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*Energy policies of petroleum-importing countries are not determined only by the price of oil. Since 1973 energy policy has also responded to changing perceptions of externalities associated with the energy system and the appropriate role for government in the economy. In that spirit, this article explores the parallels between the quest for energy security 20 years ago and for global environmental protection at present. The latter explains why the argument that government intervention in the energy sector should be minimized is once again viewed critically.*

*Les politiques énergétiques des Etats importateurs fluctuent en fonction d'autres facteurs que le seul prix du pétrole. Depuis 1973 en effet, les changements s'expliquent aussi par l'évolution de la perception des externalités associées à l'offre d'énergie ainsi que par celle de la légitimité de l'intervention publique. Le papier établit ainsi un parallèle entre la recherche de sécurité énergétique il y a vingt ans, et celle de protection de l'environnement global à présent. Cette dernière explique le retour critique actuel sur la vision minimale du rôle de l'Etat dans le secteur énergétique.*

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## From Energy Security to Environmental Protection: Understanding Swings in the Energy Policy Pendulum

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Twenty years ago, the first oil-price shock and the embargo imposed by Arab producing countries pushed energy issues to the top of government agendas, which in turn led to a significant increase in market intervention by governments in the industrialized importing countries. In the 1980s, however, energy policy went into eclipse.<sup>1</sup> Partly in response to a gradual easing of conditions on the oil market, governments ended their planning efforts, cut back their incentive programs, and voluntarily dismantled their intervention apparatus. Yet by the end of the decade, interventionism had staged a partial comeback, despite continuing moderate energy prices.

These swings of the pendulum merit study. It is tempting to interpret them as simply reflecting cyclical changes in the international oil market, in the same way that producers and buyers react to price changes. True, the steps taken by the importing countries coincided with the development of new sources to compete with OPEC oil and with greater use of substitutes for oil by consumers; the measures were also softened as the market re-

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1/ Energy policy is understood here in its usual sense to be a programmed strategy, based on forecasts of energy consumption and assessments of supply capabilities, and delivered in a number of ways: regulation (price controls, import controls, etc.), market-oriented instruments, and by way of the services of government agencies and enterprises. Like all sectoral policies, energy policy subsumes other policy goals, including those of industrial, regional and social policy. It is also influenced by foreign policy objectives.

versed. Nevertheless, the latter development preceded rather than followed the steep drop in oil prices in 1986, indicating that there had in fact been a shift in attitude about the perceived hidden costs of oil dependence (costs associated with externalities, political vulnerability, etc.). Moreover, the recent trend towards a moderate but quite real degree of interventionism does not reflect expectations of another lasting increase in oil prices, but rather the influence of a class of externalities that formerly played a smaller role — environmental costs.

In other words, the energy policies of importing countries are not influenced solely by the price of oil and the perceived cost of energy dependence. Like all sectoral policies, they are not defined purely in terms of sectoral factors. They must also reflect views of the legitimate role of the state in the economy, which change over time. In addition, they are shaped by broad policy orientations — in the areas of foreign, macro-economic, industrial and environmental policy — which also evolve. These policies condition the nature of the collective preference function and perceptions of the impacts of energy supply and use.

The aim of this paper is to identify the various factors that have shaped the energy policies of oil importing countries over the past 20 years. For each phase, changes in the modes of intervention will be linked to changing attitudes towards the externalities associated with energy supply and changing opinions about the legitimate sphere of government— developments that mirror changes in the cultural, ideological and geopolitical context. This historical approach reveals that rationales and motives are always relative, and allows speculation about conditions that will produce the next swing of the pendulum.

For the purpose of this discussion, energy policies of the industrialized importing countries will be treated as a whole, despite the pronounced institutional and cultural differences which determine the style and effectiveness of intervention in individual countries. In some countries, like the United States and Italy, official policy is more of an inspirational facade that masks a relatively limited scope for intervention, because of the existence of powerful interest groups. As

shown by the failures of ambitious programs aimed at voluntarily reducing energy dependence mounted by the Nixon, Ford and Carter Administrations, the US administration does not have the planning and intervention levers it needs to react in a timely fashion. Cultural and political-institutional factors make it impossible to maintain coherence and consistency in the definition and implementation of sectoral policies, because such policies inevitably touch upon a variety of divergent interests (Bupp, 1977). The concept of energy policy is quite different in intervention-oriented countries like France and Great Britain (up to 1979 in the case of the latter). A tradition of state supervision and coordination through sectoral planning, underpinned by powerful, centralized institutions (such as government enterprises and import regulations) makes it possible to implement coherent action plans and to establish their legitimacy through results. The energy policies of Germany and Japan after 1973 fall into an intermediate category marked by greater reliance on the private sector and market forces, informal coordination between industry and government, and a preference for market-oriented over regulatory instruments. One reason this mode of intervention has been successful is that the dynamic character of German and Japanese industry eases adjustment to price shocks, leaving less reason for intervention in the energy sector.

Despite all these differences, however, the energy policies of the oil-importing nations have always been similar in their rationale and pattern of development. One reason may be the influence of international organizations to which these countries belong: the International Energy Agency (IEA) and, in Europe, the Commission of the European Communities. Dedicated to coordinating national policies, these organizations have played a significant role in promoting mutual understanding among their members, encouraging the development of common strategies and allowing countries to learn from each other's experiences.<sup>2</sup> The IEA, dominated by the US, has

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2/ The IEA's annual assessment of the energy policies of its member nations, carried out every year since 1978, has helped develop and maintain a common core of knowledge among national administrations.

also tended, at least since 1980, to be a conduit for the diffusion of Washington's view that the proper role of government is a limited one. Thus it is not unreasonable to assume that the importing countries share a common perspective on the main aspects of energy policy.

