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**OIL IMPORTS, ENVIRONMENT AND NATIONAL SECURITY:
A RE-EVALUATION**

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Abstract

The new energy planners in Washington are advocating a policy to cut oil consumption for two reasons: lower air pollution and reduce dependency on overseas supplies. The principal arena for this reduction would be road transportation fuels since in all stationary energy sectors the process of reducing oil's share and/or volume through inroads from natural gas is already under way. Some natural gas will enter the transportation market even under existing legislation and market conditions. But some new advocates believe that within 10-15 years a large share of the U.S. automotive fleet could be converted to gas. They acknowledge this would require substantial government intervention.

Their policy would help to reduce air pollution. However, automotive air pollution is already being progressively reduced through mandated cleaner fuels as well as cleaner and more efficient engines. The argument that oil imports must be reduced for balance-of-trade or security reasons is based on questionable assumptions of oil's role in the U.S. trade balance and the equally questionable assumption that imported oil has a substantial hidden "externality" which raises its true cost above the market price.

U.S. refiners must spend billions of dollars to comply with new clean air standards for motor fuels. If at the same time demand for their principal product will be progressively reduced through market intervention they could be severely hurt. Thus, an effective government policy to reduce oil imports would have a decided negative impact on the downstream sector of the U.S. oil industry.

Reducing Consumption to Reduce Emissions

There is a growing belief among the incoming tide of energy planners and administrators in the U.S. that the desired improvements in the environment can only be achieved through a steady long-term reduction in oil consumption. According to these views the improvement in the quality of oil products and in the efficiency of the engines which burn them, while desirable, will not be sufficient to meet the long-term goals of improving air quality and preventing global warming. Thus, Vice President-Elect Al Gore states in his now famous book *Earth in the Balance* that while he supports "new laws to mandate improvements in automobile fleet mileage -- much more is needed". He believes his "*Strategic Environment Initiative*" should be able to accomplish the strategic goal of completely eliminating the internal combustion engine over, say, a 25-year period".¹

The still new environmental argument for reducing oil consumption has now joined the long standing economic and national security arguments for reducing consumption as a means to lower our dependency on overseas imports. Recent examples of this older advocacy for reducing oil consumption are contained in an article by former Colorado Sen. Timothy Wirth, a leading environmentalist, and in a report by the Center for Strategic and International Studies (CSIS), a Washington think tank.

Sen. Wirth stated: "We must get off the roller coaster of rising and falling prices and dependence on imports -- these play havoc with our economy. Instead we must reduce oil consumption and develop real alternatives to oil."²

The CSIS report states: "The U.S. has a critical national interest in developing a comprehensive national energy policy that focuses on reducing dependence on imports -- especially from the Middle East -- on developing alternative fuels, and on promoting conservation."³

If this dual policy for reducing imports -- environment and import dependence -- is carried out, U.S. refiners will be in double trouble. They would have to spend very substantial sums -- several billion dollars per year throughout the 1990's -- to meet the mandated clean air requirements for their plants and their products while at the same time the demand for gasoline, their principal product in volume and value, which

¹ Albert Gore, *Earth in the Balance: Healing the Global Environment*, Boston: 1992, Houghton Mifflin, p. 27.

² Timothy With, "Oxford Energy Forum, Oxford, U.K.: Oxford Institute for Energy Studies, August 1992.

³ Robert E. Hunter, *The United States and the New Middle East: Strategic Perspectives after the Persian Gulf War*, Report of the CSIS Aftermath Policy Council, Washington, D.C.: The Center for Strategic and International Studies, 1992, p. xiv.

currently accounts more than half their output, would keep declining as a result of government policies.

