely dependent on logging or pulp and paper, as are some 7000 businesses.

Massive cutting since the last century has reduced Canada's forest cover to under 50% of the land surface, but we still possess about 10% of the world's productive forest and one-third of the world's Boreal forest. But the amount of timber close enough to roads and mills to be commercially usable is shrinking. Due to diminishing stocks, Canada's Annual Allowable Cut has dropped from 256 million cubic

metres in 1970 to 204 million in 1986. In 1988 the Auditor General's report said: "Significant shortages of wood are now reported at the local level in every province. Restocking of productive forest lands has not kept pace with the harvest and this threatens future forest productivity."<sup>4</sup>

Until recently Canada replanted only 1 tree in every 4; a ratio now improved to 1 in 3. These rates are still too low. According to the Government of Canada, "Hence it is predicted that, unless drastic changes are made to forestry practices, Canada's mighty forests will be reduced to scrubland by the middle of the 21st century."<sup>5</sup>

If this is to be avoided, Canada must sharply reverse the direction of its public policies. Some countries have already made this change in direction, most haven't. "The Brazilian taxpayer has been underwriting the destruction of the Amazon with millions in tax abatements for uneconomic enterprises. American taxpayers are subsidizing the clearing of the Tongass, the great rain forest of Alaska. The Indonesians do the same. So do the Canadians."<sup>6</sup> In sharp contrast, some nations now have an appropriate pricing structure that provides for adequate reforestation. These nations are expanding their forest cover and getting well-positioned for an expanding forestry sector. Finland's forest resource is projected to expand from 55 million cubic metres in 1989 to 75 million cubic metres in 2005. Sweden's annual forest growth is

As Sir John A. MacDonald watched an endless stream of logs flowing down the Ottawa River in 1871, he wrote: "We are recklessly destroying the timber of Canada and there is scarcely a possibility of replacing it... It occurs to me that the subject should be looked in the face and some efforts made for the preservation of our timber."

— Michael Keating  
Toward a Common Future



100 million cubic metres per year. It is currently harvesting 70 million cubic metres annually.

### 3.2 AGRICULTURE DANGER SIGNALS

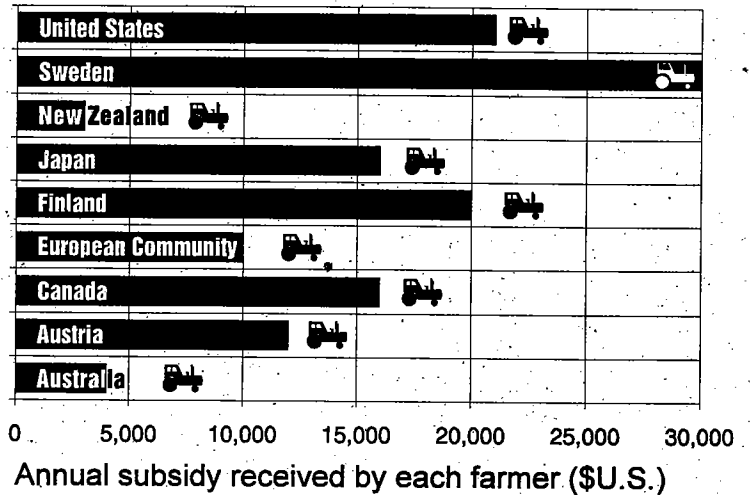
One-third of the planet is already desert. As the forests are cut back and grasslands over-grazed or over-farmed, deserts expand. The deserts are growing at a rate of 60,000 square kilometres a year, an area larger than Nova Scotia and Prince Edward Island together. When the land dries up, fertile soil is blown or washed away. Around the world an estimated 24 billion tonnes of soil are lost each year, and fertility has been reduced on cropland twice the area of Canada.

Pesticides are a two-edged sword for agriculture. They kill creatures that prey on crops but the chemical residues sometimes have severe side effects, including the poisoning of wildlife and the contamination of drinking water. In examining policies among nine developing countries, the World Resources Institute in Washington, D.C., found pesticide subsidies in the early eighties reaching as high as 89 percent of the unsubsidized retail cost (in Senegal). The median subsidy was 44 percent. In Egypt, subsidies cost the treasury more than \$200 million per year. The Egyptian government spent more per capita on pesticide subsidies in 1982 than it currently spends on health.<sup>7</sup> By keeping pesticide costs low, governments aim to help farmers reduce pest damage and thereby

increase crop yields. But it also encourages them to use pesticides excessively, increasing the myriad risks associated with toxic farm chemicals.

Pesticide subsidies provide one example of costly and damaging public policies. There is a case to be made that the problem goes much deeper than that.

## Farm Subsidies



Source: Globe & Mail Report on Business, January 1990

*Agricultural subsidies provide one of the best examples of unwittingly destructive economic policies. Virtually, the entire food cycle in North America, Western Europe and Japan attracts huge direct or indirect subsidies. These subsidies encourage farmers to occupy marginal lands and to clear forests and woodlands. They induce farmers to use excessive amounts of pesticides and fertilizers and to waste underground and surface waters in irrigation. Canadian farmers alone lose well over \$1 billion a year from reduced production due to erosion stemming*

from practices underwritten by the Canadian taxpayer.

According to the Organization for Economic Cooperation and Development (OECD) and other sources, the farm-subsidy structure now costs Western governments in excess of \$300 billion a year. What conservation programs can compete with that? These subsidies send farmers far more powerful signals than do the small grants usually provided for soil and water conservation.<sup>8</sup>

## CANADA

Soil problems on the Prairies did not begin and end with the famous "Dirty thirties." Ever since prairie land began to be cultivated in the late 19th century, the fertility of some areas has been declining. Every year we are losing 300 million tones of topsoil on the Prairies, and organic matter is being destroyed 10 times faster than it's being produced. In the eastern provinces so much topsoil has been lost that rocks are sprouting through once-rich farm fields. Prince Edward Island has lost 50% of its topsoil since 1900.

In 1984, the Senate Standing Committee on Agriculture, Forestry and Fisheries produced *Soil At Risk*, a report that estimated that soil degradation in Canada costs farmers \$1 billion a year. That same year, the federal agriculture department estimated that Canada lost as much as \$1.4 billion when one counts the costs of pollution and sedimentation off the farms.

In 1990, the Science Council of Canada undertook a comprehensive two-year study of the sustainability of the Canadian agri-food industry. Their conclusion was that many of our current problems were self-inflicted. Wind and water erosion of soils has been brought about by the cultivation of marginal farmlands and practices such as excessive tillage, monoculture, and summer-fallowing. Salinization is also associated with summer-fallowing, as well as

## Greener and cheaper

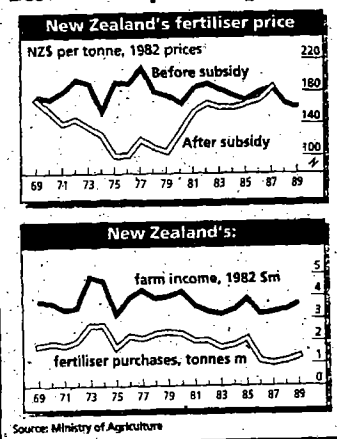
WELLINGTON

**F**REE-TRADERS have long argued that farm subsidies hurt the environment, but without much solid evidence. Since 1984 New Zealand has scrapped most of its agricultural support. Recently the Ministry of Agriculture (MAF) published a report\* on the environmental effects. They are unquestionably green.

New Zealand's farmers have always used less fertiliser, fuel and chemicals than farmers in Europe and North America. But even in New Zealand subsidies seem to have inflated the use of these things. Superphosphates, for instance, were subsidised for 20 years up to 1986 (see chart). The MAF study argues that subsidies increased fertiliser purchases by 10-25% in the 1970s, though it admits that the decline in fertiliser sales that followed the end of subsidies may also have been caused by declining world commodity prices and their effect on farm incomes.

Despite their relative caution with artificial fertilisers, New Zealand's farmers were guiltier than most when it came to clearing too much land and putting too many animals on it. These mistakes were once underwritten by subsidies. The country's pasture land rose by nearly 10% in the 1970s. When the subsidies went, the land-clearing stopped. Subsidies also bolstered the relative profitability of raising sheep, which tended to graze the most marginal lands. As the subsidies have gone, farms have become more diversified, and the most marginal land

### Less muck spreading



is now grazed less intensively.

