CHAPTER 12

West European-Soviet Energy Relations

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In Western Europe, growing energy interdependence with the Council for Mutual Economic Assistance (CMEA)–the Communist world equivalent of the Common Market–is a fact of life. It is generally viewed as a natural and desirable extension of historic trade patterns, which is not disadvantageous so long as it is kept within prudent bounds. Evaluations of what constitutes a "reasonable" or "dangerous" level of East-West interdependence hinge on a variety of factors, including the availability of alternative export markets and energy supply sources. Controversy over West European-CMEA energy relations has grown among observers—primarily on this side of the Atlantic—who weigh these factors differently.

This chapter explores the dimensions of West European energy relations with CMEA, and particularly with the Soviet Union. It focuses on four Western nations—the Federal Republic of Germany (FRG or West Germany), France, Italy, and the United Kingdom (U.K.), examining first past trends in both energy-related equipment exports to, and energy commodity imports from, the U.S.S.R. The chapter then turns to the proposed West Siberian gas export pipeline, the controversial project which will significantly increase Soviet gas exports to much of Western Europe. "Yamburg," the popular name for this project, which will transport gas initially from the Urengoy field in West Siberia, is used here to illuminate the differing perspectives of these Western nations on increasing East-West trade and energy interdependence, including the costs and benefits associated with such interdependence.

Photo credit: Oil and Gas Journal

56-inch gas pipeline being laid in West Siberia

INTRODUCTION

Trade between Western Europe and CMEA constitutes a relatively small, but growing, part of Western Europe's worldwide trade. Between 1972 and 1978, the percentage of European Economic Community (EEC) exports that went to CMEA grew from 2.9 to 3.7 percent. Similarly, commodities from the CMEA constituted 2.9 percent of EEC imports in 1972. These increased to 3.2 percent in 1978.[1] Energy and energy-related equipment and technology have made up an important portion of this trade.

Western Europe has been importing energy from CMEA for decades, but during the course of the last 10 years these imports—particularly those from the U.S.S.R.–have grown. Exports of Soviet oil to Western Europe rose from a level of 33.8 million metric tons (mmt) or 0.678 million barrels per day (mbd) in 1971 to 54.8 mmt (1.1 mbd) in 1979.[2] While exports of coal from the Soviet Union to Western Europe fell during the same period, gas exports grew exponentially from 0.005 to 0.06 billion cubic meters (bcm) per day.[3] In 1980, Soviet gas exports to the region were estimated at 24.5 bcm.[4] This is the equivalent of 20 million tons of oil equivalent per year (mtoe/yr) or 0.40 million barrels per day of oil equivalent (mbdoe). In short, energy trade between the CMEA and Western Europe has been one of the most dynamic sectors of East-West trade during the last decade.

These trends are even more striking when the energy situation of Western Europe is compared with that of Eastern Europe. Western Europe's dependence on imported energy is more than twice as high (54 percent) as that of Eastern Europe (23 percent) (see ch. 9). Despite the fact that Western Europe's *overall* dependence on imported energy has declined since the first oil crisis in 1973-74, imports of energy from the Soviet Union have been increasing.

Total Western exports to CMEA have also increased over the last decade. Historically, Western Europe's exports to CMEA, unlike those of the United States, have been heavily concentrated in industrial goods. Energy-related equipment and technology have been an important part of this trade. As was shown in chapter 6, the U.S.S.R.'s largest Western supplier of energy-related technology and equipment has been Japan, but West Germany is a close second. Between 1975 and 1979, Japan captured nearly 29 percent of this market; West Germany, 28 percent; Italy, 15.7 percent; France, 13 percent; the United States, 8 percent; and the United Kingdom, 0.2 percent.

Moreover, as table 1 demonstrates, these energy-related items constituted over one-third of Italy's exports to the U. S. S. R., about one-quarter of France and West Germany's and 10 percent of Britain 's. Thus, while overall trade between Western Europe and CMEA remains a relatively small part of Western Europe's worldwide exports, energy equipment and technology make up a significant part of those exports which do go to the U. S. S. R..

There is disagreement about the significance of West European energy and industrial trade with the Soviet Union. on the one hand, proponents of interdependence

[1] International Monetary Fund, *Direction of Trade Yearbook*, **1979.** pp. 60-61.

[2] Central Intelligence Agency, *International Energy Statistical Review*, ER IESR *81-003*, Mar. 31, 1981, p. 25. (Western Europe here is defined as France, Italy, Finland, the Netherlands, Italy, Sweden, and West Germany.)