## 1. Focus on Energy Security (1973-1981)

Following the first oil-price shock, all importing countries redefined their energy policies around the goal of better energy security, which was considered to have not only political and diplomatic dimensions (such as protecting national sovereignty and geopolitical power), but also a macro-economic dimension. The quest for energy security essentially translated into a higher price for energy and its services than was implied by the price of imported oil, since the implicit value of promoting energy security had to be included. This implicit value underlies the various motives and types of interventions discussed below.

### 1.1 *Energy Security: The Grounds for Government Intervention*

The first oil shock, coupled with the Arab embargo on oil exports, brought home to the importing countries (especially the US) their political vulnerability vis-a-vis the exporting countries. Exporters also quickly grasped that they could exploit their market power to maximize revenues for the finance of development. This laid the groundwork for a new order in North-South relations, perpetuating a climate of confrontation between producers and consumers that precluded the kind of cooperation needed to bring down international oil prices.

Another characteristic of this period was a universally pessimistic assessment of the long-term prospects for world energy supplies. Given the expected growth of energy needs all over the world, it was believed that resources of cheap fossil fuels would be rapidly depleted. This perception had first emerged during the earlier decades of rapid growth, promoted by the nuclear lobby and its long-range forecasts intended to justify the government's investments in nuclear technology. For that reason, the 1973 oil shock

was perceived by market participants as the first concrete sign of this depletion. It was believed to herald a permanent shift in the balance of market power towards the energy producers. It was even argued that the oil market would no longer go through cycles, despite the fact that all commodity markets are subject to cyclical variation. Consequently, systematically reducing oil exports was regarded as the only way to mitigate the inevitable trend towards higher prices and to reduce its impact on the importing economies. The expectation of continued higher prices justified the upfront investment required to develop substitutes for OPEC oil.

In this context, three justifications were offered for government intervention. First, there was the link to foreign policy objectives, specifically the preservation of public goods, such as national sovereignty. As the world's leading political and economic powers, the industrialized countries, led by the US, could not afford to expose themselves to political pressure from the exporting countries. That is why in 1974, faced with rising inflation, the US refused to accept the OPEC-imposed price of oil and instead began to regulate domestic prices. Political motivations also underlay the founding of the IEA in 1974. It was conceived as a weapon aimed at OPEC, with a mandate to develop cooperative mechanisms among industrialized countries to fight the risk of embargo and to coordinate national policies to reduce oil dependence.

The second rationale offered for government intervention was as a remedy for market deficiencies. The market alone could not guarantee adequate energy supplies at reasonable and stable prices, in either the short or long run. The events of 1973 and 1979 demonstrated that international market mechanisms alone could not ensure the efficient adjustment of supply to prevailing demand. The control over prices exercised by producer governments was regarded either as an extra-market phenomenon or, where governments in fact managed sales of oil from their countries, as excessive market power reflecting the lack of ready substitutes for OPEC oil. It thus seemed perfectly reasonable for the importing countries to try to recoup this rent by working towards the erosion of OPEC's market power.

The debate over the deficiencies of the international oil market cannot be reviewed here. Suffice it to say, as Adelman (1980) has argued, that there was an implicit cartelization of the market (even without agreement on production quotas), as well as a concerted effort to exploit market power. Thus rather than the scarcity rent that would have been produced by an efficiently functioning market, there was a cartel rent.

The third rationale for government intervention was based on the adverse macroeconomic effects associated with oil dependence (Toman, 1993). Even assuming that the international market is overall efficient, a sharp increase in transfers from consuming countries as part of a redistribution of rent at the international level is reason enough for intervention, given the size of these transfers and their destabilizing effects. Large unexpected transfers of revenues to pay for imported energy automatically dampen economic activity, since they lead to lower consumption of non-energy goods, less household saving and a decline in business investment. The macroeconomic effects are another significant potential externality that is not reflected in the price of oil, and they are amplified by frictional problems associated with the adjustment of private decisions.

A higher oil import bill adversely affects the balance of payments, which in turn affects the value of the national currency and so the cost of other imported goods. Following the first oil shock, oil imports as a percentage of GDP jumped dramatically from 1% (or less) to 3-5% in Germany, France, Italy and Japan. In addition, any sudden increase in the international oil price affects the price of domestic oil and other energy products and may boost inflation, even though high but stable energy prices are not inherently inflationary.

It is difficult to estimate the potential value of these externalities, since the dynamics are complex. First, a price shock accelerates the obsolescence of energy-intensive capital equipment, since users will tend to protect themselves against high and unstable energy prices by purchasing more appropriate equipment. Second, the value of energy security depends on the flexibility and adaptability exhibited by a given economy in the give

and take of international competition, since it appears to operate as a zero-sum game: those who adapt the fastest will gain, and the others will lose. Germany and Japan managed to realign their balance of payments very quickly following the shocks of both 1973 and 1979, gaining at the expense of the other industrialized importing countries. This allowed them to place a smaller implicit value on reducing oil dependency. Although the results of their initial policies aimed at increasing energy security were generally mediocre, they did not have to adopt a more interventionist stance because their industrial base was flexible enough to cushion the macroeconomic costs of the oil shocks.