All these changes have been environmentally benign. However, because subsidies to manage soil erosion have also vanished, some land has become more vulnerable than in the past. The Uruguay round allows farm subsidies with a specific environmental purpose—such as support for erosion control. Perhaps New Zealand is the one GATT member that should intervene more on the farm, not less.

\* "Impacts on the Environment of Reduced Agricultural Subsidies: A Case Study of New Zealand." By Russ Reynolds and others. MAF Technical paper 93/12.

long-term irrigation using high mineral content water. Public policies have also played a part. Food production strategies, including government subsidies have encouraged oversupply, notably of grain products. The stimulation of production has encouraged the adoption of energy- and chemical-intensive technologies and practices that are environmentally stressful, with the result that the development of sustainable agriculture systems has been hindered.<sup>9</sup>

The long-term consequences of these trends cannot be ignored. Canadian agriculture is a \$50 billion a year business that directly or indirectly employs 14 percent of our workforce and accounts for as much as one-third of our trade surplus. The industry comprises some 293,000 farms which provide employment for 450,000 Canadians in primary agriculture, plus an additional 1.5 million Canadians in related farm supply, processing, distribution and retail businesses. To save these jobs, this industry and the environment, change is necessary. As a modest first step, subsidy structures could be changed in ways that pay farmers to build up rather than deplete their basic farm capital. The "greening" of agricultural subsidies offers the possibility of sustaining both the land base and the livelihoods of those who depend on it.

As cited above, up to \$1 billion in current government subsidies could be adding to the problem. Turning those subsidies around —

or even part of them — would go a long way to adding to the solution.

### 3.3 ENERGY AND GLOBAL WARMING

The industrialized nations derive almost 90 percent of their energy (including that used for automobiles) from fossil fuels, while 7 percent comes from hydro, 3 percent from nuclear — energy from other sources add up to 0.2 percent.

Fossil fuels play a dominant role in many of the key environmental issues of the day — climate change, depletion of the ozone layer, acidification and urban air pollution. The burning of fossil fuels creates CO<sub>2</sub>, which along with methane and CFCs, is a major contributor to the greenhouse effect and global warming. Over the last century, fossil fuel burning has poured billions of tonnes of additional greenhouse-gases into the atmosphere. Carbon dioxide levels have risen 30%. Methane levels have risen 100%. In its report, the Brundtland Commission noted that "choosing an energy strategy inevitably means choosing an environmental strategy."

North America is currently the leading source of CO<sub>2</sub> emissions (25 percent of the world's total). By contrast, Japan, the nation with the highest per capita income and the second largest gross national product (GNP), produced only 5% of emissions, having switched significantly to natural gas, a cleaner fuel than either coal

What definitely needs to be more attractive is to conserve energy, save energy, make more efficient use of energy. Subsidizing energy, which is done in many parts of the world, is wrong. Fossil fuel is subsidized to an incredible extent, which is crazy from an environmental standpoint. These subsidies should be removed. That is our number one proposal.

— *Stephan Schmidheiny*  
Chairman, Business  
Council for Sustainable  
Development, Geneva

or oil, and invested in energy efficiency after the oil supply scares of the 1970s.

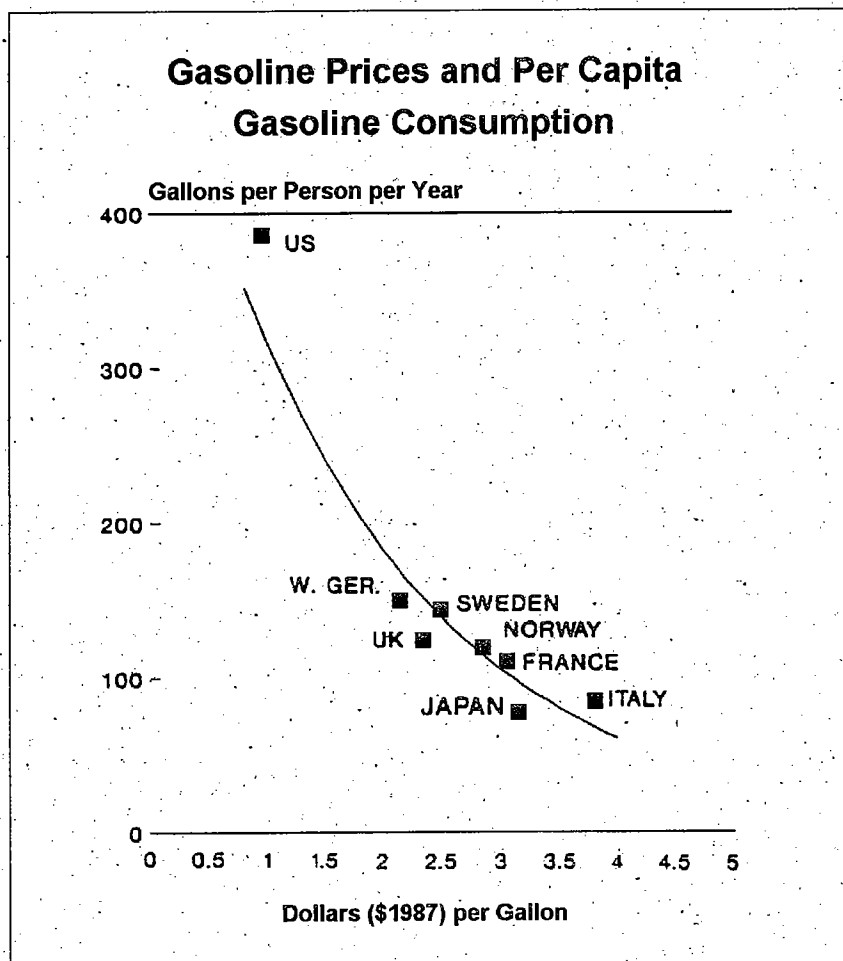
While alternatives to fossil fuels are emerging, for now energy efficiency offers the best potential for cutting back pollution and saving scarce reserves of fossil

countries as a whole now use a quarter less energy per person than they did before the first oil shock, while the energy efficiency of industry has improved by about a third. Worldwide, cars now get 25 percent more miles to the gallon than they did in 1973. In all, increased efficiency since 1973 has already saved the industrialized countries \$250 billion.

Far more could be achieved. Buildings, industry and transport could all increase their efficiency by at least 50 percent. Cars that achieve more than 50 miles per gallon (mpg) are already on the road — and prototypes that get about 100 mpg have been tested. Encouraging public transport would save more energy; buses and trains use about three-quarters less fuel per passenger mile than cars; trains and ships use two-thirds less energy than trucks to transport the same amount of freight.

The technology for massive savings in energy — and pollution — is available. The major obstacle to achieving improvements is the existing structure of public sector incentives. These incentives usually promote the very opposite of what is needed. They underwrite the exploration, development, and consumption of coal, oil, and gas; they ignore the costs of polluting air, land, and water.

In 1989 the 21 member countries of the International Energy Agency (IEA) spent 75 percent of their \$7.3 billion energy



World Resources Institute

fuels. For decades it was thought that increasing energy use and economic growth were indivisible. Experience has shown this to be false. Between 1973 and 1985, in the decade after the first oil price shock, per capita energy use in the OECD countries fell by 5 percent, while per capita GDP (Gross Domestic Product) grew by a third. Buildings in OECD