[3] Coal exports to EEC from the U.S.S.R. fell from 448,000 metric tons in 1970 to 3,'700 in 1975, and to 2,800 in 1979. Data for 1970 and **1975** is from Soviet trade statistics. After 1976, however, Soviet data records coal exports in ruble value rather than in volumes. Data for 1979 come from Business Information Display, *World Energy Industry*, vol. 1, No. 3, first quarter, 1980, p. 195. It should also be noted that coal imports to EEC from Poland rose substantially until recent months, In 1979 EEC imported 15 mmt of hard coal from I'eland (out of total hard coal imports of 81 mmt). During the same year, however, 1 8mmt of hard coal were exported by EEC. I hid., p. 313.

Data on gas exports from Ibid., p. 26. Here, Western Europe consists of Austria, Finland, France, Italy, and West Germany.

[4] Jonathan P. Stern, *Soviet Natural Gas Development to 1990* (Washington, D.C.: heath, 1980), p. 99.

Table 84.—Western Trade With the CMEA—1979 (million U.S. dollars)

	United States	Japan	France	West Germany	Italy	United Kingdom
A. Energy-related exports to U.S.S.R. (see table 1)	237	1,097	474	906	408	90
B. Total exports to U.S.S.R.	3,607	2,442	2,005	3,619	1,217	889
A/B	6.5%	44.9%	23.6%	25.0%	33.5%	10.1%
C. Total exports to CMEA-6 + U.S.S.R.	5,672	3,243	4.028	11,270	2,633	2.059
D. Total exports to world	181,801	102,802	97,981	174,092	72,123	90,810
C/D	3.1%	3.1%	4.1%	6.4%	3.6%	2.2%

SOURCE Ch 6 and OECD Statistics of Foreign Trade

argue that growing trade and energy relations between the East and West should be encouraged. Adherents of this position in all major political parties in Western Europe advance both economic and political reasons for such interdependence being ultimately beneficial to both sides. Economically, it contributes to expanded energy supplies and produces new trade opportunities. The countries of Western Europe need imported energy and, perhaps even more importantly, wish to export, particularly steel pipe. Politically, such trade is expected to lock the U.S.S.R. into long-term economic relationships which will give it a stake in maintaining the political status quo and increase the chances of its moderating its policies—toward Berlin, for instance.

On the other side, critics of interdependence fear it will lead to heightened reliance of Western countries on the Soviet Union for both energy and export markets, rendering these nations more susceptible to pressures from the East. The inevitable result as economic ties are strengthened becomes the "Finlandization" of Europe—i.e., the moderation of West European policy to placate Soviet demands.

These opposing views provide the foundation for dramatically different policy proposals, one aimed at promoting expanded interaction and the other at controlling it. A prime example of such policy disputes has been the controversy over the proposed 5,000-km natural gas pipeline, which would bring 40 to 70 bcm of gas (32.9 to 57.3 mtoe or 0.66 to 1.15 mbdoe) annually from Soviet West Siberia to Western Europe. This project is the largest and most recent in a series of gas deals between the U.S.S.R. and Western Europe. It could more than double the present level of imports (24.5 bcm). For Western Europe, the proposed pipeline offers prospects for significantly expanded gas supplies, as well as for exports of energy-related equipment and technology. At the same time, however, the deal would mean that Western Europe's dependence on Soviet energy would increase.

Assessing either the economic benefit to Western Europe or the potential degree of dependency which this project raises is hampered by both practical and conceptual problems. The most fundamental of these is that much of the readily available energy trade data have not been standardized to allow analysis of CMEA-West Europe flows. Since 1976, for instance, the Soviet Union has recorded only the ruble value–not the volumes—of energy exports.

Policy debate about interdependence is also confounded by definitional issues. "Western Europe" is sometimes used as a shorthand for any of a variety of multilateral organizations: the European Economic Community (EEC), the Organization for Economic Cooperation and Development (OECD), the International Energy Agency (IEA), or the Economic Commission for Europe (ECE–part of the United Nations). Each of this confusing array of organizations has a slightly different list of members. In 1979, for example, Soviet oil accounted for 7.2 percent of all oil and oil product imports by the European OECD, and of 6.7 percent of such imports by the EEC. During the same year, Soviet oil provided 0.2 percent of

all oil imported by the total OECD membership (which includes the United States, Japan, and their nations).[a] Similarly, the magnitude of Communist world coal exports changes, depending on whether one includes exports from Poland. If West German imports of Polish hard coal are added to those from the Soviet Union, its dependence on CMEA coal in 1979 rises from 2.4 to almost 30 percent of total coal imports.

There are also different ways to calculate "energy dependence." It can be seen from table 85 and figure 29 that, except in the case of Italy, levels of dependence are higher

[a]OECD, *Quarterly Oil Statistics 1979*, No. 1, 1980, Paris, pp. 248 and 188; *World Energy Industry*, pp. 195 and 260.

