US Energy Policy In The Face Of Growing Oil Dependence

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The purpose of this paper is to explore why the US government has displayed so little alarm about the country's growing oil dependence (at least up until the Gulf crisis), despite its traditional concern with security of supply. Abundant supplies of oil is the obvious explanation. However, quite apart from this factor (which has lent legitimacy to the laissez-faire approach), the US attitude may reflect a growing awareness that strong economic interdependence is a fact of life in several areas. It may also reflect the fact that the United States has been unable to resolve the conflicts of interest that inevitably accompany the implementation of policies designed to slow oil dependence, e.g., tax measures, the opening up offshore areas and higher gasoline taxes. It is concluded that, in the period following the Gulf crisis, the US will find it easier to solve its supply problems through diplomatic actions, rather than through domestic initiatives.

Ce papier cherche à expliquer la passivité de l'Etat américain devant la montée de sa dépendance pétrolière avant la crise du Golfe, malgré sa sensibilité traditionnelle aux questions de sécurité nationale. Le contexte d'abondance pétrolière est une première explication. Mais, au-delà de cette situation, qui légitime le laisser-faire, l'attitude américaine paraît résulter de la familiarisation des Etats-Unis avec de fortes interdépendances économiques dans d'autres domaines. Elle résulte également de l'impossibilité pour l'Etat américain de surmonter les conflits d'intérêt lorsqu'il s'agit de mettre en oeuvre une politique de limitation de la dépendance pétrolière: fiscalité, accès aux zones off-shore, taxation importante de l'essence. L'analyse suggère que, après la crise, il sera plus facile pour les Etats-Unis de résoudre leur problème d'aprovisionnements par des actions diplomatiques que par des actions internes.

Even before the recent Gulf crisis there was growing concern in the United States and throughout the world about the way US oil imports had risen in the wake of the 1986 slump in oil prices. The present crisis has heightened these concerns, especially since the end of the trend towards more import dependence is not in sight. In 1990 US oil dependence will approach the symbolic level of 50%, up sharply from 27% in 1985. By the year 2000, it could reach 60% (National Petroleum Council, 1987, p.96.). Total net imports, which stood at 380 million tonnes (7.6 million barrels/day) in 1989,[1] have risen by 56% since 1985, in response to the renewed growth of oil consumption and a sharp decline in production.

Consumption, which fell by 16% between 1978 and 1985, has since risen by 10%. Crude oil production, currently at 380 Mt (7.6 Mb/d), has decreased by 70 Mt (1.4 Mb/d) since 1985 in the aftermath of lower oil prices and the gradual depletion of the Prudhoe Bay oilfields in Alaska. The production decline was most noticeable in 1989 (26 Mt). Production is now at its lowest level since 1965. It seems unlikely that this decline will be halted within the next 10 years, since there has been a substantial reduction in exploration and prospecting.

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1/ This amount includes filling the strategic reserve.

Table 1: The US oil situation 1950-89

	Production[a] (Mb/d)	Net imports[b] (Mb/d)	Demand (Mb/d)	Dependence (%)
1950	5.41	0.55	6.46	8.5
1952	6.26	0.52	7.27	7.1
1954	6.34	0.70	7.76	9.0
1956	7.15	1.01	8.78	11.5
1958	6.71	1.42	9.12	15.5
1960	7.04	1.61	9.80	16.4
1962	7.33	1.91	10.40	18.4
1964	7.61	2.06	11.02	18.7
1966	8.30	2.37	12.08	19.6
1968	9.10	2.61	13.39	19.5
1970	9.64	3.16	14.70	21.5
1972	9.44	4.52	16.37	27.6
1973	9.21	6.02	17.31	34.7
1974	8.77	5.89	16.65	35.3
1976	8.13	7.09	17.46	40.6
1978	8.71	8.00	18.85	42.4
1979	8.55	7.99	18.51	43.1
1980	8.60	6.36	17.06	37.2
1982	8.65	4.30	15.30	28.1
1984	8.88	4.72	15.73	30.0
1985	8.97	4.29	15.73	27.2
1986	8.67	5.29	16.14	32.7
1987	8.35	5.91	16.67	35.4
1988	8.14	6.59	17.28	38.1
1989	7.60	7.59	17.36	43.9

[a]Crude.
[b]Crude and petroleum products.
Peak production was reached in 1970. Imports peaked in 1978 and should reach this level again soon.

Sources: Energy Information Administration (1988) *Annual Energy Review*. For 1989, API estimates in *Oil and Gas Journal*, January 29, 1989.

In the world's largest oil consuming country (868 Mt in 1989), the low-price strategy followed by OPEC since 1986 is obviously starting to bear fruit: it is hampering the development of petroleum substitutes, discouraging efforts to rationalize consumption, and jeopardizing efforts to discover and develop higher-cost deposits.