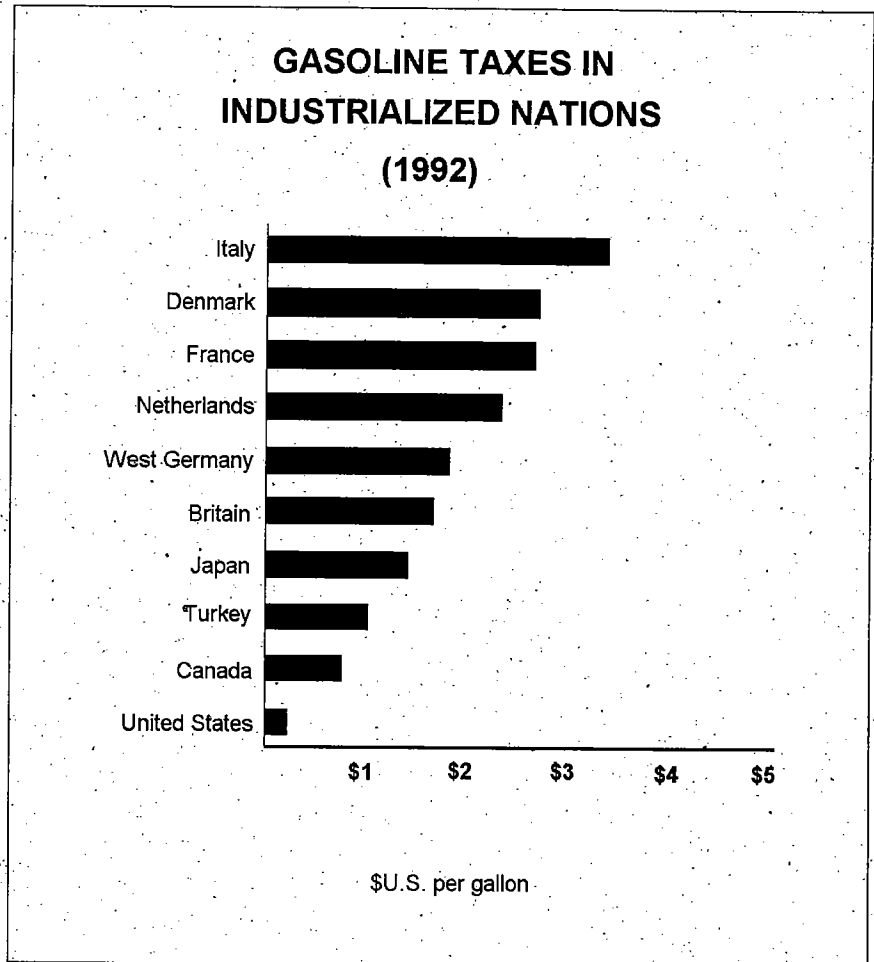
research budget on fossil fuels and nuclear energy, but only 7 percent on renewables and 5 percent on energy conservation.<sup>10</sup> In the United States, a recent study, "Federal Energy Subsidies: Energy, Environmental and Fiscal Impacts," concluded that energy subsidies cost U.S. taxpayers between \$20 billion and \$36 billion in 1989, the latest year for which reliable data are available. The study found that these subsidies favour increased energy supply over increased energy efficiency by a 35-to-1 ratio, with 58 percent of the subsidies going to support fossil fuels and 30 percent going to the nuclear power industry.<sup>11</sup>

Other researchers have put the U.S. energy subsidy bill even higher by including the \$50 billion price tag the U.S. paid for protecting the Kuwait oil fields during the Persian Gulf war.

As a result, OPEC has projected that worldwide consumption of oil will rise by nearly 20 percent between now and 2010. Fossil fuels will continue to produce 90 percent of the world's energy supplies into the 21st century, adding a further 50 percent to the pollution problem in the next 50 years. (And incidentally, ensuring that the world will continue to be dependent upon the whims of OPEC.) In order to meet this demand Dr. Subroto, Secretary-General of OPEC, has estimated that around \$250 billion will be required worldwide over the coming years to raise production capacity sufficiently.<sup>12</sup> Thus, the status quo will by no

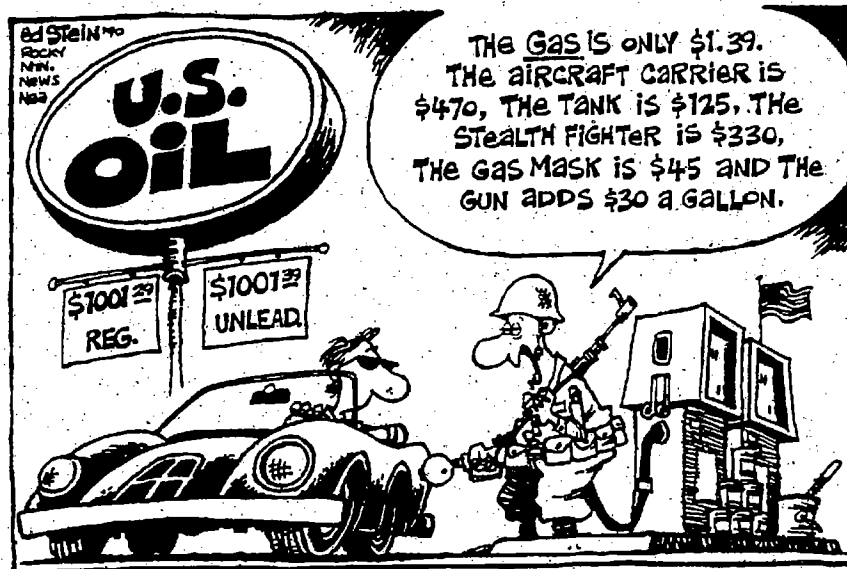
means be a bargain, either for our economies or our ecology.

On the other hand, where countries have reformed their tax and subsidy policies as part of a broader package of energy reform, the results have been impressive. Japan achieved its greatest energy



savings between 1979 and 1986, when it cut energy consumption 20 percent. From 1973 to 1986, GNP grew 63 percent while energy demand grew only 6.2 percent. Small businesses obtained energy audits at no charge, and all factories above a minimum size had to have a licensed energy engineer to promote energy efficiency. Efficiency standards were also applied to

Organization for Economic Cooperation and Development



industrial processes, buildings, automobiles, and appliances. All of this was supported by a high tax on gasoline and incentives for energy conservation which included accelerated depreciation or tax credits, reduced property taxes, and loans.<sup>13</sup>

### Canada

Canada's record on energy efficiency has never been a good one. During the 1973 to 1979 oil crises, we did achieve some efficiencies, with the result that the amount of energy to produce one dollar of GNP dropped by 14 percent between 1973 and 1986. Still, this drop was only two-thirds of what was realized by the other member states of the OECD. During the second half of the 1980s, improvements in efficiency slowed down again.

Canadians have historically been profligate users of energy. Blessed with a country that, during its developing years had abundant and easily accessible sources of energy, Canadians have developed

energy-intensive lifestyles and industries. Canada's economic prosperity was based on cheap energy — for forestry operations, to move wheat long distances to market, and to develop energy-intensive industries such as aluminum smelting that gave Canada a competitive advantage because it had "the cheapest electricity in the world." The conspicuous display of energy even became a national trademark and romantic symbol. Canadians have been for a decade or more the highest or second-highest per capita energy users in the world — which might at first be explained by the cold winter climate, except that energy use is just about as high in the milder parts of the country. Other cold countries — Sweden, USSR — use much less fuel per capita. Canadian consumption of fuel for personal transportation, again the highest in the world. Our Canadian lifestyle and habits, until now, have stubbornly resisted attempts at greater efficiency.<sup>14</sup>

In the future, if Canadians are to achieve significant increases in energy efficiency, we will need consistent and sustained policies. Fluctuating oil prices are part of the problem. Every time the price of oil declines, efforts are eased and the energy crisis is proclaimed to be over. Inconsistent policies are another problem. Relatively small energy conservation programs are no match for the enormous influences which point in the other direction — the second-lowest energy taxes in the world and

**Greenhouse Index Ranking and Percent Share  
of Global Emissions, 1989**  
*Intergovernmental Panel on Climate Change (IPCC)*

Percent	Country	Rank	Percent	Country	Rank
17.8	United States	1	0.7	Malaysia	26
13.6	U.S.S.R.	2	0.7	Romania	27
9.1	China	3	0.7	Vietnam	28
4.7	Japan	4	0.7	Lao PDR	29
4.1	India	5	0.6	Saudi Arabia	30
3.9	Brazil	6	0.6	Iran, Islamic Rep.	31
3.4	Germany (a)	7	0.6	Argentina	32
2.2	United Kingdom	8	0.5	Venezuela	33
2.0	Mexico	9	0.5	Netherlands	34
1.7	Indonesia	10	0.5	Ecuador	35
1.7	Canada	11	0.5	Korea, DPR	36
1.6	Italy	12	0.5	Yugoslavia	37
1.5	France	13	0.5	Peru	38
1.5	Thailand	14	0.5	Pakistan	39
1.5	Poland	15	0.4	Bangladesh	40
1.4	Colombia	16	0.4	Turkey	41
1.1	Nyanmar	17	0.4	Madagascar	42
1.1	Nigeria	18	0.4	Zaire	43
1.1	Australia	19	0.4	Belgium	44
1.1	South Africa	20	0.3	Sudan	45
0.9	Cote d'Ivoire	21	0.3	Bulgaria	46
0.9	Spain	22	0.3	Cameroon	47
0.8	Korea, Rep.	23	0.3	Egypt	48
0.8	Philippines	24	0.3	Greece	49
0.7	Czechoslovakia	25	0.3	Iraq	50

**Sources**

Intergovernmental Panel on Climate Change (IPCC), *Climate Change: The IPCC Scientific Assessment*, J. Houghton, G.J. Jenkins, and J.J. Ephraums, ds. (Cambridge University Press, Cambridge, U.K., 1990).