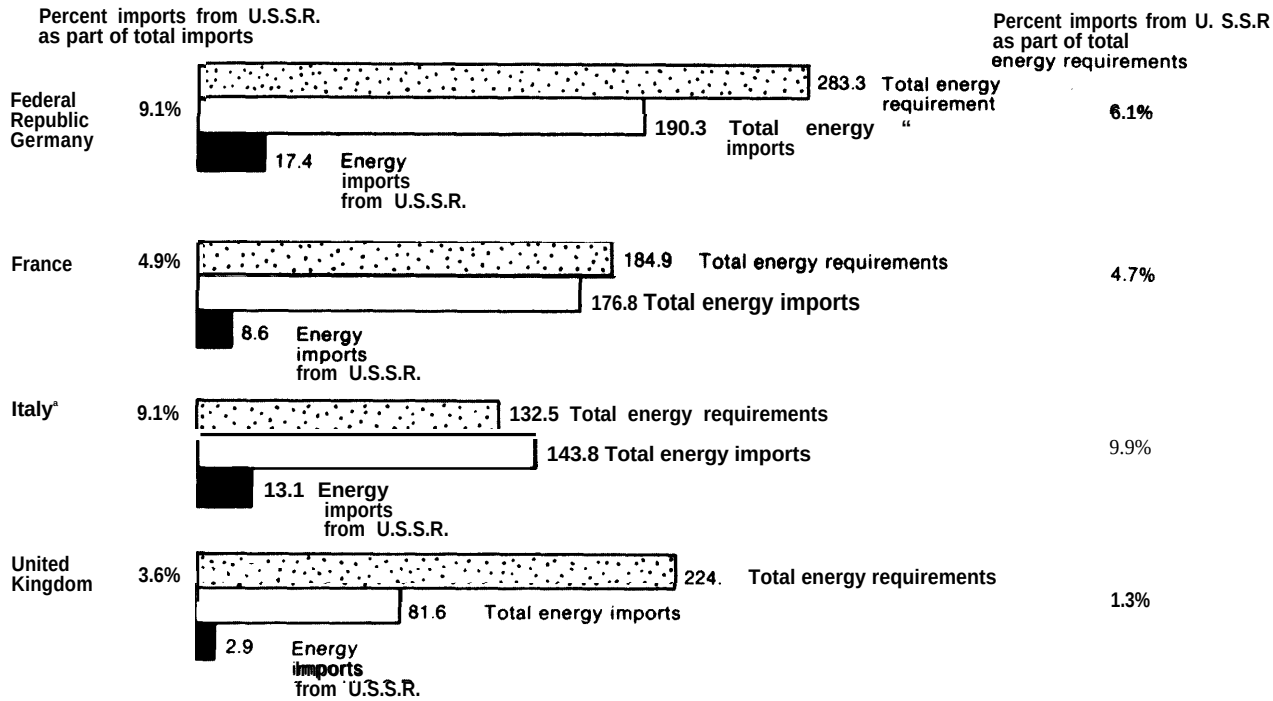
Table 85.—Western Energy Dependence, 1979
(million tons of oil equivalent)

	Oil and oil products	Gas	Hard coal	Nuclear	Geothermal, hydro and imported electricity	Total energy
Federal Republic of Germany						
A. Total energy requirements	**145,4**	49,6	*833*	3.4	*1.6*	*283.3*
B. Total energy imports from world	**150.8**	33.5	*6.0*	—	—	*190.3*
C. Total imports, from U.S.S.R.	**9.3**	8.0	01	—	—	17.4
D. Imports from U.S.S.R. percent of **total imports**	**6.20/o**	23.9%	**1.7%**	—	—	**9.190**
E. Imports from USSR as percent of **total** energy requirements	**6.40/o**	16.1%	**.1%**	—	—	**6.1 '/0**
France						
A. Total energy requirements	**117.8**	22.7	*34.2*	*3.2*	7.0	**184.9**
B. Total energy imports from world	**139.1**	16.1	*20.2*	—	**1.4**	**176.8**
C. Total imports from U.S.S.R.	**6.5**	1.6	**0.5**	—	—	**8.6**
D. Imports from U.S.S.R, as percent of **total imports**	**4.7%**	9.9%	**2.5%**		—	**4.9%**
E. **Imports from** U.S.S.R. as percent of total energy requirements	**5.5%**	7.4%	**1.5%**	—	—	**4.7%**
Italy[b]						
A. Total energy requirements	**93.4**	24.1	*10.6*	**0.2**	4,2	**132.5**
B. Total energy imports from world	**120.9**	13.2	*9.1*	—	*0.6*	**143.8**
C. Total imports from U.S.S.R.	**6.8**	5.7	*0.6*	—	—	**13.1**
D. Imports from U.S.S.R. as percent of total imports	**5.6%**	43.2%	*6.6%*	—	—	**9.1 %**
E. Imports from U.S.S.R, as percent of total energy requirements	**7.2%**	23.7%	*5.7%*	—	—	**9.9%**
United *Kingdom*						
A. Total energy requirements	**90.3**	43.2	*87.2*	2.8	**0.5**	**224.0**
B. Total energy imports from world	**70.4**	8.2	**3.0**	—	—	**81.6**
C. Total imports from U.S.S.R.	**2.9**	—	—	—	—	**2.9**
D. Imports from U.S.S.R, as percent of **total imports**	**4.1 %**	—	—	—	—	**3.6%**
E. Imports from U.S.S.R, as percent of total energy requirements	**3.2%**	—	—	—	.	1.3%