Imports of OPEC oil, particularly imports from the Persian Gulf (which pose such difficulties for the United States), are increasing rapidly. The share of Middle East oil in US net imports has risen from 15% in 1985 to 30.5% in 1989. By the year 2000, the Gulf countries could account for 50 to 60% of US imports (Yamani, 1989).

In light of its implications for national security, the deterioration in the US petroleum situation has prompted much debate since 1986. Past a certain threshold, this growing dependence has been viewed by many as a constraint on foreign policy. However, no real action has been taken since 1986, despite the recommendations of the official reports commissioned on the issue (National Petroleum Council, 1987; US Department of Energy, 1987). The surprising wait-and-see attitude of the Bush Administration, in office since January 1989, has been equalled only by the relative indifference of Congress. There is no indication that the new "National Energy Strategy," which was in the process of formulation when the Gulf crisis erupted, will contain any radical changes when it is announced in December 1990. At the present time (early fall), there appears little likelihood that the current crisis will lead to such changes.

The wait-and-see approach that prevailed prior to August 1990 marks a change in attitude in government circles. In fact, in 1986, George Bush, then Vice-President and a former oilman, criticized the laxness of the Department of Energy's (DOE) oil policy. Early in his presidential term, he expressed his concern on several occasions (*New York Times*, 1987):

> We are becoming increasingly dependent on foreign oil. That is not acceptable to any President who is responsible for the national security of this country.

The American political establishment as a whole also seemed to agree on the need for action (Plotkin, 1988, p.197). At the same time, however, the difficulty experienced since 1986 in reaching agreement on the precise means (import duties, a new tax on gasoline, oil tax incentives, encouragement of substitutes, etc.) demonstrates that energy security is no longer as important an issue as it was 10 years ago. The prominence of the issue at that time made it possible to build alliances and to reach compromises on the nature of government intervention in spite of conflicts of interest. More recently, however, the situation has not been perceived as really critical, while the energy security problem was compli-

cated by an oil import bill of $50 billion: simply doubling this figure would boost the balance of payments deficit from $100 billion to approximately $150 billion. At the same time, the gradual reduction of this deficit has become a major objective of US policy.

The United States remains a significant oil producer. In comparison with other major producers, however, its reserves are limited and more expensive to develop. Proven reserves total only 5 billion tonnes, and the reserves/production ratio is around 9 years, as opposed to an average of 89 years for the OPEC nations.

Intensive prospecting and extraction activity over a century (approximately 130 billion barrels, or 19 billion tonnes, have been produced to date) has depleted the most accessible resources, and the US has been a high-cost production area for several decades. Hence, in an international context of persistently low prices, US production will inevitably decline unless radical protectionist and incentive measures are taken. The latest projections by the DOE's Energy Information Administration for the year 2010 are extremely pessimistic: production of crude oil and condensates may fall by 200 Mt (4 Mb/d) over the next 20 years. Nonetheless, potentially exploitable resources (known reserves + resources exploitable by enhanced recovery techniques + resources as yet undiscovered) remain significant. At a price of $25 to $50 per barrel, they would amount to about 20 billion tonnes, including 8.5 billion in undiscovered resources (Mainguy, 1989, p.1062). A substantial increase in international prices might bring about a gradual stabilization of oil production.

This is not the first time that a low reserves/production ratio has caused concern; the US has been in such a situation several times since the turn of the century (in 1920, 1945 and 1970). However, the current situation is new in several respects. First, the cost differential relative to foreign producers is so great that the cost of effective protectionist measures would be very high. Second, the old concept of American dominance has been replaced by an acceptance of both economic interdependence and foreign dependence in various forms. Oil has, to a certain extent, lost its status as a strategic resource, a situation that the Gulf crisis has not completely reversed.

1. How Oil Dependence Has Been Accepted

Petroleum has long been considered a strategic resource in the United States. US oil policy, a compromise between the objective of national security and the interplay of market forces, has oscillated between interventionism and laissez-faire. Since the First World War, the importance of this objective has prompted interventionist measures or foreign policy actions to support US multinational corporations whenever imports began to rise, despite the strength of the free-market philosophy. Yet such intervention has always been tempered once the desired result was achieved or the international context changed. Growing dependence since 1986 could well have triggered a new cycle of "intervention-laissez-faire." The fact that this has not occurred may be attributed to two main factors: that there are other conditions necessary for such a "petro-policy" cycle and that the perception of the risk of dependence has changed.