Progress under Current Policy

To some extent this policy already exists. It will lead to a reduction, followed by a levelling off, in gasoline demand, but not to a phase-out. The reason is, of course, that the public continues to be satisfied with the gasoline-fed internal combustion engine and is not looking for an alternative fuel or vehicle or means of transportation. However, it does want a cleaner fuel and would welcome a less polluting internal combustion engine. Both gasoline and automobiles have been moving in this direction for quite some time and will continue to do so under existing laws and regulations. Gasoline is by all standards of measurements much cleaner and more environment-friendly today than it was 10 years ago and will be still more so by the year 2000. Meanwhile, the average fuel efficiency for motor cars has risen from 15.5 miles/gallon in 1980 to 21.3 in 1990, will probably reach about 26 miles/gallon by 2000 and improve further in the first decade of the next century.

All of this will be achieved with *existing* policies and plans, which can now be assumed to include an increase in motor fuel prices through taxation or import fee in the foreseeable future. For the U.S. refining industry this means an increasingly more costly prime product, together with the prospects of a flat to declining demand outlook, starting before the end of this decade. This is because the increase in car mileage can be expected to taper off as a result of vehicle saturation, aging population, etc., while the increase in fuel efficiency is likely to accelerate, driven by market forces or mandated higher efficiency standards.

But neither market forces nor current policy or legislation would make this an open-ended process, leading to the phase-out of gasoline. Instead, average fuel efficiency for U.S. motor vehicles could eventually stabilize at 32-33 miles per gallon, which would be slightly higher than Europe's current level. Thus, between 1993 and 2005, gasoline consumption could be reduced by 5-10% while the number of gasoline-fueled motor vehicles will rise by 25-30%. Even more important, each gallon of gasoline will emit substantially fewer pollutants than it does currently and, as I have said, current emission levels are already well below those of the 1980's. The process is likely to be accelerated in the near future when the Environmental Protection Administration (EPA) publishes regulations and incentives for removing several million old high-polluting cars, mostly of pre-1975 vintage, which account for a disproportionate share of total pollution. There will also be design improvements in catalytic converters which will further reduce auto exhaust emissions. The decline in gasoline consumption will cause a corresponding decline in carbon dioxide (CO₂), a prime contributor to Global Warming.

Thus, the goals of a major reduction in automotive pollution and a reversal of the growth in CO₂ emission can be achieved with only a relatively small recourse to alternate fuels. One local exception would be the Los Angeles basin where automotive pollution is higher by a magnitude than in any other U.S. metropolitan area and which therefore requires special action, including alternative fuel vehicles. Some other densely populated metropolitan areas will also require such vehicles to meet air pollution standards. For the rest of the nation the objective of effective pollution reduction can be achieved without alternate fuels. Hence, the purpose of moving away from gasoline, beyond the measures described above, must be primarily to reduce oil imports. As I said earlier, this has been made quite clear by its advocates.

Maximizing Alternative Fuels

Let us first look at how much gasoline alternative fuels could realistically displace by 2005 and then inquire into what is gained by this displacement. A sustained concerted effort by federal and state authorities to maximize the displacement of gasoline, through mandated requirements, tax incentives or other subsidies, could swing some 10-11 million cars, or 5% of the total car population in 2005, to alternate fuels by then. This would displace some 450-500 MB/D of gasoline. An alternate vehicle fleet of that magnitude will also have created a national infrastructure for refuelling, maintenance, etc. which would accelerate further displacement of gasoline after 2005.

Let me make clear, this is not a prediction of a likely scenario. But if the new Administration and its successors as well as state governments make the phasing out of gasoline (and also highway diesel fuel) a high priority, it could be achieved. In fact, some of its advocates now claim all U.S. automobiles could be converted to natural gas within a decade.⁴ Of course, this reflects only their intention, not the reality of a market that has virtually no infrastructure to make, service or fuel natural gas vehicles.

Absent any high-priority government intervention, there may be 3-4 million alternative fuel vehicles on the road by 2005, given the political support for alternative transportation fuels and the fact that these fuels, primarily natural gas, are indirectly subsidized since they are not taxed while gasoline carries a 35¢/gallon tax. Thus, alternative vehicles will have a tangible commercial presence by 2005 without additional incentives, giving oil-based motor fuels their first competition since the beginning of the automobile age.