[a]Total energy requirements is similar but not Identical to apparent consumption — observed consumption data is used where available for coal and natural gas. Otherwise requirements are computed by the following formula domestic primary production + imports - exports international bunkers - inventory changes Total energy requirements are computed only if inclusive of all commodities (oil, gas, coal, primary electric power and net electricity imports) "Other Electricity" includes net electricity Imports Graphs of total energy requirements do not account for Inventory changes if production and import data are separated.
[b]Italy reexports Imported energy

SOURCE Business Information Display *World Energy Industry* Vol 2 No 3 First Quarter 1980 *Petroleurn Economlst* Natural Gas *Across Frontiers,* December 1980, *Petroleurn Intelligence Weekly* July 21 1980

Figure 29.—West European Energy Imports From U.S.S.R. and World—1979
(million tons of oil equivalent)



[a]Italy reexports imported energy

SOURCE Table 85

if one looks at Soviet energy *imports* as a percentage of all energy imports to each nation (fig. 29) than if one looks at energy imports as a percentage of a nation's total energy *requirements* (table 85). Italy purchased 43 percent of its imported gas from the U.S.S.R. in 1979, but the Soviet Union provided less than 10 percent of the total energy that Italy apparently consumed. The data thus provide no unambiguous indicators of levels of risk or dependence. Individuals make risk assessments based on their perceptions of vulnerability and their judgments about energy supply alternatives—factors which cannot be precisely measured.

WEST GERMANY

Over the past decade, West Germany has become a major Western supplier of energy equipment to the U.S.S.R. Meanwhile, the Soviet Union has become a major source of natural gas for West Germany, and for political and economic reasons, Bonn is officially committed to greater energy interdependence with CM EA. The following sections outline past and present patterns in West German energy and trade relations with the U.S.S.R..

ENERGY COOPERATION BETWEEN WEST GERMANY AND THE U.S.S.R.

There are three important explanations for West Germany's interest in energy cooperations with the U.S.S.R. These relate to the energy, economic, and political realms. First, and perhaps most important, West Germany imports 67 percent of its energy, and is anxious to diversify sources of energy

supply (see table 86). In 1979, 51 percent of the FRG's total energy requirements came from oil; 29 percent from coal; 17 percent from gas; and less than 2 percent from nuclear and other energy sources. Even though West Germany produced nearly all of the coal and more than a third of the natural gas it consumed in 1979, it remained dependent on imports for 96 percent of its oil and 62 percent of its natural gas.[6]

Official government energy forecasts show West German oil imports remaining level and thus declining in importance within the overall energy balance during the next decade. These plans require a doubling in nuclear power production between 1979 and 1984, and a quadrupling over the decade.[7] Although politicians from all three parties have expressed support for nuclear power, opposition from the left wing of the Social Democratic Party (SPD), segments of the Free Democratic Party (FDP), and various environmental groups has slowed construction of additional nuclear power plants. Oil will also be replaced with natural gas and coal, augmented by intensified conservation measures.

Soviet energy-particularly natural gas—offers an alternative for West German energy planners anxious to reduce dependence on Middle East oil. Currently West Germany imports the bulk of its natural gas from the Netherlands; the Soviet Union is the second-largest supplier, and Norway the third. As figure 29 shows, energy imports from the Soviet Union made up 9 percent of West Germany's total energy imports in 1979 and 6.1 percent of its total energy requirements.

The second reason for West German interest in energy relations with CMEA is that the FRG depends on foreign trade for 30 percent of its gross national product (GNP). West Germany is the U.S.S.R. most important Western supplier of machinery and equipment, especially chemical equipment, and the largest supplier of high technology.[8] West German exports to the U. S. S. R., like those of Japan, are concentrated in a few key industries. Between 1973 and 1979, half of its large-diameter pipe exports went to the U. S. S. R.; indeed, pipe exports were the largest single export item in West German-Soviet trade during the period.[9] Moreover, specific firms are strongly involved in East-West trade. The giant steel firm Mannesmann exports 60 percent of its total produc-

[6] Jochen Bethkenhagen, "Energy Policy of the Federal Republic of Germany," paper presented at the NATO Colloquium, 1980, p. 11.