1.1 Past Petro-Policy Cycles

The three past cycles of US oil policy appear to have been primarily determined by the interaction of four factors: on the political side, the international position of the US and the state of international relations; on the economic side, the degree of dependence and the situation on the international oil market.[2]

THE FIRST CYCLE (1918-40)

Starting in 1918 the US government acted to establish itself as a rising power alongside the United Kingdom, at a time when its crude oil imports were rising and the international petro-

2/ This historical account is based on various works on the history and analysis of American oil and energy policy. See, in particular: Bull Berg (1987), Blair (1976) and Vietor (1984).

leum scene was strained. When economic conditions relaxed, interventionism waned.

In the post-World War I period, American experts forecast a rapid depletion of reserves and a decline in production in the US. In 1922 the reserves/production ratio was only 10 years.[3] The government responded with tax incentives for exploration (e.g., depletion allowances and the expensing of drilling costs) and, in particular, provided significant political support to oil companies eager to expand outside the US in order to explore and produce in Latin America (e.g. Mexico and Venezuela) and in the Middle East, an area then controlled by the UK. The US government did not hesitate to flout free-market principles in order to assist companies eager to establish a presence abroad; in particular, it ignored antitrust legislation by allowing them to act in association to counter competition from BP and Shell.

By the end of the 1920s, the first cycle had reversed itself. The energy security objective became less critical, thanks to finds in Texas and Oklahoma following the resumption of exploration and the use of new seismic exploration techniques. There followed a period of abundance and lower prices that the government did not seek to correct.

THE SECOND CYCLE (1940-70)

Political factors played an essential role in the second cycle. The cycle began after 1940, in response to the international tensions resulting from World War II and their consequences for the international petroleum market. US interventionism continued through the 1950s as a result of the Cold War, political instability in the Middle East and the trend toward rising oil imports from this region.

During the war, faced with the problem of oil security in the medium term, the US government attempted unsuccessfully to set up a federal corporation to operate in Saudi Arabia and Kuwait. The government also extended renewed support to the activities of the US majors in the Middle East, notably by securing acceptance of the creation of Aramco in 1947 and by instituting a system of tax deductions for royalties paid to host countries. Finally, in 1948 it launched a program to develop synthetic fuels from coal. Once again, the discovery of new fields (in Louisiana) and the development of new techniques (offshore drilling, in particular) brought about renewed growth in domestic production. At the same time, however, burgeoning production from the Middle East operations of the majors encouraged them to import this cheap oil into the US. This was in serious conflict with the objective of energy security.

The second cycle could have reversed at that point. Because of the Cold War, however, security remained the central objective throughout the 1950s. Despite the limited volume of imports (an average of 15% for crude alone between 1954 and 1957) and the prevailing abundance of supply, the Eisenhower Administration asked the multinationals to voluntarily restrict their imports. When these voluntary quotas proved ineffective, the Administration instituted a quota system in 1959. Despite an 80% increase in oil consumption since 1957, this system managed to keep the rate of petroleum dependence below the 25% threshold until 1971.

Apart from this system of quotas, the US government gradually reduced its direct involvement in the energy field during the 1950s. The reversal of the second cycle occurred imperceptibly. After 1955, the government no longer aided the majors. In 1954 it abandoned the development program for synthetic hydrocarbons and, on the oil substitution front, withdrew from the industrial and commercial development of nuclear reactors, constraining itself to limited financial assistance to companies involved in the prototype phase.

THE THIRD CYCLE (1970 TO THE PRESENT)

The third petro-policy cycle began in the early 1970s under the combined influence of four factors: the weakening of the geopolitical position

3/ J. Moody, quoted by M. Grenon, referred in 1977 to the data offered by experts on an official commission in 1922: 0.68 billion tonnes of reserves and 0.55 billion of undiscovered potential resources, with annual production of 65 Mt. See Grenon (1987), p.238.

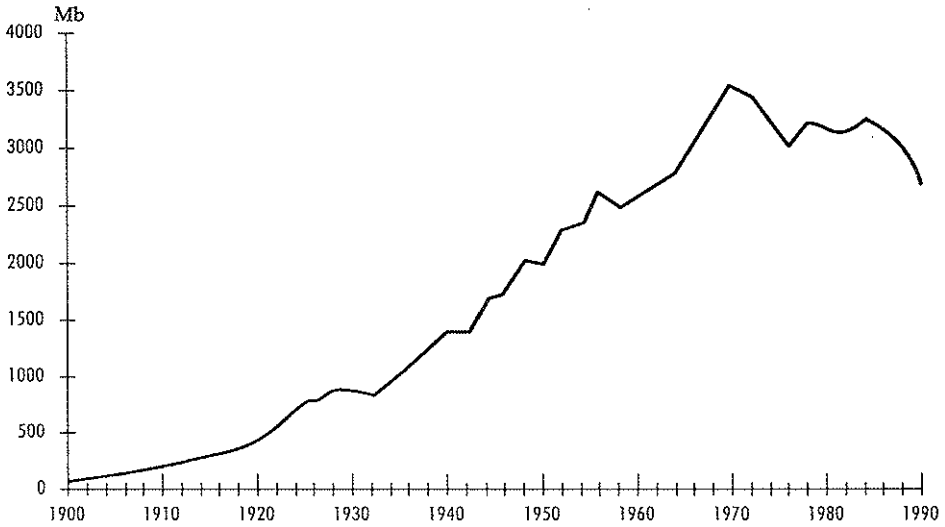

Figure 1: US oil production 1900 - 1990 (millions of barrels)