In any event, the weight implicitly attributed to energy security in the formulation of policy and the extent of negative externalities led to a positive social return on costly projects to diversify oil supply and develop domestic energy production and technological programs with long-term and unpredictable impacts. Similarly, the hidden costs of oil dependence justified subsidies to maintain unprofitable domestic industries (mainly coal). Despite the inflationary impact, domestic prices were allowed to float up to the international price (except in the US, however, where oil dependence stood at 35%) without any decrease in the already high level of indirect taxes in order to facilitate adjustment. The international price was regarded as the marginal cost of domestic energy supply.

### *1.2 Intervention Aimed at Reducing Dependence*

Even the countries which up to 1973 had traditionally placed more confidence in market forces than in regulatory intervention opted for broader government control and involvement. Initiatives extended to reinforcing market mechanisms when it furthered the goal of reducing oil dependence. In the US, existing regulation of the wellhead price of natural gas and new regulation of oil prices maintained domestic prices well below international prices. This hampered the revival of exploration and production activities (Stobaugh and Yergin, 1983). The gradual deregulation of these prices after 1978 was specifically aimed at stimulating new investment exploration

and production.<sup>3</sup>

During this first phase, policies also changed in response to new obstacles. At first, they tended to be supply-oriented. However, they gradually acquired demand-oriented components as the flexibility and extent of the link between energy and the economy became clear, as expertise developed and alliances of interest formed in the new and expanding field of energy conservation, and as the development of domestic supply ran into some serious difficulties (opposition to nuclear energy and to exploration in some potentially oil-rich areas, etc.).

#### THE QUEST FOR OIL SECURITY

Prior to 1973, most of the major industrialized nations allowed the international oil companies considerable freedom in their operations, particularly in terms of access to resources and refining. France, Italy and Japan were exceptions; they used regulatory protection to foster the development of their domestic oil industries. The US and Great Britain were content to support the foreign activities of their national companies through diplomatic means. The new government activism with respect to oil was manifested in a number of ways:

- The regulated development of strategic stocks of oil and petroleum products and the negotiation of emergency supply arrangements between countries to limit the short-term impact of supply disruptions — In many countries, the cost of maintaining oil stocks was assumed by the government, since it was regarded as an insurance cost. The OECD countries also pursued multilateral cooperation as the most efficient way to limit the political and economic risks of supply disruptions. With the exception of France, they all joined the International Energy Agency, which initially focused on setting up cooperation mechanisms. And while there was never an explicit agreement among the industrialized countries to that effect, oil stocks were also

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3/ In April 1979, the domestic price of US oil stood at \$9.5/bbl compared with \$16/bbl on the international market.

regarded as a credible deterrent to speculation-fuelled price rises and as a way to reduce the associated macroeconomic externalities.

- Efforts to negotiate state-to-state contracts to diversify and secure part of their oil supplies at guaranteed prices and to arrange sales of industrial or military equipment to realign balances of payments — There were many such contracts after 1975. France, Japan and Italy pursued these initiatives most actively, in marked contrast to the US, which regarded such arrangements with suspicion. These contracts were abandoned in the early 1980s after the second oil shock; besides being denounced by the producing countries for their rigid price clauses, they turned out to offer little guarantee of a secure supply in the event of a crisis.
- Incentives aimed at diversifying import sources, especially from non-OPEC producers, and at promoting domestic exploration efforts — These included tax breaks and the opening of the continental shelf and US federal lands to exploration.
- Support for the development of national oil corporations mandated to operate abroad in non-OPEC areas and in hitherto-neglected regions on the geographical frontier<sup>4</sup> — Foreign companies were regarded as less controllable in the event of a drastic reduction in oil supplies and as unlikely to develop remote resources in accordance with the national interest.

Some governments focused their attention on those potential resources that were most costly to develop, leaving it to the oil companies to develop the relatively cheap conventional resources that were expected to be fairly quickly exhausted. In Canada, the government sought to plan for the future by aiming for medium-term self-sufficiency, and so it concentrated on developing unconventional sources (e.g., remote Arctic regions and tar sands). Unfortunately this meant that there was less incentive to explore more conventional areas, while expenditures on difficult sites skyrocketed.

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4/ This occurred in Germany with VEBA and in Japan with the JNOC. In Great Britain, the government created the BNOC in 1974 to develop North Sea resources.

## DEVELOPMENT OF OIL SUBSTITUTES

Even though domestic products could not compete with imported oil, countries sought to support and develop their domestic production capacity, and they encouraged greater use of imported natural gas and coal. They also guided substitution at the user level by forbidding the use of hydrocarbons (oil and gas) in new electric power plants<sup>5</sup> and by encouraging industries such as cement companies to convert to coal-fired equipment.

In terms of domestic supply, governments saw the development of nuclear energy as the main long-term answer. At the time nuclear power was still regarded as a competitive option and public opinion had not yet turned sharply against it. Nuclear energy was considered the key to expanding electric power capacity and nuclear technology was already being widely marketed. In some countries – France, for example – nuclear power was expected to eventually replace conventional fuels in thermal uses.

