

JOHNS HOPKINS SEMINAR TALK - STATLER HOTEL, WASHINGTON, D.C., Dec. 16, 1959

EUROPE'S ENERGY BALANCE SHEET - 1959 .

Lest the title of my talk mislead you, let me hasten to modify it on two counts. The word "Europe" has come to mean, in these postwar years, a quite distinct geographical area, encompassing anywhere between six and 20-odd nations, depending upon who uses it and in what context it is employed. Here, <sup>usually</sup> when discussing Western Europe, we refer to the <sup>17</sup> ~~18~~ <sup>18</sup> (now 19) countries of the OEEC, <sup>Today</sup> and we will <sup>mainly</sup> also have the occasion to refer specifically to the "Europe of the Six", the European Community, which includes Belgium, France, the Federal Republic of Germany, Italy, Luxembourg and the Netherlands. Also the term "balance sheet" is not meant so much in the bookkeeping sense as in the framework of supply and demand and, consequently, of the competitive aspects of energy. Lastly, perhaps, I should add that by the elegant word "energy" I am referring to fuel and power.

Energy, without doubt, is a prime economic and political factor in the growth and stability of Western Europe today as it is, indeed, in all modern industrialized economies. An economic truism is that competition in markets takes place at the geographical and material intersection of supply and demand. However, a significant characteristic of competition in the energy sector is that it takes place in a wide number of markets. Thus in its

competitive aspects, it is international even though nations may try to confine and control it within national borders. Indeed, this is a very real economic problem that has confronted many nations in recent years.

Energy is no less significant in the affairs of nations as a political factor. Indeed, it was this interaction of economics and politics in the realm of Europe's most important source of energy -- coal -- that led to the formation in 1952 of the European Coal and Steel Community. However, as we have seen in the past 18 months in western Europe, exposure to the free play of market forces in a Europe-wide market of 165 million consumers has not transformed coal into an ideally competitive industry -- *Instead we have* as witnessed ~~by the~~ serious structural deficiencies remaining in the coal economies of *and, to some extent, of France.* Germany and Belgium, But more of this specific situation later.

Energy again became a potent economic and political argument in Europe in 1956 when the six nations of the Coal and Steel Community were considering whether or not to extend their integration to include all sectors of their economies. The Suez affair had just provided dramatic evidence that all of Europe could ~~be crippled~~ be crippled by the whim of a Middle-East dictator using oil as a political weapon. (At that time some 90 per cent of Europe's total oil imports were passing through

the Suez Canal.)

Thus the idea of a European Atomic Energy Community -- Euratom as it has become popularly known -- suddenly grew in importance. We will never become independent of energy imports, acknowledged the Europeans, but let us at least start our own nuclear power industry so that we will be less dependent the next time such a crisis occurs. The argument may have been more politically appropriate than economically pragmatic. Another argument seemed to have more merit: it was that at the present rate of increasing energy imports, Europe would arrive at a stage before 1975 wherein the entire balance of payments situation would be <sup>in</sup> perilous unless <sup>the</sup> upswing in energy imports could be checked at a reasonable level.

The cost of power in Europe then was already five to 10 mills per kwh more than in the U.S. Thus, according to U.S. and British estimates of nuclear power costs, nuclear power, theoretically, could almost at once become competitive with conventional power. That was the story in 1956 and 1957.

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Today the situation with respect to energy in Europe is no less important and no less political. But in a little more than two years the outlook has changed radically. The demand continues unabated. But the supply prospect has

altered basically. But before we look into the present energy situation, let us examine a few comparative figures that will help orient us in a discussion of Europe's energy needs.

In 1958, the European Community produced 230 billion kilowatt hours of electricity -- roughly one third our own electricity production that year. This contrasts to a per capita GNP within the Community slightly less than half that of the U.S. Between 1950 and 1955, at constant prices, the GNP of the Community went up 32 % - much faster than that of the U.S. During the same period the consumption of energy increased by 37 %. This impressive rate of expansion is unlikely to continue. However, even allowing for a modest <sup>3.5%</sup>~~3.5%~~ annual increase in the national income of the Community in future years, and for about a .8% increase in energy output for every one per cent increase in the GNP, we can count upon an increase in Europe's energy consumption of about 75% for the period 1955-1975.

We are accustomed to base energy measurement, whether oil, coal, gas or hydro-electric, upon a metric ton of coal equivalent. ~~Therefore,~~ the Community ~~having~~ consumed 433 millions of tons equivalent of coal in 1955, <sup>and have to</sup> it will increase that consumption figure by ~~some 230 million tons in~~

by some 300 million tons ~~in~~ in 1975 to a total of between 717 and 760 million tons.

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A look at the Community's own resources indicates that domestic production can not be counted upon to contribute to its future needs. Hydro'electric potential has been exploited to its utmost. The production of coal has actually declined and opportunities for expansion are slight. in fact, given a more stable import market, especially for ocean freight rates, it is likely that Europe's marginal mines will shut down in considerable number over the next years. Europe's gas and oil reserves have been well explored and their extent fairly well determined. These are not expected to make an appreciable difference in the domestic balance sheet.