⁴ *The Oil Daily*, Dec. 16, 1992, p. 3, Washington, DC.

Reducing Imports through Fuel Switching

Now let us examine the premise that the U.S. government should mandate, or otherwise actively encourage, the shift from imported oil to alternative domestic fuels, not for environmental reasons, but to reduce our oil import level. If the mandate took the form of an import fee, it would, of course, affect all oil products, not just transportation fuels.

It is true that, other things being equal (which is rarely the case), a country's economy benefits more from domestic products than imports, be it food, automobiles or Btu's of energy. However, there is also the old but still valid Ricardian thesis of *Comparative Advantage* in international trade, according to which the U.S. should concentrate on high-tech equipment while the Middle East should stick to oil exports.

At any rate, a real reduction in U.S. oil imports would require fuel *substitution* since fuel *conservation* is already well under way in automotive transportation, as pointed out, and further progress can be expected. However, we must also keep in mind that energy conservation has a cost, as the auto industry reminds us loudly whenever there is a call for raising the fuel efficiency standards.

In the transportation sector, fuel substitution means primarily switching to natural gas in the near term since electric vehicles are not yet fully commercial. In general, the government takes action to restrict imports of a commodity only when the commodity's domestic output has become depressed or is threatened by imports. However, natural gas does not require protection against oil imports. In the three markets in which gas and oil compete directly -- residential/commercial, industrial and electric power generation -- gas has gained share and volume relative to oil, both in the last 10 and the last 5 years. All indications are that gas's share will continue to rise relative to oil's in all three markets from now to beyond 2000. In fact, gas will be *the* growth fuel in the U.S. energy sector, even without entering the transportation sector. Furthermore, on a modest but not insignificant scale, gas will also get into the transportation sector.

The growth in gas demand in all of these markets will inevitably cause its price to rise in real terms from the current level of about \$2/MMBtu at the U.S. Gulf Coast. This is necessary to meet the projected demand increases even without a proactive policy to substitute gas for oil in the transportation market. The National Petroleum Council in an ongoing project entitled, *NPC Study on Natural Gas*⁵, projects prices of \$3.50 and \$2.75 per MMBTU (in 1990\$), respectively, for 2010 in its two scenarios. The study assumes an annual consumption of only 140 BCF by 2010 for natural gas vehicles in both reference cases. However, it estimates that under more optimistic assumptions up to 640 Bcf, equal to nearly 300 MB/D, could be supplied to the motor vehicle market by 2010.

⁵ Executive Summary *NPC Study on Natural Gas*, Draft Report, Dec. 17, 1992, National Petroleum Council, Washington, D.C. pg. 7,24

If oil import constraints or higher motor fuel taxes or some other form of government intervention were to cause vehicle gas consumption to be substantially higher, and get there several years earlier, than the NPC's "optimistic" estimate, gas prices could be expected to rise more than the NPC projection. Thus, such a pro-active policy would mean higher costs for all gas consumers.

Oil Imports and the Trade Deficit

Now let us examine the arguments for curtailing oil imports. First, the trade balance. The point is frequently made that the single largest item in our trade deficit are oil imports. In 1991 net oil imports of \$43.8 billion accounted for 67% of our total merchandise trade deficit. The conclusion drawn from these numbers is that oil imports must be reduced to improve our trade balance. The numbers are correct but the conclusion is not. The ratio of our oil imports to our trade deficit is at any given moment a function of our total trade balance. For instance, in 1990 oil imports accounted for only 54% of our merchandise trade deficit. Yet, net oil imports were \$11 billion *higher* than in 1991. The main reason was that U.S. merchandise exports increased in 1991, thereby reducing the total trade deficit which, in turn, raised oil's share.