In regard to coal, the countries that had been striving to reduce their heavily subsidized domestic production (Germany, France and Italy) abandoned this objective after 1973, while keeping subsidies and protective measures in place (e.g., import controls and purchasing requirements). In some countries, governments strongly encouraged national companies and large purchasers to acquire interest in foreign mines. This occurred in France and particularly in Japan, where the "sogo-sosha" (trading companies) invested in mining operations in Australia, Canada and the US.

In natural gas, large import contracts were signed by European gas pipeline corporations and by major Japanese users (electricity companies). The durability and cost of transportation infrastructure and the long terms of the contracts were seen as a security guarantee, in that buyer and seller were committed to a relationship based on mutual interest. European governments sometimes took an active role in developing these ar-

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5/ As in the Power Plant and Industrial Fuel Use Act of 1978 in the US and the 1975 European Directive in the European Community.

rangements when state-to-state contracts served the ends of foreign policy.

## DEMAND-ORIENTED INITIATIVES

On the demand side, governments began gradually to encourage consumers, whose energy consumption patterns had for too long been distorted by low prices, to rationalize their behaviour and improve their equipment. Given the many market impediments to optimal resource allocation, price alone no longer appeared to be a powerful enough lever. What was needed was to lead consumers to their efficiency frontiers (where they rarely situated themselves spontaneously), encouraging capital-energy substitutions that made sense in light of the short pay-back periods involved. Accordingly, government action combined information and skills training programs with regulatory measures (such as insulation and efficiency standards), subsidies, and tax incentives for investment.

Governments also began to actively promote the development and dissemination of efficient technologies. It was no longer enough to rely on the technologies in the existing production function; it was time to push the production frontier out. It was no longer enough to simply support the allocative role of prices; it was time to focus on their pivotal role in guiding innovation. In this regard, some governments used regulation to create niches of innovation in order to foster and disseminate new technologies. In 1978 the Public Utilities Regulation Policy Act (PURPA), which promoted cogeneration and renewable energy solutions, was passed in the US. Japan, along with some other countries, imposed a special tax on imported oil (1.2%) to finance the development of its energy conservation technologies.

## PROMOTION OF NEW ENERGY TECHNOLOGIES

Government-sponsored R&D to develop substitutes for OPEC oil is arguably the best response to the externalities associated with OPEC market power. In the heady optimism for technology that marked the 1970s, there was great hope that a technological breakthrough (e.g., nuclear reactors,

tar sands development, coal-based hydrocarbon synthesis, nuclear fusion) would provide a long-term solution by making available substitutes for oil on a vast scale.

Governments had to develop generic knowledge and basic technological know-how.<sup>6</sup> They also had to assume a large part of the cost of demonstrating new technology and to provide risk guarantees, since the enormous sums involved were beyond the financial capacity of even the major firms. In response to the first oil crisis, expenditures by governments on energy R&D accelerated, and attention turned from nuclear power alone to other technologies, especially in the US and Japan. The US "synfuels" project, launched in 1980, is a typical example. The aim was to use new technologies to create a completely new, plentiful substitute for imported oil. A myriad of projects centred on different technologies (tar sands, synthetic fuels, coal gasification, etc.) were sponsored through direct subsidies and risk-sharing contracts.<sup>7</sup>

It is clear from the variety of intervention and the widespread reliance on energy policy that the importing countries placed great stock in energy security and that they did not trust international markets to smoothly effect the necessary adjustments. Domestic prices were expected to fully reflect the international price of oil, which served implicitly as an "externality price" to guide decisions aimed at reducing the hidden costs of dependence. Governments believed that it was their job to help both producers and consumers adjust to the new cartel price and to solve the problem of inadequate domestic supply. They had to pave the way for long-term adjustment by sponsoring major innovation projects, and they had to assume the role of the market in order to guarantee short-term supply.

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6/ Because markets are inherently myopic, market signals alone will not encourage private agents to acquire scientific and technical knowledge. In addition, because the benefits of such knowledge accrue only partially to those who fund its acquisition, market forces will not automatically produce a socially efficient level of R&D.

7/ A projected \$88 billion in public funds was allocated to the project.

## 2. Changing Perceptions of the Cost of Energy Dependence (the 1980s)

While it is not possible to distinguish the effects of energy policies from the effects of high prices, these policies certainly contributed to the gradual revival of confidence in market forces by helping to weaken OPEC's market power and thereby pave the way for a new perception of the role of governments.

Energy policy went into eclipse during the 1980s for two other reasons: a change in opinion regarding the economic risk and political danger of oil dependence, particularly in the US; and criticism by free-market advocates of the "welfare state" and government intervention. We will examine below, first, how these changes affected attitudes towards market efficiency and the externalities associated with energy security and, second, how the withdrawal of governments followed slightly different paths depending on the influence of regional and local institutions.

### 2.1 *The Changing Context of Energy Policy*

The decline of interventionism was partly the result of a series of adjustments that took place on energy markets from 1973 on in response to higher prices and policy shifts. Oil imports by the OECD countries fell from 1220 millions of tonnes of oil equivalent (Mtoe) in 1973 to 757 Mtoe in 1985. Rates of energy and oil dependence declined significantly, despite the difficulties affecting nuclear energy development in almost all the countries involved (with the exception of France and, to a lesser extent, Japan).<sup>8</sup>

There were two important consequences of these developments. First, the economic importance of oil imports decreased substantially, particularly as economic growth continued. Second, OPEC's market power was progressively eroded by the gradual emergence of new competitive forces (in the form of non-OPEC oil and substitutes for oil). The result was a return to a more moderate level of prices starting in 1986 — proof that the oil-exporting countries of OPEC could not retain their market power indefinitely. The

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8/ See the article by Damian (1994) in this issue.

restoration of moderate prices also undermined the prevailing belief that hydrocarbon reserves would be rapidly exhausted and that oil prices would skyrocket to perhaps \$100/bbl by 2000. Macroeconomic policymakers no longer considered the reduction of energy dependence as a priority and began to listen more favourably to those arguing for a reduction in government intervention. In fact, however, the changes that occurred in 1986 were merely the continuation of a well-entrenched pattern.