[7] "Germany," in International Energy Agency (IEA), *Energy Policies and Programs of IEA Countries* (Paris: OECD, 1980), pp. 115-121.

[8] John Young, 'Quantification of Western Exports of High Technology Products to Communist Nations' (Washington, 1). C,: U.S. Department of' Commerce, 1 **977).**

[9] Deutsches Institut Fur Wirtschaftsforschung, *Wochenbericht*, No. 15 (Berlin, 1980). Exports of large-diameter pipe made up 12 percent of all West German exports to the U.S.S.R. during that period.

Table 86.—Federal Republic of Germany—Energy Balance, 1979

	Oil	Gas	Coal	Nuclear	Geothermal hydro and Imported electricity
Total energy requirements					
	51 3%	17.5%	29.4%	1.2%	.6%
283.3 MTOE	1454	496	833	34	16
Energy imports:					
—as percent of total energy requirements	53.2%	11.8%	2.1%		
190.3 MTOE	150.8	33.5	60		
Energy exports					
17.2 MTOE					

SOURCE Business Information Display op cit.

tion of large-diameter pipe to the U. S. S. R.; Salzgitter, the other large West German steel producer, sells 40 percent of steel exports to CMEA nations. Thus, while East-West trade represents only a small portion of FRG's total worldwide trade, in energy-related equipment, trade with the Soviet Union is disproportionately significant. Some experts estimate that 92,000 West German jobs are dependent on trade with the Soviet Union, and 220,000 on trade with CMEA.[10]

The third dimension of West German-CMEA energy interdependence is political. The ruling SPD-FDP Party coalition officially supports East-West trade as an incentive for detente and as a basis for long-term political interdependence which reduces the likelihood of conflict between East and West.[11] The West German Government has, moreover, specifically stated that it is in the interest of the West to assist the U.S.S.R, in developing its natural resources,[12] The 1978 Soviet-West German economic cooperation agreement contains a section committing both sides to cooperate in joint energy development, and in May 1980, official spokesmen from the two nations agreed to intensify such efforts. Support for this position, among businessmen and others, is widespread.

FRG-SOVIET ENERGY TRADE, 1970-80

FRG Equipment and Technology Exports

The FRG has been exporting energy-related equipment to the Soviet Union for more than 30 years, very often as part of compensation deals in which the exports are paid for in other goods or commodities. In recent years, a pattern of growing equipment exports linked to increasing imports of Soviet energy has evolved. The greater part of FRG exports has been in pipe, compressor stations, and pumps for pipelines. Additionally, West German firms have supplied equipment for petrochemical plants in the CMEA region. Added together, these categories of energy-related exports make up about 25 percent of all West German exports to CMEA (see table 84).

West German energy equipment trade with the U.S.S.R. first came to prominence in 1963, when three large West German steel companies signed a contract to supply the U.S.S.R. with 163,000 tons of 40-inch steel pipe, valued at $28 million. In November 1962, a North Atlantic Treaty Organization (NATO) resolution, passed at U.S. initiative, embargoed all sales of large-diameter pipe to the Soviet Union. The intention of the United States was to impede the completion of the Friendship oil pipeline from the U.S.S.R. to Eastern Europe. While the governments of some other West European nations refused to cooperate, the FRG compelled its firms to cancel their contracts. This understandably provoked considerable outcry from the West German business community. One company, Phoenix-Rheinrohr, was forced to close one of its plants, and others suffered substantial financial losses and were forced to cut back capacity.

Since the United States did not have as great political leverage over its other allies as it did over Bonn at the time, it was unable to prevent Great Britain, Italy, or Japan (which was not a member of NATO) from selling similar pipe. Ultimately, the U.S.S.R. found alternative suppliers and completion of the pipeline was delayed by only 1 year, Moreover, many contend today that the embargo forced the U.S.S.R, to develop its own pipemaking capability. This episode still rankles. West German leaders still recount it and regard it as misguided.[13] It remains an important event in the shaping of West German opinion on the utility of economic sanc-

[10] Deutsches Institut Für Wirtschaftsforschung, *Wochenbericht*, No. 13 (Berlin, 1981).

[11] Statement by Chancellor Helmut Schmidt, Feb. 28, 1980, quoted in Bundesminister für Wirtschaft, *Der Deutsche Osthandel 1980* (Bonn: June 1980), p. 62.

