

lap, real costs are often hidden and the effectiveness of all the measures is unclear. To further complicate the picture, a new consumer incentive program for switching off oil has recently been announced. The fact that this program is only partially described adds to the confusion.

The Socially Optimal Energy Price

Canadian consumers do not pay the *true cost* (the total cost) of oil. The true cost is higher than the *price* in Canada for a variety of reasons. (1) The relatively low price of oil discourages production and encourages consumption. Ideally, therefore, if it is best from a *social* perspective to discourage consumption and encourage production, then a higher oil price would be "better" than a lower price. We recognize, of course, that political and institutional realities also introduce important limiting factors into oil pricing arrangements. (2) By increasing our oil dependency *today*, and therefore our imports, we give OPEC more power in the *future* to raise the world price of oil that we will eventually have to pay. This is one part of the real cost of consuming more today. (3) Acid rain, the production of carbon dioxide and the numerous emissions which result from burning fossil fuels impose environmental costs.

Theoretically, by adding up all of these various factors, what is called a *socially optimal energy price* can be determined. The accounting task itself is in reality impossible to perform. It is clear though that if oil is substituted for by alternatives that do not embody the real costs associated with oil consumption, then the value of the substitution is at least equal to *the cost which is avoided*. For the United States, the Department of Energy has estimated that the socially optimal price for oil in the U.S., when only some cost factors are accounted for, is about \$3 per barrel above the world price; while in *Energy Future* it is estimated that the socially optimal price was between \$35 and \$85 in 1979 even when some social and political costs were excluded (Stobaugh and Yergin, 1979).

The task of finding the appropriate mix of incentives and regulations is indeed a difficult one. Even more elusive is the philosophy concerning whether the market should be interfered with and why. This philosophy must be clear, so that the purpose of programs is consistent and clear.

Barriers to alternative energy commercialization obviously exist. Most agree, however, that when an

Subsidies

Subsidies are indirect or direct payments usually made by governments to reduce the cost of purchases to consumers or the cost of production to producers. Consumers receive an indirect subsidy on oil consumption when they pay less than the import cost of oil. The *direct* subsidy on oil imports is financed by all Canadians through general tax revenues, by oil producers through the oil export tax and by oil consumers through the Petroleum Compensation Charge. Oil producers also finance (through foregone earnings) an *indirect* subsidy on domestic oil consumed in Canada because they receive less for their oil than they could receive on the world market. The indirect subsidy facing consumers is therefore also an indirect tax (negative subsidy) on oil production because revenue is indirectly transferred from producers to consumers. Alternative energy production is inhibited because consumption of its output is not subsidized to the same extent.

alternative is competitive with the socially optimal energy price (or the international price) it should be commercialized. But what is the incentive to innovate or commercialize in Canada when energy services can be conveniently derived from oil at a subsidized price of about \$20 per barrel? Although the current commitment is to higher domestic prices, if we want more alternatives to come on-stream quickly, it is evident that government incentives will be necessary.

In a country where the domestic price of oil is still subsidized, the best incentive government can provide to alternative energy sources is one which subsidizes each new unit of alternative energy which replaces oil. The subsidy should, ideally, be equal to the difference between the regulated oil price and the socially optimal oil price. This constitutes an output subsidy.

When the use of alternatives is foregone, imports are consumed instead, markets remain undeveloped, gains in achieving domestic security of energy supply are foregone, and continuing pollution from oil consumption results. In the case of conservation there is good argument for rewarding the saving of a barrel of oil because that barrel need not be imported at the world price and national security potentially threatened.

With an output subsidy, new, more expensive energy sources would likely be developed because producers would effectively receive a price competitive with that of oil, and as domestic oil prices increased the output subsidy could decrease. Consumers would not need to receive energy incentives directly but simply