#### CHANGING PUBLIC PREFERENCES REGARDING ENERGY SECURITY

As the goal of energy security faded in importance the market seemed to regain its lustre. The gradual recognition by the US of the reality of energy interdependence resulted in a more realistic view of the political and military aspects of oil security — the focus of foreign policy shifted after 1980 to strengthening the country's military power. The Reagan Administration believed that the best way to achieve energy security was to couple market forces with a suitable insurance policy involving diplomatic and military action and the filling up of strategic reserves (Deese and Nye, 1981; Nau, 1984). Economic cooperation aimed at reinforcing regional stability in the Middle East has also accompanied the US's new *laissez-faire* approach to energy since 1980.

The prospect of imports breaking the symbolic threshold of 50% of oil consumption no longer aroused the same political reaction. The oil countershock did nothing more than trigger a discussion on the idea of imposing a \$10/bbl tax on imports to protect domestic production by guaranteeing a price floor (US DOE, 1987). But macroeconomic and redistributive arguments (e.g., a desire not to penalize consuming regions) defeated this proposal. Between 1989 and 1992, the Bush Administration took no action despite its earlier interventionist stance, daunted by the web of conflicts of interest that it would have had to untangle. It is clear that US oil dependence is now considered as irreversible and that reducing dependence is not a priority compared with other macroeconomic objectives, such as fighting inflation and reducing the public debt.

Two factors have more recently helped bolster this trend. The North American Free Trade Agreement has significantly improved US access to more-secure import sources, although the trend towards diversification had begun earlier with purchases of Canadian oil and gas. In addition, the flexibility shown by the oil market during the 1990-91 Gulf War strengthened confidence in the ability of market mechanisms to ensure short-term adjustment and medium-term stability by preventing permanent price increases even when OPEC's production capacity was pushed to the limit. From the US viewpoint, these events confirmed the effectiveness of military action to guarantee medium-term energy security, even as the demise of the USSR eliminated the risk of such interventions degenerating into a world conflict. The alternative — a return to a policy of voluntary import restrictions — would have been costly and involved a fruitless search for compromise among the interest groups affected.

Can spending to create and maintain a rapid deployment capability of military forces and to wage the Gulf War be considered part of the price of oil imports from the Middle East? It has been suggested that military expenditures are a substitute for maintaining and developing uncompetitive domestic production capacity (Hall, 1992). However, while military expenditures may *a priori* appear to be an external effect of dependence on Gulf reserves, they cannot be considered solely as an oil security cost, since they serve a variety of other foreign policy objectives, such as international stability in a broader sense. This makes it difficult to consider such expenditures as simply a hidden surcharge on US oil dependence.

#### RELIANCE ON MARKET FORCES

Even before OPEC's market power began to erode, the style of government intervention in the energy sector had been changing with the rise to power of strong free-market advocates in certain countries (particularly the US and Great Britain) and the spread of their ideas through international organizations like the IEA and the EEC. According to this point of view, the main culprit in energy problems and economic inefficiency

**Table 1: Reduction in Rates of Oil Dependence of Importing Industrialized Countries (%) \***

	US	Japan	Germany	France	UK	Italy
1973	16.9	79.0	54.3	67.3	50.0	79.0
1985	12.5	57.0	40.7	41.8	-25.0	58.7

\* Ratio of net oil imports to primary energy consumption

Source: IEA, *Energy Policies of IEA Countries* (annual reviews).

in domestic supply was government itself. Adjustment to change should be left to natural market forces and the actions of private agents. According to the British Minister of Energy in 1982, "The task [of government] is ... to set a framework which will ensure that the market operates in the energy sector with a minimum of distortion and that energy is produced and consumed efficiently" (Lawson, 1992, p.23). The free-market approach, it was argued, could achieve security of supply more cheaply than voluntary action, which carried too high an opportunity cost relative to other desirable economic goals. Thus incentive programs should be discarded in favour of deregulation and privatization to stimulate competition.

## 2.2 Reactions of Governments: A Change of Style

The retreat from interventionism was manifested in several ways.

*Free trade:* With the implementation of a free-market philosophy, barriers to trade in energy products between countries were dismantled, particularly within regional trading blocks. In the US, this occurred with oil and petroleum products in October 1981, and in Canada with spot sales of oil and gas in 1984 and with electricity in 1990. This trend culminated in the negotiation and implementation of the chapter devoted to energy in the 1988 Canada-US Free Trade Agreement. In Western Europe, following the Single Act in 1987, the members of the European Community bowed to pressure from the Commission and committed themselves to a series of reforms aimed at removing the last remaining barriers to energy trade.

*Less support for commercially non-viable produc-*

*tion:* Protection for unprofitable domestic coal operations in the form of subsidies, purchasing requirements for electric companies, import quotas, etc. first came under fire in France and then later in Germany, Spain and the UK. Social consensus was sought in planning production cutbacks. When prices fell, the US elected not to maintain production at unprofitable oil wells, although some argued in favour of preserving assets that would be costly to reactivate in the next round of the price cycle.

