dian economy before the recent cost increases accounted for only about 8 percent of gross national product, while direct fuel costs of the typical manufacturing operation were in the region of 4 percent of value added or 2 percent of the value of shipments. The industrialized economies should be able to adjust to the cost changes involved, but for the developing economies it may be a much more serious matter.

It is in the field of international monetary relations that some of the greatest uncertainties appear. In a direct sense, Canada need have little concern on the score of early balance-of-payments effects for itself because it is more than self-sufficient in net terms on oil supply and can improve its position on export account by at least as much as it loses on import account. Almost no other advanced economy in the free world is in that favourable position. As this is written the *yen* and the *franc* have already been devalued. The net additional-payments costs, even for countries such as Japan and West Germany, which have held huge monetary reserves, are so large that these reserves offer only very short-term protection. For many other economies, it is difficult to see what adjustments can be made quickly enough to make any significant contribution to financing the huge increased costs of imported energy. In India, it has been estimated that the costs of oil imports at previously planned levels will shortly exceed all foreseeable export earnings — a position which obviously will force drastic readjustments. On the other side of the fence, of course, the oil-producing countries will be amassing earnings in gold or foreign currencies in unprecedented amounts.

The whole mechanism of international payments could thus be subjected to disturbances on a most unusual scale at a time when the International Monetary Fund's Group of Twenty have so far failed to devise mutually satisfactory arrangements to cope with more normal pressures. When the crunch comes, it is to be hoped that there is not a mass scramble to save each currency and each national economy at the expense of all the others. Given a reasonable attempt at co-operation, there is one important stabilizing force upon which to capitalize. It is as much in the interest of the oil-producing economies to protect the stability of international exchanges as it is in that of the rest of the world. Some of them have already suffered from earlier devaluation of the dollar and of sterling.

A fourth consequence of the huge and sudden change in crude-oil prices is the correspondingly huge and sudden change in the regional distribution of world income. As the Shah of Iran has pointed out, the rich countries of the world are suddenly going to be a good deal less rich. Equally, the poor countries of the world which are not oil producers are going to be, at least in the short term, a good deal poorer. The beneficiaries of the shift will be the oil-producing countries, although it should be made clear that in most cases their resulting *per capita* income will leave them still well below the level of the richer countries. They will, however, be accumulating huge sums of capital. At the same time, over the next decade and beyond, most of the rest of the world must make huge capital and research and development expenditures for the creation of new and alternate sources of energy. They will be less able to generate the required funds because of the higher costs they must absorb for their current energy consumption. Part of the solution may lie in financing by the oil-producing countries, with benefit both to the capital-generation need and to an international payments balance.

Options for consuming countries

It is evident that important readjustments have to be made and that new challenges must be met. What are the options for the consuming countries? There are at least three deserving of some comment: 1) steps to achieve more efficient use of energy; 2) steps to develop alternate energy sources; and 3) a *modus vivendi* with the oil-producing countries based on long-term mutual interest.

There is a great deal of talk these days of the need for conservation. Sometimes this is put forward as a means of reducing current supply stringencies — e.g., in the United States, sometimes as a sort of moral imperative for the longer-term future. Certainly, in an absolute sense, we have been prodigal users of energy and nowhere more so than in the United States and Canada.

There has been good reason for this. Energy has been cheap and economy in the use of something which is cheap is very different from economy in the use of something which is dear. In the longer run, there is no reason to expect energy to be in short supply, but it is likely to be considerably dearer relative to other commodities than we have been used to. For quite practical reasons this will encourage economies which have not hitherto been worth while. Even if we do not set our thermostats lower, we can insulate our homes and offices, especially in new constrcution, to achieve substantial savings. In North America, higher gasoline prices will further stimulate the switch to smaller automobiles, just as higher gasoline prices in Western Europe have dictated such a pattern from the beginning.

In the thermal generation of electric power, we will have strong incentives for research and development in technologies to improve the current unfavourable ratio of BTU (basic thermal unit) input to BTU output of useful energy, now much too close to three-to-one. In industry, substantial savings can be developed now that there is a cost incentive of significance. Eventually it is certain that, for the economy as a whole, we can in such ways achieve more unit output of energy consumption without discomfort of significant sacrifice. It has been estimated that in North America savings of this kind might amount to as much as 30 percent of total energy consumption or, in other words, offset something like five to seven years of growth at recent rates.

The larger need, however, is to direct our efforts to developing major alternate sources of energy. This is not an unexpected need. Over the years substantial resources and research effort have been directed to the potential of fossil fuels other than conventional oil and gas as well as to more exotic energy sources likely to be important beyond the next two or three decades. There is now an urgent need for more. It is urgent because the common characteristic of most of the foreseeable alternates is long "lead" times — whether for difficult and extensive exploration efforts to find and produce Arctic and offshore oil and gas, or for the mammoth construction required before there can be any significant impact from Alberta's tar sands, or for development and improvement of technologies for coal gasification and liquefaction, fusion power or solar power.

North America has a special place in the equation of alternate energy sources. Leaving aside nuclear power and