*Note:* (a) Data for Germany include both the former Federal Republic of Germany and the German Democratic Republic.

subsidies to the energy sector estimated to be \$4 billion annually.<sup>15</sup>

Increasing energy efficiency is therefore undermined by our stop-start-stop-start efforts and by our decidedly mixed policy signals. However, as the OECD has pointed out, a program of reduced subsidies and increased taxes could influence pricing in ways that

encourage conservation and efficiency. This would involve raising energy taxes during periods of low real prices and reducing them during periods of high real prices. The objective would be to maintain or slowly increase prices at levels high enough to bring about steady improvements in energy productivity.<sup>16</sup>

## 4. Ecological Tax Reform

### **U.S. Ozone Depleting Chemicals Tax**

As part of the U.S. plan to implement the Montreal Protocols under the Vienna Convention, in 1989 Congress enacted a \$4.3 billion excise tax on ozone-depleting chemicals (ODCs). The tax has been a major success in reducing ODC production. Although the Environmental Protection Agency issued regulations capping the total emissions of ODCs, chemical producers have been induced by the tax to produce lower amounts of ODCs than allowed by the caps in every year since the tax was enacted. The tax has twice been raised and is a significant source of revenue. The most striking effect of the tax has been to encourage technological development. Most of the major producers of ODCs are now by their own account producing replacement chemicals which are less expensive, more effective and more environmentally benign than those they replaced.

### **Shifting to a 21st Century Economy**

Our tax system constitutes a very major part of the framework within which our economy operates. It affects every sector and every industry. The tax system contains an extraordinary number of tax programs and tax policies which taken together, create an extremely powerful framework of incentives and signals for influencing the behaviour of producers and consumers, businesses and households. Getting this framework "right" is essential. The wrong framework can damage the economy. Equally, the wrong framework can damage the goal of creating a sustainable economy.

The Canadian economy in the 21st century must be both strong and sustainable. "Ecological tax reform" is one of the most important tools for getting us there. Properly designed and fully implemented, ecological tax reform could remove the "burdens" on our economy — waste, pollution, inefficiency — while providing relief and even boosting the factors that are needed for economic success — work, investment, and greater efficiency.

A comprehensive program of ecological tax reform should have three main components. First, it should impose heavier levels of taxation on toxic pollution, waste, and inefficient use of virgin resources. Secondly, as an offset, the current tax burden on income, savings, and small business could be lightened. (The alternative is to use the revenues from environmental taxes to pay down the public sector debt.) Thirdly, ecological tax reform should ensure that the tax system offers incentives only for economic advancements in line with the lean and clean economy which will be a priority for competitiveness and prosperity in the coming decades.

### **4.1 ENVIRONMENT-FRIENDLY TAXATION: TOWARDS A ZERO-WASTE, ZERO-POLLUTION ECONOMY**

The idea of "ecological tax reform" is in many ways an extension of the Polluter Pays Principle. The principle was introduced by member countries of OECD in 1972. The PPP requires a firm to pay the full costs of pollution prevention and control measures. It is important for a number of reasons. It has the potential to see that environmental damage is reflected



in the prices that consumers pay, thereby creating an incentive for consumers to favour those goods which have the least impact on the environment. Secondly, pollution taxes drive the further development of zero-waste technologies and clean production systems, of which there are now many examples. These advancements boost economic performance since waste and toxic pollution *weaken* an economy and cost it jobs.

Over the past 15 years, many nations including Canada, have stepped forward with a myriad of charges, fees, levies, pay-per-bag, and refund deposit schemes. These in turn have sparked a round of private sector ingenuity, and profitability. A 1989 survey of OECD members identified more than 50 environmental taxes and charges, including levies on air and water pollution, waste, and noise, as well as various product charges, such as fees on fertilizers and batteries. In most cases these fees have been set too low to motivate major changes in behaviour, and have been used instead to raise a modest amount of revenue for an environmental program.<sup>17</sup> There are, however, some notable exceptions. In the United Kingdom, a higher tax on leaded gasoline increased the market share of unleaded gas from 4 percent in 1989 to 30 percent in 1990. And in 1989, the U.S. Congress passed a \$4.3 billion tax on ozone-depleting chlorofluorocarbons (CFCs), which played a large part in hastening

their phase-out and subsequent replacement by environmentally-benign alternatives.

Some other examples are below.

*Air Pollution.* Acid rain is caused by emissions of sulphur dioxide (SO<sub>2</sub>) and nitrogen oxides (NO<sub>x</sub>). Due in part to the introduction of taxes on various atmospheric emissions, Sweden slashed levels of sulphur dioxide by 75 percent between 1965 and 1985. The country is committed to reducing what is left by another 75 percent. Sweden isn't the only nation. West Germany cut power plant emissions of sulfur dioxide by nearly 90 percent between 1983 and 1989. Switzerland and Austria have gone further. Finland was the first country to introduce a carbon tax on fossil fuels, effective January 1, 1990.

*Water Pollution.* The French have had a system of effluent charges on water pollution in place since 1969. The system is primarily designed to raise revenues which are then used to help maintain or improve water quality. As an illustration, the agency for Seine-Normandie, corresponding to the Paris region, levied the equivalent of \$US 250 million in 1990 alone. These funds in their entirety will be invested in water pollution control in the same region. The pollutants on which charges are levied has expanded considerably since the initial inception of the program.<sup>18</sup>

The German system of effluent charges is very similar to the French system. It covers a wide range of pollutants, and the

charges are used to cover administrative expenses for water quality management and to subsidize projects which improve water quality. The Netherlands

has had a system of effluent charges in place since 1969, and the charges placed on effluent streams are among the highest. In general newer plants face more stringent regulation than older plants.

**Toxic Waste.** Canadians produce approximately five million tonnes of hazardous waste each year, 80% of which enters the environment untreated. There are approximately 10,000 old dumpsites, containing decades of toxic, untreated chemicals. Many of them are leaking their contents into the environment. The four biggest dump sites on the American side of the Niagara River alone are threatening the drinking water of seven million Canadians and one million Americans downstream. (The cleanup cost of these dumps is estimated to be anywhere from \$11 billion to \$100 billion).<sup>19</sup>

In October 1989, the CCME undertook to restore contaminated sites in Canada in accordance with the "polluter pay principle." A joint federal-provincial program totaling \$250-million was proposed with \$200-million earmarked for decontamination and the remaining \$50-million for development and testing of decontamination technology. In the Green Plan, the federal government has since committed itself to work with the provinces and territories on agreements for implementing the program.<sup>20</sup>

In reviewing the experience of environmental taxes and charges, certain patterns and strategies can

### Recent Environmental Tax Reforms from EC/OECD Countries (1990)

#### Australia

proposals for 'Polluter Pays Principle' laws.

#### Belgium

proposals to tax waste water and solid waste.

#### Denmark

(a) has a CFC tax and a tax on rubbish

(b) refundable deposits on drink containers, planned for car batteries.

(c) new legislation to triple rubbish charge and increase cost of raw materials in process.

#### Finland

(a) introduced a carbon tax;

(b) removed sales tax from 'green products';

(c) increases in taxes on single-trip containers, waste oil and phosphate fertilizers.

#### France

(a) charges business for air and water pollution and uses the revenue to subsidize investments in pollution control by industry.

(b) is considering redesigning water charges to discourage farmers from using nitrate fertilizers.

#### Germany

(a) introduced tax incentives on catalytic converters on cars, plans to tax cars on noise and emissions basis not engine size;

(b) charges for industrial pollution emissions — reducing the charge in the early years of the

installation of pollution control equipment;

(c) has more environmental economic measures than any other EC country (but less than Finland and Sweden).

#### Holland

(a) introducing a new environmental plan;

(b) plans energy taxes and tax on carbon dioxide emissions;

(c) recent call for environmental disclosure in financial statements.

#### Italy

(a) introducing a range of taxes on non-bio-degradable materials;

(b) implementing new taxes on sulphur dioxide, particulates, plastic products, herbicides and non-biodegradable industrial waste;

(c) taxes on airport noise pollution.

#### Norway

(a) raised tax on petrol and charge a toll in cities;

(b) refundable deposit on oil and batteries;

(c) tax on CFCs being introduced.