*Partial deregulation:* Administered producer prices for fossil fuels were deregulated. When it came to power in 1981, the Reagan Administration removed controls over the wellhead price of oil. In Europe, countries that had previously regulated oil prices also relaxed their controls (France in 1986, Italy in 1991, etc.). The Thatcher government, similarly concerned with giving free rein to market forces, removed most government controls over the development of hydrocarbon resources.

*Privatization:* In countries where public corporations and mixed enterprises were involved, ownership regulations were also affected by the neo-conservative trend (Vickers and Yarrow, 1988). The change was more rapid in the oil sector than in the gas and electricity sectors because public-owned oil companies were thrust into a competitive environment that forced governments to grant them extensive strategic autonomy.

*Competition in energy-distribution industries:* The most important reforms in the energy-distribution industries were not so much ownership changes as the introduction of competition, which had a real impact on the operations of these industries (Vogelsgang, 1991). In the natural gas sector, third-party access to gas pipelines was granted in Great Britain in 1982, in the US between 1984 and 1986, and in Canada in 1985. These reforms made possible direct transactions between producers, consumers and distributors, which encouraged the emergence of new actors (traders) and new market instruments (spot and futures contracts). In the electricity sector, competition was introduced more carefully. The most radical reforms took place in Great Britain with the dismantling of the state-owned system and privatization of the electricity industry in 1990.

In the US, reforms were aimed mainly at facilitating industry entry and instituting long-term competition between independent producers and existing public utilities through "competitive bidding."<sup>9</sup>

*Decline of energy conservation efforts:* Another symptom of government withdrawal was a decrease in public spending on energy conservation, particularly following the 1986 oil countershock. In the US, the withdrawal began in 1981 when the Reagan Administration resolved that consumers themselves should decide how best to adjust to the new higher price of energy. The process of tightening end-use consumption regulations also slowed. Moreover, when the price of oil subsequently fell, no attempt was made in any country to maintain incentives through higher taxes.

*Decline of government-sponsored research:* According to the free-market philosophy, the responsibility of governments is limited to promoting the acquisition of basic knowledge in promising areas and developing the technical know-how required to counteract adverse externalities (e.g., environmental damage, nuclear safety). Public money should not be poured into great showcase projects. If private firms anticipate adequate returns on their investment, they will assume the complete risk of financing themselves. The non-market benefits of such projects do not justify government intervention. Consequently, government-sponsored R&D on energy fell dramatically, first in the US, where spending declined from \$7.4 billion in 1980 to \$2.9 billion in 1985 (constant dollars), and then in all the other countries except Japan from 1985 on. The decline in R&D spending mainly affected projects with medium-term economic spinoffs, with some of the slack taken up by private firms.

The end result of these reforms was to broaden greatly the range of actions open to private national and international energy companies. But has national policy completely relinquished its

influence over market forces and thus its ability to promote public objectives? Have the important decisions in this regard passed exclusively into the hands of the major private energy companies?

It is clear that with privatization, deregulation and the dismantling of barriers to energy trade, governments have discarded their main levers of intervention, particularly those needed to implement broad energy policy programs. The decline of government involvement in the electricity industry and the espousal of private management principles have certainly limited the possibility of reactivating large-scale investment projects such as coal or nuclear facilities. It is generally more difficult to pursue capital-intensive projects with long-term horizons in a competitive environment.

However, it is important not to overstate the extent of institutional change. In countries with a large private or mixed enterprise sector, such as Germany and Japan, efforts to introduce competition in the energy-distribution industries encountered resistance. The robustness of institutional compromise on rent sharing and the effectiveness of informal cooperation between firms and governmental authorities helped avoid confrontation. The Japanese energy minister retained a significant coordinating role, while in Germany, the Länder remained major shareholders in energy enterprises (Wright, 1993). In countries with strong interventionist traditions, like France, governments simply took a less active role, adopting more of a hands-off attitude towards public enterprises and encouraging them to adopt a private-sector management style.

Even in countries where reforms were the most radical and where governments opted to abandon energy policy entirely, interaction persisted among the authorities, energy producers and energy consumers. Governments continued to exert an influence over energy developments through market-oriented instruments and informal, ongoing contacts with top executives. And with the privatization of government monopolies and the introduction of competition into the distribution industries, new regulatory frameworks had to be defined — and sometimes they were more restrictive than the ones they replaced.

Another sign of continuing government in-

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9/ Direct access to distribution grids for independent producers was not granted in the US until 1992. Note that some European countries — Spain, Italy, Holland and Portugal — have also significantly eased their entry regulations for independent producers since 1988.

volvement was the emergence of regional agencies in sectors where the central government had hitherto played only a minor role or which it had already largely abandoned. This was particularly true in countries with federal structures. In the US, for example, several individual states introduced their own energy conservation policies. With the spread of integrated resource planning, the scope of regulatory action by state public utility commissions gradually broadened as the economic and social returns on supply-side investment were compared with those of demand-side management (DSM). Various incentive programs were put in place to make it easier for electric utilities to institute DSM programs.<sup>10</sup> In Germany, beginning in 1986, a number of Länder (including North Rhenanie-Westphalia, Sarre and Schleswig-Holstein) set up agencies to run special energy conservation incentive programs, at the same time as the federal government was severely cutting back on its fiscal commitments in this area.<sup>11</sup>

To sum up, with a return swing of the pendulum after 1981, energy policy faded in importance as confidence in market forces returned. The groundwork for this change was laid by a shift in the perception of the costs and risks associated with energy dependence. Yet governments remained very much involved, attempting to vary degrees to influence the direction of these forces through regulation and incentives.