Sources: H. Landsberg and S.H. Schurr (1967) *Energy in the United States: Sources, Uses and Policy Issues* (New York: Random House); Energy Information Administration (1987) *Annual Energy Review.*

of the US, international tensions resulting from Soviet expansionism and the Arab-Israeli conflict, the first oil price shock and the rapid rate of increase in dependence. After 1980, the revival of American power in international affairs, a reduction in oil imports, the weakening of OPEC power and a relaxation of tension on the oil market permitted a swing back to free market policies.

Successive administrations (Nixon, Ford and Carter) responded to the oil problem through international action and government intervention (Stobaugh and Yergin, 1979). Jimmy Carter called the world energy crisis "the moral equivalent of war." The US responded to its short-term vulnerability by gradually building up a strategic reserve, and by forming an alliance of consuming countries — the International Energy Agency — to present a common front in the event of a new embargo.

The government encouraged fuel substitution and promoted the development of alternative energy technologies, including, once again, synthetic fuels. To the same end, it took steps to reduce energy consumption. Finally, after heated debate, it deregulated the domestic price of oil in 1979-80, frozen since 1972 as an anti-inflationary measure, allowing it to come into line with the much higher international price in order to encourage domestic production.

The third US petro-policy cycle reversed itself with the advent of the Reagan administration, thanks to the improvement in the US oil and energy situation brought about by earlier initiatives: rising production from the Alaska oilfields discovered in the early 1970s, the bringing into service of the nuclear reactors ordered prior to 1971 and a reduction in the energy intensity of US production. The drop in imports after 1977 reduced US vulnerability to OPEC action. High oil prices encouraged exploration and the development of new recovery techniques.

WHY LAISSEZ-FAIRE SINCE 1986?

Neither the slump in oil prices that led to a decline in US production after 1986 nor the Iran-Iraq conflict brought about any real change in the Reagan laissez-faire policy. A proposal to introduce a new import tax was rejected.

But the attitude of the Reagan Administration

was inseparable from its foreign policy, which aimed to restore the geopolitical power of the US after its decline in the 1970s, largely due to the Vietnam fiasco (Nau, 1984, pp.1-6). The accompanying reinforcement of defence policy enhanced the effectiveness of US diplomatic action in the Persian Gulf, thanks to the credibility of the "rapid deployment force."

This retrospective explains why a new petro-policy cycle did not begin before the current Gulf crisis, despite an alarming increase in the rate of dependence. The other triggering factors were not in place. From an economic standpoint, supplies on the international market were abundant. From a political standpoint, the position of OPEC was temporarily weakened by the expansion of non-OPEC production; the US geopolitical position was strong; changes in the East Bloc had prompted a reduction in international tension, with the Soviet Union withdrawing troops from Afghanistan and turning inward to deal with its domestic problems; and finally, the end of the Iran-Iraq conflict had reduced regional instability in the Middle East. In such a context, the American public saw no need to worry unduly.

The Gulf crisis has forcefully brought home the vulnerability of supplies from this region. It may mark the onset of a fourth cycle. The swift dispatch of a large military force to the Middle East was in fact intended primarily to guarantee a secure supply of reasonably priced foreign oil by forestalling a takeover of the region by Iraq. It remains to be seen whether the new situation will prompt the US to adopt a more interventionist energy policy aimed at stabilizing or reducing imports over the medium term.

1.2 Acceptance of Dependence

A distinct change of attitude appears to have emerged in regard to the acceptance of dependence. After 1986, in the period leading up to the Gulf crisis, political factors came to play a much less important role in the perception of the associated risk than was the case in the past, even though the rate of dependence was now significantly higher than before.

The institution of a quota system in 1959 was, for example, a response to the prospect of imports topping the 20% mark, even though the imports in question represented production by US corporations in Venezuela and the Middle East and even though supplies on the international market were abundant. The main factor behind this concern was the regional instability in the Middle East — as exemplified by the nationalization of the Anglo-Iranian Company in 1951 and the first Suez crisis in 1956. On the other hand, the long Iran-Iraq conflict of the 1980s did not evoke a comparable response even though it held an equally great potential for regional instability.