#### Sweden

(a) recently increased taxation of pesticides and fertilizers;

(b) VAT on energy;

(c) specific taxes on carbon dioxide, sulphur and nitrous oxide emissions;

(d) carbon tax introduced;

(e) car-usage taxation is rising and likely to rise much further.

already be seen. Bill Long, Director of the OECD Environment Directorate recently observed

*The use of environment taxes and charges has expanded considerably in recent years. OECD governments today are applying new taxes to energy, pesticides and fertilizers, batteries, packaging, waste disposal and to virtually anything one can think of that places an undesirable burden on the environment. It is noteworthy, however, that on almost every occasion, these "eco-taxes" are introduced as a supplement to regulation and not as a replacement. Two strategies are emerging: one is for governments to search for the best mix of regulatory and economic instruments for particular problems: and, second, for policy-makers to use regulations to establish long-term performance objectives...and then to look to market mechanisms to find the most cost-efficient pathway toward that goal.*<sup>21</sup>

Perhaps more important, is what lies ahead: In Germany a team of researchers at the Umwelt and Prognose Institut (Environmental Assessment Institute) proposed a varied set of taxes for the former West Germany that would have collectively raised more than 210 billion deutsche marks (\$136 billion). The researchers analyzed more than 30 possible "eco-taxes," and determined tax levels that would markedly shift consumption patterns for each item. In some cases, a doubling or tripling of prices was needed to cut consumption substantially. For

example; halving pesticide use would require a tax on the order of 200 percent of current pesticide prices.<sup>22</sup>

#### 4.2 INCOME-FRIENDLY TAXATION

Our current tax structure tends to weigh most heavily on those activities that drive long-term economic progress: savings, investment, and efficiency. Taxes on income, payrolls, and investment inevitably encourage people to work, save, and invest less than they would otherwise. Over time, the resulting lag in the acquisition of skills, capital, and efficient technology slows income and productivity growth.

We are at a point where the economy badly needs to be rejuvenated, not held back. Work done by the World Resources Institute (WRI) suggests the economic benefits of an "ecological tax shift" could be substantial. Their work has focused on the U.S. where they have concluded that substituting \$100 billion in suitably designed green taxes for \$100 billion in current taxes could, over time, increase economic productivity by \$45 to \$80 billion annually. These savings arise in two ways: First, cutting the marginal tax rates on income and profits would reduce the burden of these taxes on the economy, generating 40 to 60 cents for each dollar of revenue shifted. An additional 5 to 20 cents on the dollar is gained from the net environmental benefits of the pollution charge or green fee.<sup>23</sup>

Their work also suggests that if substantial new revenues are needed as part of a federal deficit-reduction program, pollution charges are preferable to traditional revenue sources. Taxes on income or payrolls impose net costs on the economy at the same time that they raise revenues, but properly designed pollution taxes do not. Green taxes can generate revenues and promote environmental quality without discouraging savings or investment. Reducing the federal deficit could have long-term benefits for the economy, although how it's done determines how large those benefits are likely to be.

As the WRI has concluded, pollution taxes should be a key component in a national strategy to put the economy on a growth track. They should be part of any long-range plan to reduce the federal deficit, to make our national tax system work for the economy, and to promote cost-effective environmental management.

### **4.3 INCENTIVES FOR A CLEAN AND GREEN ECONOMY**

As Canadians prepare for the 21st century, we must remind ourselves that all economies constantly change, the only question is the direction of that change. If we cling to the vision of an outdated, resource inefficient, and potentially hazardous economy, we stand to jeopardize our competitiveness and our prosperity.

In this century we have left behind the horse and buggy, paddlewheelers, coal bins, the iceman, typewriters, and vinyl records. To replace these products whole new technologies and service industries have emerged: telecommunications, broadcasting, airline travel, and computer services. Even since 1976 we have witnessed the lightening-speed acceptance of cellular phones, compact disc players, facsimile machines, and microwave ovens.

In the future, there is no reason not to further discard those products and technologies that are resource inefficient and environmentally poisonous, and instead redirect our economy toward clean industries and technologies and services that are economically and environmentally sustainable: clean and efficient transportation systems, recycling technologies, energy and water saving technologies, intensive reforestation, eco-cars, hydrogen-, biomass-, and solar-power systems; zero-emission technologies, closed-loop production systems, and energy efficient consumer products. To fail to do this is to invite the eventual but inevitable erosion of our economic, resource and environmental well-being.

Preparing for a 21st century economy requires that we have some vision of what a clean and green economy might look like and that we put in place the right tax signals to help get us there. Such a vision is at this point incomplete, but there are signs

that point us in promising directions in transportation, recycling, and clean energy, to name only a few areas.

### Efficient Transportation

The fastest-growing user of energy (and energy-related CO<sub>2</sub> emissions) is passenger transportation. We are at the point where the world's 500 million automobiles have led to unsustainable urban congestion and environmental damage. (It has been estimated that the cost of traffic congestion — idle drivers and idling cars — now reaches \$100 billion yearly in the U.S.<sup>24</sup>). The question is, what technologies will succeed the car, and where

will Canada be in this multi-billion dollar race.

New environmental regulations in California and other states are encouraging electric cars. By 2003, 10 percent of all new cars sold in California must be ZEVs (zero-emission vehicles). The EC will probably adopt measures similar to California in the next few years, and Japan already aims to have 200,000 electric cars on the road by 2000. In the long run, most experts predict the use of hydrogen to produce electricity in a fuel cell.

California has also ordered that diesel trucks and buses be converted to methanol fuel by 1995. That conversion is an

Fiscal Policies for the Transportation Sector				
	Fuel Use	Fuel Choice	Transportation Demand	Infrastructure Development
<b>PRICES</b>	Establish a deposit-refund system for CFC refrigerants in mobile air conditioners			
<b>TAXATION</b>	Tax petroleum fuels, establish packages of taxes and rebates or corporate income tax incentives to promote design, production, marketing and purchase of high fuel-economy vehicles	Tax petroleum products as part of an integrated package of options to promote use of alternative fuels with lower greenhouse gas emissions.	Provide corporate tax incentives for employees to encourage employees to increase vehicle occupancy and reduce emissions.	Surcharge on construction contracts to support demonstration and certification of designs and standards that reduce materials use in infrastructure development.
<b>SUBSIDIES</b>	Promote design, production, marketing and purchase of high fuel-economy vehicles by taxes and rebates.	Subsidize a range of sector activities to promote use of alternative fuels with lower greenhouse gas emissions, including R & D.	Subsidies to promote development of low-emission modes.	
<b>DIRECT EXPENDITURES</b>	Purchase high-MPG vehicles for government vehicle fleets, and support prototype development to promote design and production of efficient vehicles.	R & D to reduce cost of producing alternative fuels with low greenhouse gas emissions.	R & D to understand demand for transportation, to permit subsequent formulation of policies to reduce growth in demand.	R & D to reduce material use and associated greenhouse gas emissions in infrastructure development.

U.S. Department of Energy

### **Tax Credits and Renewable Energy in California**

Over the past decade renewable energy has become an important part of California's energy supply. Approximately 14 percent of electricity generated in the state now comes from renewable resources not including hydropower. California leads the world in geothermal, wind and solar thermal electric generation, has the largest biomass electric capacity in the United States and accounts for about one fifth of worldwide production of photovoltaic modules. The success of renewables in California is in part due to tax credits. Both federal and state governments first introduced renewable energy tax credits in the late 1970s and they have had a varied history since then, culminating in the enactment of investment and production credits in the 1992 National Energy Policy Act.

estimated two billion dollar business opportunity. Methanol (also known as wood alcohol or methyl hydrate) is extremely clean-burning, with none of the build-up of noxious emissions associated with diesel fuels. On an equivalent energy basis, it also promises to be more economical, and it can be stored and transported in much the same way as gasoline and diesel.

Even cleaner technologies are emerging; for example, magnetic levitation trains based on superconductivity. High-speed trains could largely replace short-haul flights, especially in the Third World, which provide the dense populations needed to support them. The Bullet Train in Japan may point to the future.

It is important to note, however, that further eco-improvements in transportation need not be the exclusive preserve of the world's industrial giants. Brazil for example almost single-handedly created its own ethanol-powered automobile industry. In 1975, faced with heavy dependence on imported oil and a depressed sugar market, the Brazilian government began a program to convert domestic sugar cane into ethanol for use as a motor fuel. The government provided substantial subsidies for ethanol production, used the government-owned oil company to control much of the ethanol distribution, ensured that ethanol was consistently priced lower than gasoline, and reduced taxes on ethanol vehicles. Today

about 30 percent of Brazil's passenger vehicles operate only on ethanol with a target to increase that in the future.<sup>25</sup>

What these examples illustrate — and vividly — is what can be done on the road to cleaner energy sources and more efficient transportation systems. The key to making the shift is again the signals provided by public policies. Fuel taxes, for example, should distinguish between the environmental effects of different types of fuel — gas or diesel, leaded or unleaded. The tax and subsidy structures should discourage heavier and more energy-intensive transport. Private-vehicle expenses should no longer be deducted from taxable income. Work done by the U.S. Department of Energy (see sidebar, page 25) gives an indication of the range of possible options.