### **3. A Return to Interventionism: The Growing Importance of Environmental Factors**

Since the late 1980s, even those governments most devoted to free markets have become much more interventionist in regard to energy. This reversal did not occur because free-market philosophy and deregulation have been tried and found wanting — that movement continues in several

industrialized countries, including Scandinavia and Australia. Neither is the turnaround due to a change in opinion about the risks of dependence. The current view remains that the oil market will be relatively stable in the medium to long term and that the risks of energy supply interruptions are limited. Such an outlook allows one to be optimistic about long-run prospects for non-renewable resources. The potential medium-term problems identified in some forecasts (e.g., IEA, 1993) have not sparked any significant interventionist reaction. The US, sure of its special relationship with Saudi Arabia, is focusing on macroeconomic objectives and continuing to favour low prices.

A dramatic new swing back to active interventionism in the industrialized countries in the future will only occur as a response to a new round of persistent pressures on the oil market that will once again be interpreted as the result of market imperfection.

The current revival of moderate interventionism mainly reflects a resurgence of interest in the environment, an interest which had been smothered by the first oil-price shock. Around 1985 public attention began to focus on acid rain and the greenhouse effect. Governments were forced to respond to these environmental concerns, and their initiatives were similar to those seen earlier as part of the quest for energy security. In both cases, there was recognition of the role of externalities and an inclination to deal with them through pricing mechanisms. As will be discussed later, the particular nature of the new environmental concerns (especially the greenhouse effect) and their possible remedies (reducing CO<sub>2</sub> emissions) dictated a basic approach that was similar to that for reducing energy dependence, since, unlike the remedies for some pollution problems, "end-of-pipe" investments were not feasible.

#### *3.1 From Environmental Constraints to Environmental Standards*

In the context of government policy, regulatory actions have long been considered a more efficient way to encourage technological adjustment than market-oriented instruments. Environmental

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10/ In 1990, the Electric Power Research Institute studied more than 1300 DSM initiatives. It estimated that these actions saved a total of 35 TWh or 1.3% of annual demand in that year alone (Hirst, 1992).

11/ A similar pattern was seen in Australia, Canada and Spain.

legislation introduced in the early 1970s established regulations aimed at constraining industry and consumer choices; the US Clean Air Act of 1970 and its subsequent amendments are a good example. Adjustment measures included adding anti-pollution devices to existing technology (e.g., dust collectors, flue gas desulphurization devices, catalytic converters) and improving the energy products themselves (e.g., standards for petroleum products).

By forcing industry and consumers to absorb a substantial portion of the environmental costs associated with supplying and using energy products, governments induced a shift to cleaner techniques. This had a significant impact on the cost of supplying energy products. It has been suggested, for instance, that on average a surcharge of 40% was added to US electricity generation.<sup>12</sup> Environmental constraints also erected insurmountable political and regulatory roadblocks to large-scale investment and resource development projects. For example, nuclear programs in several countries were cancelled and off-shore oil exploration was halted in the US. These obstacles can be viewed as reflecting the implicit priority given to environmental protection over energy security in society's collective preferences, as revealed by democratic processes.

Around 1985, following a long lull in regulatory activity precipitated by the oil shocks, the regional and even global dimension of the pollution problems viewed as most serious by the public led to a revival of interventionism. Only national governments can speak on behalf of those affected by cross-border pollution, and only national governments can negotiate responses to global climate problems, since the only hope of success lies with international cooperation and coordination. Governments also have an obligation to consider the welfare of future generations, given that the phenomena involved are irreversible.

The energy sector is the primary target when governments decide that the most effective way to deal with the problem of climate change is to focus on reducing energy-related CO<sub>2</sub> emissions, rather than on other greenhouse gases. Since adding CO<sub>2</sub> recuperation equipment is not a viable option,<sup>13</sup> governments have little choice but to

concentrate their efforts on innovation at the source — on energy demand and supply technologies. One way to enhance the exploration of technological possibilities in the medium term would be to devise an incentive program to compensate for the market's inability to capture long-term externalities. Progressively higher taxes on CO<sub>2</sub> emissions (as proposed by the EEC countries) would provide a price signal to channel technological progress in new directions. Environmental protection is now an integral part of energy policy development from the outset and is one of the main criteria of success. According to the IEA, "The central policy goal is still to maintain and increase energy security, integrated with policy development objectives of environmental protection and sustainable economic growth" (IEA, 1992a, p.15). In short, active government involvement in the energy sector is once again perfectly acceptable even in countries with decidedly free-market philosophies.

### *3.2 Convergence of Objectives: "No Regret" Strategies*

Policy development tends to proceed by fits and starts, particularly because, faced with international competition and recession, governments want to minimize the opportunity costs associated with various courses of action. Those governments most concerned with economic growth, as was the Bush Administration, are reluctant to tackle the problem of the greenhouse effect without knowing how dangerous it actually is. There is also debate over the most appropriate instruments for the task: marketable permits, CO<sub>2</sub> taxes, fuel consumption restrictions, efficiency standards, etc.<sup>14</sup>

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13/ The Japanese claim to be developing CO<sub>2</sub> recuperation technologies as an alternative to wholesale switching of technology. However, many experts are sceptical.