The commonly held view of dependence prior to the Gulf crisis may be summed up as follows.[4]

- The strategic reserve constitutes an effective insurance policy against the short-term risk of supply interruption; the reserve currently contains 570 million barrels (81 Mt), or about 90 days' worth of imports.
- Oil dependence, it is true, is trending upward to a probable level of 55-60% by the year 2000, but overall energy dependence remains at a reasonable level of 25%.
- Imported oil is less expensive than domestic production, even though imports contribute to the balance of payments deficit. Thus the US enjoys the same economic advantages as competitor nations who have had to accept a situation of dependence. Furthermore, imports make it possible to preserve US reserves for the long term, when prices will once again rise.
- The US imports many other products that are essential to the functioning of its economy. It no longer holds the dominant position in all economic fields it once did. It depends heavily on Japan and Germany to finance its budgetary and balance of payments deficits. There is therefore less reason to take an alarmist view of oil dependence in this context of interdependence in multiple dimen-

4/ The frequently-cited arguments mentioned here are taken primarily from Yergin (1988).

sions.

- The downstream integration into the US of certain companies based in producing countries (Aramco, PDVSA, etc.) contributes to energy security.[5] The producing countries concerned will thus feel more bound to the interests of the US or other consuming countries where they have become part of the refining and distribution network.[6]
- The risk of sharp and lasting price increases has diminished. OPEC countries have taken stock of the adverse effects of the 1979 price increase, which encouraged the development of new producers and petroleum substitutes, while at the same time the sudden windfall profits they received had no substantial beneficial effect on their economies.
- The crucial question is no longer whether oil imports make the US more vulnerable, but rather how this dependence fits into the world petroleum context, particularly with regard to the Middle East. An oil price shock originating in a given region would affect all importing countries, not only those that import from this region.

Some observers have gone so far as to assert that the US could quite easily pursue its development while remaining dependent on foreign suppliers for a large part of its oil needs. At a 1988 conference in London, John Herrington, the last energy secretary in the Reagan Administration, stated bluntly that energy independence can no longer be viewed as a realistic goal, since energy *inter*dependence is a reality and will remain so (*Pétrostratégies*, 1988). He went on to outline the need for an appropriate strategy to deal with the challenge of interdependence.

The view of M.D. Tusiani (1989), the president of a brokerage firm, is also noteworthy, since it typifies this new attitude:

> America is no longer self-sufficient in energy, and no act of government will change this. We must learn to live on imported oil as the rest of the industrialized world does. It is time that we came to terms with reality. ... This country must learn to feel secure even when we cannot dictate to others. A land rich in resources ... helped us to become prosperous. Our concepts of strength and freedom were formed in a time of plenty. Now our dwindling oil reserves threaten these cherished notions. ... We must ask overseas producers for oil and pay the world price. We must treat the people who produce it with respect. ... Dependence does not mean bondage. It means consequences attached to our conduct.

This position is not shared by all. Some observers argue that oil cannot be considered a raw material like any other; in their view, great difficulties await the US if laissez-faire policies continue to hold sway. The US Energy Association (the American member of the World Energy Council)[7] sounded the alarm in 1988. It emphasized the risk of dependence and the loss of America's credibility in regard to reducing its trade deficit, given its spiralling oil import bill (estimated to rise to between $110 billion and $180 billion by the year 2000, with imports of 10 Mb/d at $30/b or $50/b, compared with $50 billion before the Gulf crisis).

Only in the last few years has the issue of the oil bill become a real subject of concern. Since the linkage of the US dollar with gold was ended in 1971, the dollar has played the role of currency of international settlement, particularly for trade in oil. Furthermore, the bulk of the petro-dollar surplus of producing countries has been channelled through US banks. As long as the US balance of payments deficit remained below a level that would destabilize the balance of the world economy, the US did not have to worry about its oil bill — even in 1980, when it rose to $74 billion. (That same year, the trade deficit was

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5/ In June 1988, a subsidiary of Aramco and Texaco set up a joint venture for ownership of three east coast refineries. This provided Aramco with an outlet for 600,000 b/d. The Venezuelan national oil company, PDVSA, also has agreements with the refiners Citgo and Champlin (an outlet for 300,000 b/d). See Bourgeois and Perrin, (1989).

6/ Another advantage cited was that this downstream integration decreases incentives to build refineries in producing countries and hence the risk of seeing American refineries shut down to the advantage of foreign ones. Moreover, crude oil entering the US from the producing-country company to supply its refineries should be cheaper. See Coburn (1989), p.53ff.

7/ Formerly the World Energy Conference.

only $25 billion, while the trade account currently shows a surplus of $8.7 billion (OECD, 1981).)

The US must now deal with a major external constraint. Efforts to reduce the US trade deficit will always be hampered by the oil question. Each 1 Mb/d increase in imports, at a price of $20/b, adds $10 billion to the deficit. How then will the total bill be affected by the jump in oil prices from $18 to $30/b or more in the summer of 1990?