And, of course, the old cliché that foreign trade is a two-way street still holds true. In the first 9 months of this year, we imported \$24 billion from OPEC countries and exported \$16 billion to them. This is not to say that a decrease in oil imports and a concurrent increase in domestic gas production would not improve our international trade position. But this is true for most imported goods. The U.S. trade deficit for motor vehicles and parts in 1991 was nearly \$40 billion, almost as big as oil's. Yet, the U.S. auto industry has certainly enough spare capacity to displace a large part of these imports.

"Security Externalities" in the Cost of Imported Oil

Let me conclude my analysis with one of the more sophisticated arguments for oil import reduction, namely that the *real* cost to the nation of imported oil is far more than its market price because of the "security externalities" which, it is claimed, society must pay for these imports. According to this reasoning, which has become more widespread since the Gulf war, the sources of imported oil from the Middle East as well as some other regions are endemically "insecure." Hence, the U.S. must be prepared at all times to maintain access to these supplies. The cost of this preparedness and the eventual action to carry it out is viewed as an externality born by U.S. society through the fiscal system but not reflected in the price of oil. If our import dependency were substantially lower, the argument goes, these externalities would decline as would the real cost of oil to the U.S. economy.

The argument may sound right and it is also correct to call imported oil a "strategic" commodity whose availability might have to be secured with military means under extraordinary, but not inconceivable, circumstances. However, there is no evidence that the U.S. military budget is, or was, larger than it would be if our dependency on overseas oil supplies were, say, half as big.

Our military expenditures from 1950 to 1990 were determined almost entirely by the vagaries of the Cold War. The equipment built and personnel trained during this period were always available, and sometimes used, for military operations not directly connected with the Cold War. That includes the protection of foreign oil supplies. The protection was actually briefly carried out by the Navy during the Iran-Iraq war. But military budget appropriations were not affected by these actual or potential tasks which in all imaginable cases would have required only a small fraction of the personnel and equipment already on hand. In other words, a military establishment designed to combat the Soviet Union at its military prime can obviously protect U.S. foreign oil supplies with its existing equipment.

The argument that the market price of imported oil ignores its security cost to the U.S. economy received a big boost after the Gulf War because U.S. troops and material were used on a large scale and control over the Middle East's vast oil reserves was clearly a key issue in the conflict. However, financially, the U.S. was fully reimbursed by its allies for all direct expenditures incurred during the war. More important, of course, is the fact that the purpose of the U.S. military action in the Gulf War was not to secure its own oil supplies, which Iraq never threatened to cut off, but to implement, together with other nations, the resolution of the U.N. Security Council to force the Iraqi army out of Kuwait. Its principal ally in this action was the United Kingdom, a net *exporter* of oil. For the U.K., just as for the U.S., the concern over Middle East oil was primarily of a geopolitical nature.

The only identifiable security externality of imported oil is not a military expenditure but the cost of building up the U.S. Strategic Petroleum Reserve to nearly 600 million barrels between the late 1970's and the outbreak of the Gulf War. If one were to allocate the cost of this reserve to all oil consumed during this period it would amount to about 20¢/bbl, or one percent of current prices.

Impact on the Refining Sector

How does all this affect the downstream sector of the U.S. oil industry?

Since the rise in oil imports since the mid-1980's is not the cause but the result of a structural decline in domestic production (as well as rising demand), a government policy to reduce oil imports would not reverse, or even arrest, the decline in production but would shift future oil demand to other energy sources. Since U.S. oil demand is

likely to grow at a very slow rate in the next decade even without such a policy, a government imposed import reduction would over time have a serious impact on the U.S. downstream sector.

For the next few years even a highly concentrated effort to reduce oil imports will have little impact on U.S. oil consumption. However, if the effort is sustained throughout the decade the import reduction would be substantial by the beginning of the next century and grow at accelerating rates thereafter. Thus, a set long-term policy to reduce U.S. oil imports would not just affect foreign suppliers but much more so the U.S. refining and marketing industry, a long-established major domestic industry with fixed assets of more than \$50 billion.

The new Administration must determine whether such a policy is in the national interest.