The only indigénous source of ~~supply~~ energy not yet tapped and, not yet proven, remains atomic power. Etienne Hirsch, President of Euratom, has optimistically forecast that by the year 1980, atomic energy will account for one quarter of the Community's total electricity production -- representing the amount now produced by all thermal and hydro-electric power stations. It is hard to argue with such a forecast on the basis of present available information. However, one fact about atomic power ~~is~~ is reassuring:

it is that the cost per kwh of nuclear power will go down as reactor technology improves. Thus the U.S.-Euratom Joint Program for the construction of power reactors in Europe may help provide the experience that is necessary to bring down operating costs. In all events, even the more cautious energy economists are inclined to admit that nuclear power will be competitive with classic forms in Europe by about 1970.

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Out of the foregoing, at least one aspect of Europe's future energy situation can be determined: it is that the Community's future growth will depend upon imported fuel.

In 1955, the Community imported 20 per cent of total energy requirements. The import total, in hard coal equivalent, was 126 million metric tons. Of this total, 23 million were coal, 93 million crude oil, and the remainder mineral-oil derivatives -- principally fuel oil. Three quarters of the coal came from the U.S. and 90 per cent of the crude oil came from the Middle East.

By 1975, at least 34 per cent of total energy needs of the Community must be imported from third countries. Using a composite figure based on the cost of imported coal delivered at Rotterdam today and upon the cost of imported fuel oil equivalent, we can estimate that the Community's bill for energy

imports by 1975 will be in excess of four billion dollars. This represents about one fifth of the ~~Community~~ <sup>present</sup> total value of Community's/annual imports of all products.

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Faced with the prospect of paying an annual bill of this magnitude -- for imported energy -- Europe is inclined today to consider carefully its future course of action. One immediate reaction has been to realize that fuel and power represent an economic area wherein a common European policy rather than separate national policies can best resolve the energy problem for Europe. Thus the High Authority, executive arm of the European Coal and Steel Community, empowered by Treaty to coordinate an energy policy for the Community nations, is preparing some far-reaching recommendations based upon a study completed this year.

The most important conclusion of the lengthy report is that Europe can and must take into full account non-European fuel and power resources. This is a far cry from the situation following Suez when European were convinced that massive internal investments in coal and nuclear power were imperative.

A diversity of sources -- notably the promising oil and natural gas deposits in the Sahara and Libya -- have greatly changed the picture.

These discoveries may mean that oil to the extent of 150 million metric tons of coal equivalent and 60 million tons equivalent of natural gas will flow into Europe by 1975 from the Sahara -- two fifths of Europe's total energy consumption today.

The Libyan and the Saharan deposits do not signal Europe's abandonment of coal investments internally. But it is doubtful if they will be made except for modernization and transport. It is reported that already some European economists are advising coal operators to take their investment capital and invest in energy sources abroad.

The plethora of new fuel sources will not cause utilities to dismiss atomic power. But the changed energy situation now allows them to wait another few years until the atom demonstrates that it can compete with classical forms of power on a commercial basis.

The changed oil situation will mean a gradual increase in Europe's fuel oil consumption. Already pipe lines are sprouting across Europe, linking major seaports with present or prospective refinery centers. Europe's present refineries produce a relatively high percentage of the medium and light petroleum derivatives in relation to fuel oil thus placing the price of the latter ~~at a~~ relatively higher ~~price~~ than in the U.S. where the demand for gasoline and light distillates



is proportionately greater. New refineries being built are designed to yield a higher ratio of fuel oil.

If coal is going to survive, the Study of the High Authority ~~indicates~~ indicates that the rigid price structure now dominating the industry must give way to flexibility. Economists would like to see eventually in Europe the same kind of competition between fuel oil and coal that exists in New York where power plants with multiple burners can switch from one fuel to another as the coal-fuel oil price relationship fluctuates according to market pressures. (From 1950 to 1956, the coal-fuel oil price relationship varied between 35 and 38 cents per million BTU's in the New York area.)

But this competitive situation is not the case in Europe ~~yet~~ yet although disparities are lessening. Were it true, oil from Venezuela under present market conditions would be competing successfully with coal shipped <sup>in Rotterdam</sup> from Hampton Roads. ~~Europeans, in fact, see a theoretically more successful competitive position today for Venezuelan oil vis-a-vis free market coal in Rotterdam than in New York.~~

~~In all events, the future competitive position of various sources of energy in the European Community will be determined in the future not by the ability of European energy producers to maintain low prices, which must~~

If and when the Common Market is able to operate a freely competitive energy market without barriers to coal imports or other forms of energy, total coal consumption in the six nations would, by 1965, reach a level of 240 million metric tons (much less than present day consumption) and of that amount, some 35 to 45 million metric tons would be imported at competitive or better-than-competitive prices from the United States.

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In all events, the future competitive position of various sources of energy in the European Community will be determined in the future not by the ability of European energy producers to set the low price but rather by the cost of imported U.S. coal and of fuel oil. This, the High Authority economists regard as a fundamental consideration for the orientation of any energy policy for the European Community.

These are a few of the considerations involved in working out a long range energy policy for Europe. Because of time, I have not touched upon social conditions, investment patterns, public and private ownership, government attitudes and policies and still other factors that must be weighed.

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There are at least definite conclusions we can make on the basis of the evidence: they are that Europe has sufficient energy available in the foreseeable future to be able to grow industrially at the high rate that has been fostered by economic integration. Whether it will be cheap and competitive power -- thus contributing further to the productivity of Europe, depends upon the success of a coordinated energy policy. This last achievement would also provide the fullest evidence of the Common Market's success in carrying out a liberal trade policy.

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