### **Recycling**

Canada can expand its threatened forest resources by using and re-using them more efficiently. Every year our offices and homes discard a virtual "urban forest". Over 40% of landfill waste is paper or paper products. If Canada recycled its newspapers as efficiently as Japan, we would save 80 million trees a year — approximately 40,000 hectares of forest land. Recycling not only saves forests, it also saves energy. Recycling paper requires only a third the energy of virgin timber.

The transition to recycled materials is an integral part of

increasing the material efficiency of our economy. Recycling can help save biodiversity, too. Increased recycling of glass, steel, and aluminum and other energy-intensive products reduces the need for mining the raw material and — at least as important — the demand for the energy used in processing. These measures translate into fewer dams and power plants destroying habitats, and fewer pollutants released into the air and water.

One key step governments can take toward greater resource conservation and recycling is to remove subsidies for production based on virgin materials. In mining particularly, tax breaks are often given to companies to compensate for the depletion of mineral reserves. Since companies using recycled materials get no such breaks, tax policy encourages the use of virgin materials.

### CLEAN ENERGY

Together, renewable sources could make a great, and overwhelmingly benign, contribution to energy supplies. The Philippines, Brazil and Norway already get at least half their energy from them.

*Wind.* Ninety-five countries now get electricity from the wind. California generates 90 percent of the world total and expects the wind to supply at least 8 percent of the state's power by the year 2000. Denmark now produces 6 percent of the world's wind-generated electricity — more than half the power

produced outside California. Giant windmills have been built in Sweden and West Germany, and the U.K. has estimated that wind power could provide a fifth of the country's electricity by 2020.

*Solar.* The sun's power as an energy source dwarfs anything that man has yet devised: the sunlight which falls on earth every 15 minutes provides more energy than that produced in a whole year by all other forms of energy (oil, gas, nuclear, electric) combined. It is not surprising that a sunny climate is leading the way in solar technology. California produces more energy from solar sources than the rest of the world combined. Nearly 20 solar power stations using reflectors have been built with government help, half of them in California.

Plants and trees store the sun's energy. Brazil used ethanol, produced from sugar cane, for half the fuel used in its vehicles in 1986 and, although its program has hit problems, such alcohol fuels are becoming increasingly attractive, particularly in the U.S., for combating pollution.

*Geothermal.* The top five kilometres of the earth's crust contain 40 million times as much energy as its oil and gas reserves. But geothermal energy, too, is widely dispersed and is only used when concentrated by hot water, trapped in rock. Most of Iceland's homes are heated by such reservoirs. Geothermal electrical capacity provides more than a sixth of the power consumed in Central America. Japan plans to

### A Greener Bottom Line

A survey in the United States of more than 500 companies that adopted cleaner production processes found that each company reduced industrial wastes by between 85 and 100 percent; even more importantly, the investment payback periods were short, only one month to three years. These benefits accrued to old industries as well as to high-technology industries. The technological changes included the incorporation of advance technologies, such as ion exchange and ultrafiltration; process modifications involving the replacement of an old substance by a new, less-polluting material; and the adoption of processes that were less chemical-intensive and more mechanical-intensive. The most dramatic case was that of the photographic firm PCA International Inc. The initial cost of \$120,000 for the process modification was paid back in a few months by annual savings in the cost of developing solutions (\$360,000), fixer solution (\$25,000), bleach solution (\$780,000) and silver recovery (\$1,410,000), a total annual saving of \$2,575,000.

As newly industrializing countries like India and China emulate countries with high standards of living, their outpourings of emissions and trace gases into rivers and the countryside can create an eco-disaster. We can't tell them not to industrialize or modernize. They're just trying to do what we do.

There's an opportunity for business to provide pollution-abatement technology to help control factory emissions, we would be helping ourselves at the same time. This can be paid for by North/South capital transfers, and will probably be the fastest-growing area for scientists and engineers in future. Environmental engineering will grow like crazy as developing countries try to raise their standards of living. There are big market opportunities in helping these countries clean up their environments.

— Paul Kennedy, Author  
"Preparing for the 21st Century"

increase its use tenfold in the 1990s.<sup>26</sup>

Canada has historically been a producer, and a consumer, of a wide range of modern forms of energy: oil, natural gas, coal, uranium, and hydro-electric energy. In addition, our largest single industry, forest products, produces much of its own needed energy from wood waste. We have developed a very wide range of techniques, technologies, skills and policies to deal with a spectrum of modern energy and environment issues. We have not always been successful. But this enforced versatility should stand us in good stead in the changes likely to come. Canada is in a good position to lead in many areas: grain-based fuels, natural gas and, for heating; geothermal steam. Canada has an abundance of all three. Each of these alternatives produces much lower volumes of CO<sub>2</sub> than fossil fuels.

To capitalize on the low CO<sub>2</sub> factor in alternative fuels, Canada could lead the world in the imposition of a CO<sub>2</sub> tax — a tax which would be imposed on all fuels as measured by the degree of CO<sub>2</sub> generated. This would provide a new source of revenue which could be applied directly into alternative fuel research and development. Tax incentives for renewables have proved their worth in California and in Denmark. With a fraction of the support that has been poured into nuclear power, Canada would be on its way to getting much of its

energy from a more sustainable mix of energy sources.



## 5. GETTING FROM HERE TO THERE

### IMPLEMENTATION ISSUES

*A Liberal government will establish a framework in which environmental and economic policy signals point the same way.*

*Our first task will be to conduct a comprehensive baseline study of federal taxes, grants, subsidies, in order to identify barriers and disincentives to sound environmental practices. We want to promote, not hinder, the research, development, and implementation of clean and energy-efficient technologies; renewable energy use; the sustainable management of renewable resources; and the protection of biological diversity.*

— Liberal Party of Canada  
1993 Election "Red Book"

The key actor in framing an effective sustainable economic policy is the Government, which has the power both to set standards and to choose from a wide range of instruments to implement such standards. The Government must create a realistic framework for encouraging industry to pursue cleaner production processes.

### FROM RED TO BLUE TO GREEN

The above quote from the Liberal election Red Book, promises to create such a framework. Canada's budget and expenditure plans are normally

spelled out in the Government's 'Estimates'. Also known as the Blue Book (because of the colour of its cover), the Estimates create the framework of government spending, taxation and subsidy signals within which the economy operates. The above promise seems to indicate that the Blue Book is about to become the Green Book.

In a theoretical sense it is easy to spell out what a green budget framework should accomplish.

This framework should integrate environmental and sustainability dimensions into industrial policy and all spending programs relevant to industry. It should eliminate policy inconsistencies and mismanagement, as well as policies and instruments that distort markets, e.g. the fixing of wrong prices (artificially subsidized energy or raw materials). It should also correct market failures, such as the absence of prices for environmental services.

Governments should generally adopt the polluter-pays principle, which requires industry to bear the cost of pollutant reduction and prevention. This principle would apply continuous pressure on industry to pursue cleaner production options and would prevent distortions of competition among firms.

Ecological tax and subsidy reform will involve pollution taxes, removal

### Canadians think green

The public wish to see the economy and the environment integrated more carefully in the future. According to a poll by IISD, a majority of Canadians want environmentally sustainable economic growth, believe the transition can occur quickly, and think green products and services will spur economic recovery and exports.

"Developing our economy in a way that avoids the depletion of renewable resources and minimizes damage to the environment" should be a "major priority" over the next decade, said 72 percent of those polled. Fully 82 percent of Canadians surveyed said "developing an environmentally sustainable economy over the next decade" is "likely" or "definitely possible".

Those surveyed saw the environment playing a leading role in repairing and developing the North American economy. "Clean-up and protection of the environment will contribute significantly to the growth of our economy," agreed 84 percent of the Canadians. An overwhelming 92 percent of Canadians said environmentally friendly products and services could play a "somewhat" or "very important" role in overall exports during the next ten years.

— I.I.S.D., and *The Environmental Monitor*,  
1998

of environmentally-perverse subsidies, "golden carrots" (incentives to encourage environmentally-beneficial behaviour) and support for the transition from a resource-intensive to a efficiency-intensive economy.