Of course, the Administration was aware of this problem. But it failed to use it as a further justification for taking action to reduce US oil dependence — yet another indication of the lower priority accorded to energy and oil security in the years before the Gulf crisis. The attitude of acceptance of dependence, although called into question by the current crisis, is still a reality. As a result, the energy policy response to the Gulf crisis will likely be less interventionist than the approach taken in the 1970s.

2. Waiting for the Third Oil Shock

The Bush Administration is endeavouring to pursue an intermediate policy between the interventionism of the 1970s and the laissez-faire of the following decade. Before the crisis, it rejected protectionist measures to increase the oil supply, such as an import tax, while Congress blocked the President's proposed tax incentives. Like the previous administration, it also made no effort to stem the renewed rise in oil consumption. Its attitude was essentially to wait until an increase in crude prices to $30-35/b allowed market forces to effect the necessary readjustments in production.

2.1 Factors Hampering Action to Expand the Oil Supply

Since 1986 the slump in crude prices has brought about a decline in exploration activity, the closure of many marginal wells (17,400 in 1988) and a reduction in the enhanced recovery activities that had been extensively developed during the previous decade. However, thanks to new technologies and technologies now under development, enhanced recovery is likely to double the amount of exploitable proven reserves (National Petroleum Council, 1987, pp.128-129); this gives an indication of the stakes involved. A more general trend is also emerging as the US oil industry increasingly turns its attention abroad, where the potential for discoveries and profits is greater.

The disincentive effect of low prices was reinforced by environmental obstacles to opening up the continental shelf to exploration, obstacles that have increased since the wreck of the Exxon Valdez in March 1990 off the coast of Alaska. For a decade now, a large proportion of Congress and many environmental organizations have mounted fierce resistance to the awarding of concessions, while the most promising areas are off-shore. The Reagan Administration's 1982-87 five-year plan, which sought to open up two-thirds of the continental shelf to exploration, succeeded in opening up only one-quarter.

In the new 1991-96 plan, the most ecologically and politically sensitive zones will be largely excluded. In June 1990, the Administration was forced to accept a ten-year moratorium in five areas: California, Oregon, Washington, Florida and the New England states. Alaska, a key oil-producing area, was not spared, notably with regard to oil exploration in the coastal plain of the Arctic National Wildlife Refuge. If this very promising zone is not opened to exploration, Alaska's production is expected to decline radically over the medium term (from 1.96 Mb/d in 1989 to 0.66 by the year 2000). Environmental restrictions have also affected the development of the newer oilfields. In 1989, the California Coastal Commission refused to permit the start-up of production in the Point Arguello off-shore field (500 million barrels), even though $2 billion had already been invested to develop it.

To stem the decline in domestic production, the US would need both high oil prices and the opening up of promising areas to exploration. High prices are necessary to stimulate exploration and the development of enhanced recovery techniques. The small producers who, historically, have accounted for the majority of wildcat

wells, would then be able to resume their prospecting activities. The majors, interested primarily in the more easily developed areas in foreign countries, would also be encouraged to shift some of their upstream activities back to the US.

While waiting for this price increase, the Bush Administration has refused to consider protectionist measures, such as an import tax, to raise the domestic price artificially, the principle of which was widely debated in 1987 and 1988. Although supported by independents, producing regions and the American Petroleum Institute, this measure encountered opposition from consuming regions, free-marketers and macroeconomic policy makers, who pointed out its regional inequity and high cost to the US economy in terms of inflation and reduced competitiveness. In addition, there are technical difficulties involved in formulating and applying a process that grants significant exemptions to "friendly countries": Canada, Norway, the United Kingdom, Mexico.

The Bush Administration, for its part, proposed tax incentives designed to encourage exploration, enhanced recovery techniques and to help small producers as long as oil prices remained below $21/b. These measures included a tax exemption for the intangible drilling costs of independents, a tax deduction for returning to production small wells closed since 1986 (*Oil and Gas Journal*, 1989), and a 10% tax credit on enhanced recovery expenditures. However, preoccupied by the formidable problem of the budget deficit, Congress was loath to reduce the tax burden on the oil industry. Will the Gulf crisis change this attitude?

2.2 *Half-Hearted Efforts to Control Oil Consumption*

Rising oil consumption is essentially due to increased fuel consumption in automobiles, which in 1989 reached 370 Mt (7.4 Mb/d), an amount equivalent to total imports (see Table 2). Despite an increase in traffic and gasoline prices three times lower than in Europe and Japan, consumption declined by 25 Mt between 1978 and 1985. This decline was brought about by the imposition of unit consumption standards on car makers and by the increased market share of fuel-efficient imported cars, resulting in an improvement of approximately 50% in average consumption. Similar improvements were achieved in trucking and air transport.