14/ The Scandinavian countries unilaterally imposed a carbon tax in 1991. The Japanese government is supporting the development of clean technologies (including "end-of-pipe" CO<sub>2</sub> absorbers) in the hope of launching a new technological wave that will restore its economy's competitive advantage.

The vast majority of governments prefer for the time being to follow an intermediate course known as "no regret" energy policies. The idea is to implement measures that are fully justifiable in terms of other objectives like energy security and economic efficiency. In other words, taking action against the greenhouse effect makes sense given the externalities associated with reducing energy dependence and the allocative gains associated with more efficient energy use, even though by itself this goal may not now justify government intervention.

It should be noted, however, that simultaneously pursuing the goals of environmental protection and energy security can lead to conflict over the means of intervention. Consider such actions as opening up environmentally fragile areas to oil exploration or providing subsidies to coal production. There are also some potential conflicts between environmental protection and energy efficiency.<sup>15</sup> From a more global perspective, the CO<sub>2</sub> reduction policies of the industrialized countries may also conflict with the interests of the petroleum-exporting countries. The latter consider ecotaxes as an unwarranted attempt to capture their oil rents and as a factor dampening the oil futures market. They threaten to regain their market power by halting capacity expansion in order to trigger worldwide price increases, a move that would probably revive energy security concerns in the medium term (Yamani, 1993).

In any event, policies are now primarily demand-oriented, seeking to reduce market obstacles and imperfections with respect to energy conservation. They aim as well to eliminate subsidies for unprofitable fuel production (which are also denounced by the proponents of free markets) and to promote the use of natural gas, considered the cleanest of the fossil fuels.

Much has been made of the convergence of objectives between free-market reform and environmental protection. For example, introducing competition in the electric power industry would encourage the development of combined-cycle plants, which are better for the environment (Skinner, 1993). However, the development of

capital-intensive technologies that will themselves be environmentally friendly from a global perspective (e.g. nuclear plants,<sup>16</sup> geothermic "hot rocks" technology and solar satellites) will be discouraged by these reforms: these options are likely to require monopolistic structures and solid public support.

The "no regret" policies that have been instituted in order to fulfil commitments to maintain greenhouse gas emissions at 1990 levels in the medium term (IEA, 1992b) are remarkably similar despite differences of culture and methodology. In Great Britain, the government unveiled an action program in September 1990 to provide more funding for energy efficiency (for instance heat pumps) and renewable energy (UK Department of the Environment, 1990). In the US, the controversy over climate change bolstered the influence of the environment lobby in the long process of drafting a general energy policy bill; the resulting legislation was passed in October 1992. This act is essentially a catalogue of previously enacted federal initiatives to promote energy efficiency (e.g., new standards, assistance to government action, incentives for industry) and renewable energy technology (e.g., subsidies and tax credits).

## Conclusion

A number of conclusions can be drawn from this historical analysis of trends in energy policy.

First, interventionism on the part of oil importing countries is generally founded on the perception that energy markets have significant undesirable external effects, which governments try to correct. Thus energy security and environmental protection are parallel goals in terms of both their nature and the means of dealing with them.

Second, interventionism by the importing countries waxes and wanes in step with the market cycle of international energy prices. An easing of conditions tends to restore confidence in the ability of markets to ensure stable supply at reasonable prices. It also greatly influences percep-

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15/ See Anderson (1994) immediately following this article.

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16/ If satisfactory solutions are found to the problems of safety and waste disposal.

tions regarding long-term prospects and the horizon for non-renewable energy resources, which in turn affect the perception of the costs of dependence. One of the major changes of the 1980s was the ebbing of fears of rapid energy depletion. It should be noted, therefore, that recent changes in energy policy are not driven by expectations of future price shifts.

Third, besides changes in actual market conditions, energy policy interventionism is also influenced by cultural and ideological change. All things being equal, such change produces paradigm shifts in policy making and conditions perceptions of externalities (approaches to energy security and environmental costs) and attitudes towards the government's right to intervene in the economy. This was true of the rise of free-market philosophies in the post-Keynesian period. It was also true of the new approach to energy interdependence and oil security in the US after its foreign policy choice to reinforce its political and military might. This produced a strong *laissez-faire* approach to oil. Looking to the future, the shift away from government intervention and towards large operators and market forces may appear irreversible, given the pattern of development of the industrialized economies. Yet rethinking the minimalist approach to governments' role in the economy, combined with the enshrining of environmental concerns in the public agenda, will likely lend a new legitimacy to interventionism, even if political and public interest in the greenhouse effect flags.<sup>17</sup>

All oil importing countries must face the fact that the supply of energy will continue to be subject to externalities and to long-term factors that are not well accounted for by market processes. While energy remains one of the basic resources of economic activity, uncertainty is growing about the internationalization of energy markets and the globalization of geopolitical and environmental issues. No matter what style of intervention they opt for, governments cannot withdraw

from the energy sector for long, because short-sighted market forces are not up to the task.

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17/ Given the scientific uncertainty over the greenhouse effect and the difficulty of achieving emission reductions, it is unlikely that the scientific and environmental policy communities can continue to mobilize public opinion and government attention indefinitely.

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