Preliminary studies done in Germany and the United States imply that green taxes have substantial revenue-raising potential (up to 5 to 10 percent of GNP). These estimates are admittedly quite crude. Data on emissions and pollutants is still poor. We have an incomplete understanding of what we're trying to tax. Estimates of anticipated revenues would also be affected by the tax rates that were levied, and the effects of the tax. (If the tax is truly successful the tax base should eventually shrink to zero — i.e. the pollution should stop.)

The following considerations will be important in implementing ecological tax reform:<sup>29</sup>

- ❖ what level of taxation can be justified in terms of the polluter-pay-principle?
- ❖ does raising the cost of resource consumption have the desired incentive effect? at what level is the incentive effect relatively optimum?
- ❖ what is the appropriate pace for introducing such reforms?
- ❖ what other taxes should be lowered to achieve the goals desired?
- ❖ how can undesired distribution effects be avoided or compensated for?

In practice, the redesign of government budgets to promote more sustainable forms of development raises a variety of issues, a number of which are summarized below.

*Objectives.* A significant challenge in "greening" government budgets is to define appropriate environmental objectives or standards which can guide fiscal decisions and government programs. Such standards exist in economic planning where a combination of measures (e.g., unemployment, inflation, rate of growth, level of debt, etc.) has come to be accepted as sound indicators of a country's performance. Social planning has its demographic, income, education, and other indicators; environmental protection planning has indicators to measure changes in the quality of air, water, soil, and other resources. Yet there remain disagreements on the standards of acceptable environmental performance. There are many questions with no widely-accepted answers: "How "clean" should clean water be? Is any net loss of forest cover acceptable? Or how much species extinction can we afford?"

At a more fundamental level of analysis, economists and ecologists have not reached consensus about *sustainability*. This raises issues which include: the level of throughpu. in the economy, disparities between the rich and the poor, the degree to which natural and manufactured capital can be substituted, the capacity of

ecosystems to assimilate wastes, the harvesting of renewable resources on a sustained yield basis, intergenerational equity, and living off the interest of capital.

*Opposition to Change.* In the past, both environmentalists and industrialists have resisted economic instruments: environmentalists have been concerned that governments not abandon traditional regulatory approaches in favour of "licenses to pollute"; for their part, industry has opposed some instruments on the simple ground of not having to pay for what they had previously received for free.

The fact that economic instruments continue to be little-used — although the idea itself is over twenty years old — illustrates the importance of creating constituencies for such change. An example of the political difficulties in introducing green taxes is the recent opposition to President Clinton's proposed energy tax. Although Americans pay lower energy prices than most other industrialized countries, interest group pressure nevertheless led Congress to water-down President Clinton's proposal. It is worth noting that the proposed tax would have yielded less revenue than the value of energy subsidies to American consumers.

*Federal-Provincial Harmonization.* In federal countries, the harmonization of federal and provincial budgetary measures is important to prevent them from operating at cross-purposes.

Countries will no longer be able to afford the costs of contradictory policies. Such incoherence is evident in policy areas such as energy (e.g., the simultaneous subsidy to fossil fuels and funding of programs to reduce carbon dioxide emissions) and agriculture (where some governments make available subsidies both to increase production and to protect marginal lands). In the future, these conflicts will have to be resolved as part of the budgetary process. How would this coordination be achieved? Where federal governments transfer moneys to lower levels of government, what opportunities exist to attach environmental conditions to such transfers?

*Appropriate Circumstances.* Properly designed economic instruments offer many advantages over traditional regulatory approaches. In theory, they reduce compliance costs (and thus enhance competitiveness), are more flexible, encourage technological innovation and reward better environmental performance. It is important to note, however, that economic instruments are not appropriate in all circumstances. Where health and safety are at stake or time is a factor, traditional regulatory approaches such as prohibitions or detailed regulations may remain the preferred course of action.

*Effectiveness.* In theory, environmental taxes will also be ineffective where consumers do not appreciably change behaviour in response to higher prices.

### Environment Stocks Checklist

**WINNERS** — These will do well in the 1990s: petrochemical producers leveraged to methanol, waste oil disposal companies, packaging companies with recycling programs, oil producers leveraged to natural gas, environmental and ethical mutual funds, companies engaged in environmental solutions.

**LOSERS** — These face major expenditures in clean-up. Failure to do so may find some companies regulated out of business: pulp and paper makers, smokestack industries, energy producers leveraged to oil, base metal smelters, gold refiners, plastic companies without recycling programs.

— *Financial Post*

However, this problem carries the seeds of its own solution. To the extent that the environmental tax raises significant revenues, the revenues can be used to reduce the cause of the environmental problem. A number of North American utilities subsidize energy efficient retrofits of old buildings, for example. Government expenditure can support research and development of cleaner materials, processes, and technologies. The tipping fee for using the regional landfill on Vancouver Island covers the costs of a program researching and supporting the development of markets for recycled materials. Finally, government expenditures can be used to subsidize alternatives to current consumption patterns. Thus governments can ensure the provision of recycling programs and transit systems.

*Impact on Government Budget Planning.* Environmental taxes potentially serve two competing objectives: behavioural change and revenue-raising. To the extent that they are successful in the first objective and lead to a reduction in the detrimental practice or emission being targeted, it may compromise the achievement of the second objective and lead to a drop in government revenues. The reconciliation of these potentially competing objectives is therefore an important consideration in designing and applying any such system of taxation.

*Distributional Issues.* Steps taken to eliminate environmentally

damaging subsidies or to tax environmentally damaging behaviour will have considerable distributional impacts. A reduction of agricultural subsidies would impact farmers more than consumers, for example. Increasing the level of taxation on gasoline and other fossil fuels will also raise distributional issues. Simply put, who pays? and more important, who will pay more than others? Energy-intensive industries will end up paying more than others, as will colder regions. Some impacts would also be regressive. For example, an energy tax would have a greater effect on poor families, who spend a higher proportion of their income on an energy. Without corrective features an energy tax could have the perverse result of changing energy use by poor households but would have less impact on the more energy intensive wealthier consumers who could more easily assume the increased costs.

There are essentially two ways in which governments can cushion these unfair distributional consequences. Ideally, social and environmental targets should be integrated into policy design, ensuring *from the start* that distributional effects are equitable. This might require, for example, that a scheme to reduce auto emissions by increasing the cost of driving would also include a program to increase the availability and affordability of environmentally beneficial alternatives. In some cases, this approach will be impractical and

environmental policies will have to be designed with provisions to compensate the hardest hit *after the fact* through reductions in other taxes or increases in welfare benefits. For example, governments could use the revenue generated by the introduction of ecological taxes to reduce regressive taxes such as sales taxes.

*Earmarking.* A particularly controversial issue regarding the use of environmental taxes is whether the revenues they generate should be earmarked to the resolution of environmental problems or be consolidated into general government revenues. Polling data have shown that public acceptance of green taxes is enhanced by allocating their revenues to environmental projects. Earmarking is common in European countries; notably Germany, France and The Netherlands where it has been practiced with respect to water pollution charges for several years. In Canada, British Columbia has established a Sustainable Development Fund for this purpose. On the other hand, as Bruce Doern has observed, Canadian finance authorities "are stout in their objections to the direct linkage of any tax with any expenditure fund"<sup>27</sup>

There are reasons for these objections. Taxes on waste, for example, are really taxes on many different types of waste, everything from tires, to batteries, to air emissions. How many separate accounts should be set up,

before this becomes administratively expensive and even counter-productive. Furthermore, is there any reason why health care should not be paid for, at least in part, by environmental taxes since it is quite plausible that some of the burden being placed on our health care systems can be traced back to the presence of toxic poisons in our air, water and soils.

For these reasons, the advantages and disadvantages of earmarking will need to be thought through carefully as part of any major ecological tax reform package.

### **Jobs and Competitiveness.**

Although conventional wisdom suggests that imposing additional costs on industry to protect the environment reduces its competitiveness, a number of studies conclude that the opposite may hold.

Michael Porter is the author of *The Competitive Advantage Of Nations*. Writing in *Scientific American* (April 1991) he concluded that "strict environmental regulations do not inevitably binder competitive advantage against foreign rivals; indeed they often enhance it. Exacting standards seem at first blush to raise costs and make firms less competitive. This may be true if everything stays the same except that expensive pollution-control equipment is added.