[12] Ibid., p. 19.

[13] Angela E. Stent, *From Embargo to Ostpolitik: The Political Economy of West German-So viet Relations, 195.5-1.%0* (New York: Cambridge University Press, 1981), ch. 5.

tions and the ineffectiveness of such sanctions in preventing the acquisition of technical capabilities in the U.S.S.R. Since then, pipeline equipment has played an increasingly important role in West German-Soviet trade.

In 1969, 3 years after the NATO embargo was lifted, the U.S.S.R. concluded a $25 million contract with the West German firm Thyssen for joint construction of pipe- making factories in the U.S.S.R. and the FRG. The pipes were used to transport gas from the Soviet Union to Eastern Europe. This contract marked the beginning of intensified West German exports of energy- related equipment to the U.S.S.R.

The first major exchange of West German equipment for Soviet energy was arranged in February 1970. West German banks, steel, and gas firms were all involved in the deal, which provided for the sale of 1.2 million tons of pipe, worth $400 million, as well as increased imports of natural gas. A consortium of 17 West German banks under the leadership of the Deutsche Bank supplied the credits at an undisclosed, but reportedly very favorable, rate of interest. By charging high prices for the pipe they sold, steel firms were evidently able to help to compensate the banks for losses suffered in interest rate charges. This deal assisted the ailing West German steel industry, which, as noted above, is highly dependent on foreign trade. The exchange was viewed as a success by both sides; it was followed by similar contracts for West German pipe arranged in 1972 and 1974.

Another important gas project was the "triangular" West European-Soviet-Iran contract signed in 1975. Here, West European equipment was sold to Iran, Iranian gas to the Soviet Union, and Soviet gas to Western Europe. In 1977, the deal was enlarged to include construction of the IGAT-II, a 1,440-km pipeline designed to carry gas from fields in southern Iran to the town of Astara on the Soviet border (see fig. 30). France, West Germany, and Austria were scheduled to receive a combined total of 11 bcm of this gas in exchange for supplies of equipment and cash.[14] The project has now been abandoned.

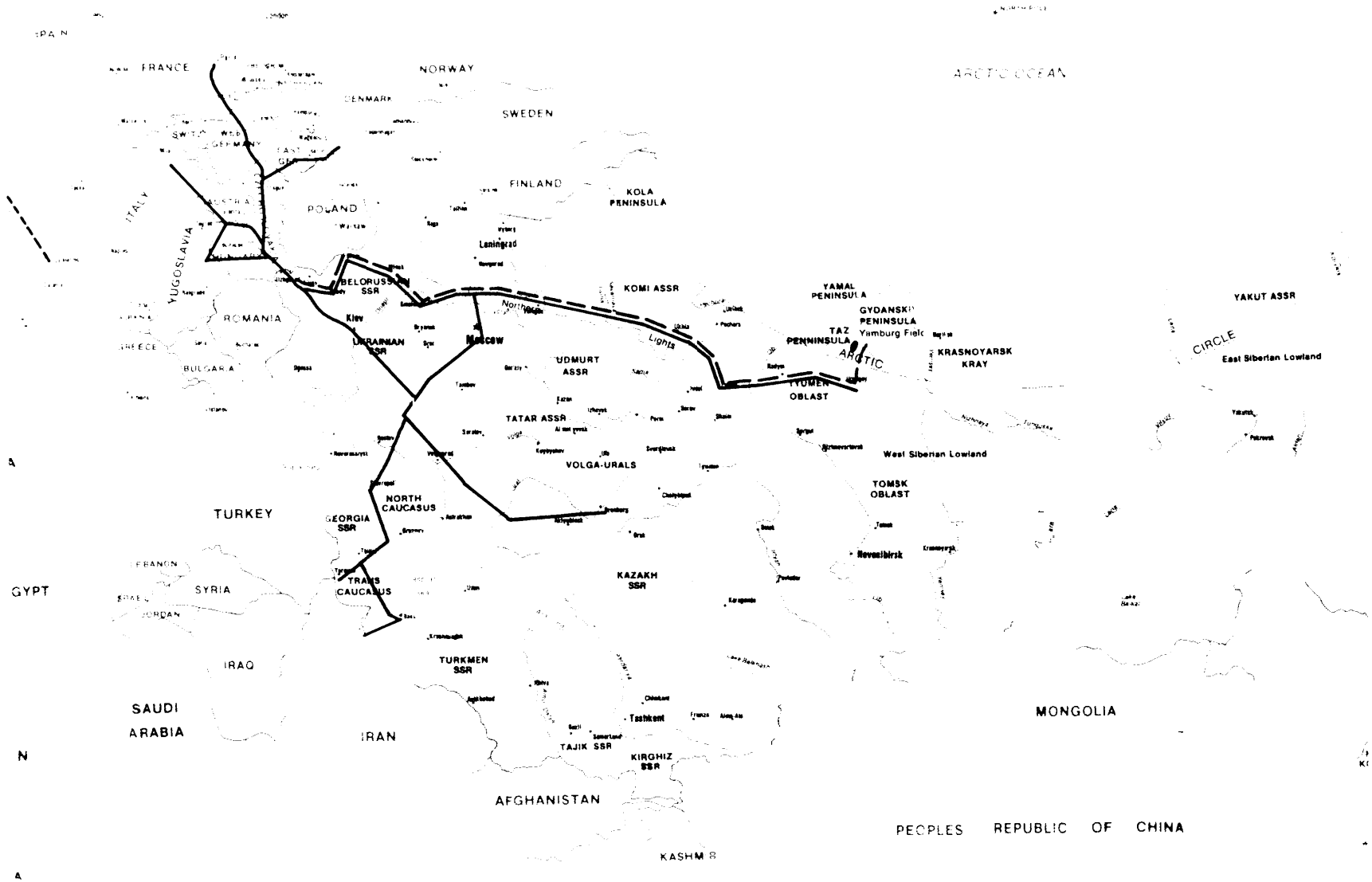
West German firms also took a leading role in the Orenburg pipeline project. The 2,750-km Orenburg or "Soyuz" pipeline is a joint project involving the U.S.S.R. and the CMEA-6, which will supply the bulk of additional Soviet gas exports to Eastern Europe over the next decade. After only 2½ years of construction, the pipeline was completed on schedule in 1978, and heralded as a prime example of CMEA cooperation. West German firms such as Mannesmann supplied pipe and other ancillary equipment, including drill pipe, casing, and equipment for 22 compressor stations. Japanese, French, American, and Italian companies were also involved.