Since 1986, the oil price slump has caused a relaxation of efforts to improve the fuel efficiency of vehicles. In that year, car-makers, who have always been reluctant to accept the standards imposed on them, succeeded in persuading the Reagan Administration to relax the average consumption standard for new vehicles from 8.5 l/100 km (27.5 miles per US gallon) to 9 l/100 km (26 m/gal). Their goal is to sell a larger number of more-profitable "big cars." Thus, there have been no further improvements, in real terms, in the efficiency of the automotive fleet for several years.

The US government is cautiously considering a return to the previous 8.5 l/100 km standard, but not until 1997. The government's motives are dictated less by energy security concerns than by environmental considerations. Perhaps it will go further in light of the arguments of the conservation lobby, which has pointed out that lowering the standard to 7.3 l would have the same effect as developing an additional 100 Mt (2 Mb/d) of oil production capacity (Mills, Harris and Rosenfeld, 1988, p.189).

It is clear that fuel consumption is an area where major improvements could be made, yet one where the US government has so far declined to take action. Its refusal to consider increasing the fuel tax to a level comparable with Europe or Japan is telling in this regard. The US gasoline price, tax included, is three or four times lower than in most other countries. The tax of 24¢ per gallon is eight to ten times lower than in France and Italy (see Table 3). The mere suggestion of a relatively modest increase of 10¢ to 25¢ per gallon immediately triggers violent opposition from a number of groups (consumers, the oil industry and auto-makers), even though such a move would help reduce the US budget deficit, currently at $152 billion. American public opinion appears to be vehemently opposed to any measure of this type, an attitude that has so far

Table 2: Changes in US consumption of petroleum products, 1973-89 (Mb/d)

	Gasoline	Jet fuel	Diesel and domestic fuel oil	Res. Fuel	Other	Total
1973	6.71	1.06	3.09	2.82	3.66	17.34
1978	7.36	1.06	3.43	3.02	3.92	18.79
1985	6.86	1.22	2.86	1.02	3.61	15.57
1989	7.41	1.48	3.11	1.32	4.04	17.36

Source: API (1989) *Basic Petroleum Data Book*.

Table 3: Comparison of the gasoline tax in various countries 1988 ($/gallon)

	US	FRG	France	Italy	Japan	UK
Tax	0.24	1.06	1.78	2.32	1.35	1.30
Price with tax	0.92	2.53	3.11	3.91	3.41	2.59
Ratio to US price	100	275	338	425	370	281

Source: EIA-DOE, *International Energy Annual 1988*; US Energy Association, *Countdown to the Next Crisis*, op. cit., p. 10.

dissuaded the government from considering it, despite its soundness on the grounds of energy security and environmental protection. The fact is that a tax increase of between 50¢ and $1 a gallon would be required to force a real and durable change in the behaviour of car buyers.

The opponents of any increase argue that such a measure would have a series of adverse effects. Assuming that the tax were doubled from 24¢ to 49¢ per gallon, the DOE predicts, in its 1987 *Energy Security* report, the following effects: higher inflation, a slowdown in the transportation industry, higher unemployment, a broad-based drop in the GNP (of approximately $20 billion) (DOE, 1987, p.E1.), shrinking household income, and a severe and inequitable impact on the lower classes. It notes, too, that the additional revenue earned would be partially offset by a drop in other revenues ($9 billion out of $22 billion). However, the alarming increase in the budget deficit might force the Bush Administration to break the gasoline tax taboo in the near future.

2.3 New Dependence on the Gulf Countries

The DOE report assumes a slow but steady rise in oil consumption, averaging 0.8% a year until the year 2000 in a base-case scenario, where the price of oil would rise gradually to $28/b. This would lead to an increase in demand of approximately 50 Mt (1 Mb/d) compared with 1989. The rise in the demand for fuel would be accompanied by higher consumption of petroleum products in electric power plants as a result of new environmental restrictions.[8] With crude oil production totalling only 295 Mt in the year 2000, the DOE estimates, in the same scenario, that the level of dependence will rise to 55% (see Table 4). It could even reach a level of 60% if prices are lower ($22/b in the year 2000): oil consumption would increase by 85 Mt instead of 50 Mt, and oil production would decrease by 120 Mt instead of 85 Mt.

8/ See Energy Information Administration (1989), p.51. DRI and Wharton simulations, carried out in late 1988 and quoted by the DOE, each resulted in a comparable dependence rate of approximately 56% (see same report, p.40).