"But everything will not stay the same. Properly constructed regulatory standards which aim at outcomes and not methods, will encourage companies

### **Environmental Policy and the Public Revenue in Developing Countries**

The range of environmental concerns continues to expand, and few sectors of economic activity remain untouched. Yet claims on public and private financial resources are already large. How then can environmental policies be made more "affordable"? Regulations and taxes can help reduce environmental damage, and developing countries may be better served by following the tax and investment approaches to environmental policy in most situations, rather than the regulatory route followed by industrial countries during the past century.

Although the use of regulations is sometimes appropriate, such as for controlling hazardous wastes, in most cases the tax approach has significant advantages. Taxes are economically efficient, have wider impacts, demand less information, and are administratively less burdensome because they can be grafted onto existing structures. Economists have often considered most such advantages to be applicable in the industrial countries, but they apply with even greater force in the developing world.

— "World Bank & the Environment", 1992

*to re-engineer their technology. The result in many cases is a process that not only pollutes less but lowers costs and improves quality.*

*"Both Germany and Japan have tough regulations and both countries continue to surpass the U.S. in GNP growth rates."*

In the U.S. the most comprehensive recent study of the impact of environmental legislation on the rates of economic performance in various states was conducted by Stephen Meyer, a professor at the Massachusetts Institute of Technology. His findings were striking: states with the most ambitious environmental programs had the highest level of economic growth and job creation.

Almost 10 years ago, the first World Industry Conference on Environmental Management (WICEM), convened by the UN and the International Chamber of Commerce (ICC), pointed out that industries that curb toxic and solid waste through recycling and low-emission technologies were often more profitable than competitors using older, more polluting technology. Another example: the 3M corporation has spent in excess of \$100 million in waste recycling over 13 years but has saved the company over \$400 million. Starting more recently in 1986, Dow Chemical estimates that they have already saved \$5 million.

Economic instruments may be even superior to regulation. For example, Frederick Cannon, Vice President and Senior Economist, Bank of America, recently

reviewed the available evidence with this conclusion:

*Economic growth and environment improvement have had a positive relationship during the past two decades. However, the cost of environmental protection has been high — higher than it need be. Inflexible bureaucratic approaches in applying regulations have often reduced economic activity without achieving needed environmental improvements. Market-based approaches to environmental improvement are beginning to demonstrate how the cost of protecting air and water resources can be minimized. As more of these market-based approaches prove successful, they will be applied to a wide range of environmental needs, such as controlling solid and hazardous wastes, managing land use, and encouraging recycling. As a result, millions of jobs can be created in environmental industries, resource management can be improved, and strong economic growth can be sustained.<sup>28</sup>*

Will this involve a shifting of costs? Yes it will. But it will also bring about a desirable shift in our economy, by creating a proper framework of incentives for a clean and efficient economy, one more capable of competing and prospering in the 21st century.

Taxing products and activities that pollute, deplete, or otherwise degrade natural systems is a way of ensuring that environmental costs are taken into account in private decisions — whether to generate electricity from coal or sunlight. Each individual producer or consumer decides how to adjust to the higher costs: a tax on air emissions would lead some factories to add pollution controls,

some to change their production processes, and others to redesign products so as to generate less waste. By raising revenue from such "green taxes" and reducing income taxes or others to compensate, governments can help move economies swiftly onto a sustainable track.

Would such tax shifts be politically feasible? If people are asked whether they favour higher taxes, the answer is overwhelmingly no. If people are asked whether they would rather be taxed on their use of energy and on the amount of waste they generate than on their salaries and profits, the answer is very likely yes. Environmental charges give people an attractive option for savings. At present, the only way most people can reduce their tax bill is to work less and earn less income. Environmental charges would give them the option of reducing their tax bills by acting on their principles — by saving energy, recycling, or bicycling to work. Virtue is its own, but not necessarily its only, reward.<sup>30</sup>

Phasing in tax and subsidy reforms over, say, 5 or 10 years would ease the economic effects and allow for a gradual adjustment. If Canada wishes to keep the total tax burden the same it could reduce income and other taxes in proportion to the added revenues. Or it might choose to use some of the green-tax revenues for unmet fiscal needs — for instances, to reduce the budget deficit.

Virtually anywhere environmental taxes are applied, other taxes would need to be adjusted to ensure a progressive overall tax structure. Completely shifting the tax base would not be desirable, since income taxes can be designed to ensure that the wealthy pay a proportionately higher share; green taxes, on balance, would not serve this equity goal. Indeed, to offset any regressive effect, income tax rates would need to be lowered for poorer people, who would suffer, for example, from higher heating fuel prices. Government payments could compensate the very poor, who may not pay any income taxes at all now but who might experience higher living costs under an environmental tax code. Moreover, since green-tax revenues would diminish as production and consumption patterns shift away from the taxed activity, they would not be as constant a source of revenue as income taxes are. For all these reasons, some blend of taxes seems best.

Federally and provincially, Canada has plenty of sticks in its arsenal; it's time to start growing more carrots.

— Ian Smyth, President,  
Canadian Petroleum  
Association

## 6. Conclusion

Over the past 25 years, the nations of the world have pursued economic prosperity as an uppermost priority. The most successful nations have emphasized what are undeniable priorities: training, research and development, labour-management cooperation, innovation, and investment. All of these have been important in the past and remain important elements of any nation's economic strategy. But they should all be based on an even more fundamental and enduring principle of economic strength: respect for the environment, and sustainable development. Sustainable development can provide for prosperity over the long run; economic growth without the hangover. There is no trade-off between ecology and economy; they are partners in prosperity.

As we look around the globe, we can see the unmistakable signs of change. Governments have started to undertake tax and subsidy reform with sustainable development in mind. In the United States, the Friends of the Earth have published *The Earth Budget*, the first comprehensive review of all U.S. Federal expenditure programs from an environmental point of view.

As a companion piece to this *Action Plan*, the IISD has carried

out a project focused on examining closely these reforms which have worked most successfully and which haven't. Reforms are being examined from across North America and Europe, and include reforms related to:

- ❖ polluter pay taxes, levies, charges
- ❖ incentives for clean technology
- ❖ energy and carbon taxes, transportation taxes, incentives for alternative energies
- ❖ waste management deposit systems
- ❖ agriculture subsidy reforms, soil conservation, wetlands and forestry.

This work will culminate in *The International Casebook on Leading Practices*, giving details on:

- ❖ when the subsidy or tax change was made
- ❖ the goals of the change
- ❖ the problem the change was designed to address
- ❖ the impact so far on promoting sustainability
- ❖ the cost-savings (or added revenue) for the government
- ❖ the economic groups most affected by the changes, and the adjustment programs put in place



As this *Action Plan* reveals, the greening of taxes and subsidies will likely dominate much of the public policy, public finance, environmental and resource management agenda in the 1990's. The reasons?

- ❖ budget pressures will make it difficult to spend more to save the environment. Protecting the environment will have to come not from spending more, but from spending and taxing *differently*.
- ❖ public support for "green" taxes remains high, as does the desire to see governments take decisive steps on the environment.
- ❖ governments traditional "command and control" response to environmental problems will increasingly need to be complemented by the use of economic and fiscal instruments.
- ❖ sound environmental policy is increasingly seen as underpinning strong economic performance and job growth.

This *Action Plan* has tried to scope the many issues raised by the "greening" of government budgets. Some of the changes involve fundamental shifts. Others require considerably more research and planning. In our opinion, however, neither the magnitude of the changes required nor the amount of additional work that will ultimately be required should serve as a reason not to take action immediately. The general approach that is required is twofold. The first

step is to stop sending producers and consumers the wrong signals through environmentally-damaging subsidies. The second is to start sending positive signals by incorporating environmental considerations explicitly in prices.

The immediate priority should therefore be to study the environmental impact of subsidies, to ask whether the objectives for these policies are still valid, and if so, whether they can be achieved in a more sustainable fashion. The second area for action should be increased experimentation with ecological tax reform. There are many obvious areas where environmental taxes could be applied. In addition to immediate economic and environmental benefits, this approach should help to reveal and to increase our understanding of many of the more fundamental institutional, economic and scientific issues that will have to be resolved in order to green the budget process as a whole.

There are always technical and political difficulties to changing taxes and subsidies, but, with increased effort, and the knowledge that the current tax and subsidy regime may be serving to dig us in deeper — both financially and environmentally — these difficulties should not be insurmountable.

SUSTAINABLE DEVELOPMENT  
CAN PROVIDE FOR PROSPERITY  
OVER THE LONG RUN; ECONOMIC  
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