The possibility of exporting West German equipment for Soviet nuclear power stations has been under discussion for some years. One project, initially discussed by the U.S.S.R. and the FRG in 1975, eventually fell through. The German Kraftwerkunion was to construct a 1,200-MW nuclear powerplant at Kaliningrad in the U.S.S.R. at a cost of $600 million. One major point of contention was the West German stipulation that some of the power produced by the plant should supply West Berlin. West Berlin's energy situation is precarious—the city is not connected to the electrical grids of either East or West Germany. The project failed, not only because the Soviets asked a very high price for the electricity, but also because East Germany objected to transmitting electricity to West Berlin.[15] Some West German firms have supplied equipment for Soviet powerplants, and while discussions of prospects for new projects surface periodically, FRG Government spokesmen say that there is little likelihood of West German nuclear plant exports to the U.S.S.R. in the immediate future.

[14] Stern, op. cit., p. 79.

[15] Walter B. Smith, "Securing Energy for West Germany and West Berlin," paper presented at Department of State Executive Seminar on National and International Affairs, 1978-79, pp. 13-15.

Figure 30.—Gas Pipeline Feeding Western Europe



SOURCE: Office of Technology Assessment

——— Existing gas pipeline (Brotherhood Pipeline from Uzhgorod to East and West Europe) (Orenburg or "Soyuz" Pipeline from Uzhgorod to Orenburg)

- - - - - - - - Gas pipelines under construction

— — — — Proposed gas pipeline

FRG Energy Imports

Imports of Soviet oil and natural gas to West Germany have grown steadily over the last decade, and have become increasingly significant in the FRG's energy balance. Soviet exports of crude oil and products to the FRG rose from 6.6 mmt in 1972 to 9.3 mmt in 1979,[16] about 0.187 mbd or 6.2 percent of total oil consumption[17] (see table 85). However, the West German Government is cognizant of the declining rate of growth of Soviet oil production and is not expecting its level of Soviet oil imports to significantly increase.

Clearly the most promising area for potential Soviet hydrocarbon imports is natural gas. When the first gas-pipe contract was signed in 1970, the Soviet trading company Soyuzneftexport agreed to supply German Ruhrgas with 51.5 bcm of gas (equal to 41.8 mtoe) over a 20-year period beginning in 1973. Soviet gas began to flow into Bavaria in 1973. Subsequent deals have increased supplies from the Soviet Union to West Germany. Between 1974 and 1979 West German natural gas imports from the U.S.S.R. have grown from 2.1 to 9.8 bcm/yr (9.8 bcm is about 8.0 mtoe/yr or 0.16 mbdoe).[18] As table 85 shows, this represented about 24 percent of all West German gas imports and about 16 percent of gas consumed in 1979. Had IGAT II come on line as projected, West Germany might have been receiving an additional 5.7 bcm of gas from the U.S.S.R. Imports of Soviet gas have thus become a significant part of West Germany's gas imports.