Table 4: DOE forecast of US oil dependence 1989

	Base case			Low price scenario	
	1989	1995	2000	1995	2000
Assumed Oil price ($/bl.)		20.6	28.0	15.8	21.7
Crude production (Mb/d)	7.6	6.2	5.9	5.8	5.2
Net imports (Mb/d)	7.6	9.3	10.2	10.3	11.8
Demand (Mb/d)	17.4	17.8	18.6	18.5	19.5
Rate of dependence (%)	43.9	52.0	54.8	55.6	60.3

Source: EIA, *Annual Energy Outlook 1989: Long-Term Projections* (Washington: DOE), p. 51.

Table 5: Breakdown of US net imports of crude oil and petroleum products 1986 and 1988 (Mt)

	1986	%	1988	%
OPEC	151.4	54.2	169.3	51.0
incl.				
Gulf countries	48.0	17.2	87.7	26.4
Saudi Arabia	34.1	12.2	53.0	16.0
Nigeria	21.0	7.5	28.1	8.4
Venezuela	43.4	15.5	40.1	12.0
Indonesia	16.7	6.0	9.3	2.8
NON-OPEC	127.4	45.8	162.9	49.0
incl.				
Canada	35.7	12.8	44.5	13.4
Mexico	35.0	12.5	37.2	11.2
United Kingdom	16.3	5.8	13.8	4.1
Total	279.0	100.0	332.2	100.0

Source: International Energy Agency (1989) *Quarterly Oil Statistics* (Paris: OECD)

The increase in US imports by the year 2000 (between 2 and 4.2 Mb/d, depending on the scenario) is expected to be supplied primarily by OPEC, given the stagnation in non-OPEC production. North American oil from Canada and Mexico, which currently accounts for 25% of imports, cannot provide a solution, considering the quantities required relative to the production capacities and domestic requirements of these two neighbouring countries. The Free-Trade Agreement with Canada will not radically alter the volume of oil exports from that country. The US government has little choice but to accept growing dependence on OPEC, and particularly on the Gulf region. The share provided by this region, which had fallen to 15% of net imports, had by 1988 risen again to 26%. Of this volume, 16% was supplied by Saudi Arabia, which has once again become the leading supplier, to the tune of 60 Mt in 1989 (US Energy Association, 1988, pp.1-2). The Gulf region's share could reach 50 to 60% by the year 2000.

Prior to the Gulf crisis, the US government reacted to the situation outlined above by seek-

ing to consolidate the US sphere of interest in the Middle East. In 1989 it made special diplomatic overtures to both Saudi Arabia and Iraq. These countries were designated as the primary contributors to higher OPEC sales to the US in the coming years, as Iraq's expansionist ambitions had not yet been recognized.[9] In addition, the US government supported US oil companies in their search for commercial opportunities to expand their activities in producing countries. It planned to broaden this support to other industrial firms, feeling that stronger trade links were a good way of stabilizing relations with the US (Moore, 1990).

It is significant that certain producing countries, particularly Saudi Arabia, declared their willingness to deliver oil under a "leasing" arrangement to the economy-minded US government so that it could fill its strategic reserve without significant budgetary implications.[10] OPEC had previously regarded this reserve as a weapon directed against it, one intended to dissuade OPEC from using oil deliveries as a means of political pressure or to manipulate the market in the event of an increase.

Iraq's unexpected seizure of Kuwait has forcefully underlined the instability of the Gulf region. The firmness of the US response, marked by the deployment of a large military force, reflects the vital importance of the Persian Gulf as a future source of oil supply for the US (Brzezinski, 1990). The US wants to prevent Iraq from becoming a power which, through its domination of the entire region, will be able to use its oil as a political weapon and control its world price. Already during the Iran-Iraq war, the presence of a large American naval force in the Gulf was motivated by the objective of preventing domination of the region by an enemy of the US.

Regardless of the outcome of the Gulf crisis, the question of how to maintain or enhance control over the region will be a major issue facing the US. Should a strong military presence be maintained, or will the development of close economic and diplomatic links suffice?

This question is all the more important because political and economic circles in the US seem to have accepted the inevitability of a rise in American oil imports. At best, some of the obstacles to the expansion of exploration and production may be lifted, Congress may accept certain tax incentives, and more vigorous action may be taken to reduce fuel consumption. But the fact of higher oil imports remains. The US has accepted oil dependence, since it finds it easier to resolve its supply problems through diplomatic or military control of the source of imports than by addressing problems related to its domestic production and consumption, which give rise to too many conflicts among internal special interests.

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9/ Imports from Saudi Arabia rose from 981,000 b/d in 1986 to 1,245 Mb/d in 1989; imports from Iraq rose from 81,000 b/d to 500,000 b/d. See Niering, F. (1980), p.60.

10/ Should this oil be withdrawn from the strategic reserve in the event of a crisis, it would be paid for by the purchasing companies directly to the oil producing countries at a price determined by auction.

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