Soviet gas supplies have been relatively dependable. In 1979, however, deliveries were reduced by as much as 25 percent due to technical problems accompanying a very severe winter. Those living in Bavaria, the region primarily supplied by Soviet gas, have apparently not been adversely affected by these supply cuts due to substitution of gas from other parts of West Germany. [19] The impact of any future cuts will depend not only on the region involved, but the nature of the consumer (industry or residential), the time of year and available storage facilities.

West Germany also imports CMEA coal, particularly from Poland. In 1979, the FRG imported 2.4 mmt of hard coal (1.65 mtoe or 0.03 mbdoe) from Poland and 0.210 mmt from the Soviet Union. Together these amounted to 30 percent of all coal imports, or about 2.1 percent of West German coal requirements for the year.[20] The FRG also imports substantial amounts of brown coal (lignite) from Eastern Europe, and the West German and Polish governments are jointly supporting a coal gasification project scheduled to produce nearly 1 bcm/yr of gas by 1983. In addition, 55 percent of the uranium used in West German nuclear plants is enriched in the U. S. S. R.[21]

In sum, while West Germany's oil imports from the U.S.S.R. are expected to decline, natural gas imports are expected to rise, perhaps doubling in volume by the end of the decade.[22] There appears to be little likelihood of expanded imports of coal from Poland; Polish coal exports to Western Europe declined dramatically in 1980 due to faltering production.[23] Overall, the FRG now imports about 6.1 percent of all the energy it uses from the Soviet Union; this represents about 9.1 percent of its total energy imports (see table 85). This level of dependence is significantly higher than that of Japan, for example, but still much lower than the FRG's dependence on OPEC oil (about 60 percent).

"Marshall Goldman, *The Enigma of Soviet Petroleum* (Boston: George Allen & Unwin, 1980), p. 64.

[17] "l'he 1979 imports from the total CMEA region to the FRG made up 8 percent of German oil consumption. See *Der Deutsche Osthandel 1980*, p. 19.

[18] U. S. Department of Energy, *World Natural Gas 1978*, and Petroleum Economist, *Natural Gas Across Fron tiers*, December 1980.

[19] Interview with Ruhrgas spokesman.

[20] *Workd Energy Industry*, op. cit., p. 78.

[21] *Der Deutsche Osthandel*, 1980.

[22] Stern, op. cit., p. 105.

[23] "A'efI *York Times*, May '21, 1981, p. 1, Business Section. "Western governments and banks alike are concerned that in recent months the Soviet Union has been receiving a growing proportion of Poland's faltering coal production, always considered the country best collateral, While the West used to get two out of every 3 tons of coal shipped out of Poland, it now receives only about half, bankers say,

FRANCE

Like the Federal Republic of Germany, France has been interested in promoting greater interdependence with the Soviet bloc. Since the Presidency of General de Gaulle, French leaders have sought to maintain a foreign policy stance distinct from that of the United States. In addition, pursuit of detente with the Soviet Union has long been a major policy goal.

French energy-related interaction with the Soviet Union is, however, tempered by two factors. First, while France's dependence on imported energy is much higher than that of the FRG, French energy planners have in the past committed themselves to a very ambitious nuclear power program. The fate of this program has now been called into question as the new Mitterrand government has placed a moratorium on new nuclear reactor construction, but if targets were met, nuclear power, which made up only a miniscule portion of total energy requirements in the 1970's, would provide 30 percent of total energy by the year 1990. This has now been scaled down to 21 percent.[24] (See tables 86 and 87 for a comparison of French and West German energy balances in 1979.) Even this would minimize—theoretically at least—the need to seek alternative foreign energy suppliers. Secondly, French political relations with the U.S.S.R. have not been as sensitive or complicated as those of West Germany. There is no French Berlin; nor are Soviet troops stationed on French borders.

ENERGY COOPERATION BETWEEN FRANCE AND THE U.S.S.R.

French energy relations with CMEA are, like those of West Germany, informed by energy policy, more general economic, and political concerns, France is seeking to change its energy balance so as to reduce its dependence on imported oil. In 1979, 63.8 percent of France's total energy requirements were provided by oil (crude and products); 12.3 percent by gas; 18.6 percent by coal; and about 5.3 percent by nuclear, hydropower, and other sources. At the time of the first oil shock, only Italy among the EEC nations had a higher oil dependence. Since that time French energy policy has operated with the assumption that such dependence creates national security risks. Hence its emphasis on nuclear power.

France has a tradition of strong state intervention in the economy, which has provided a supportive context for strong guidance of energy industries.[25] There are virtual state monopolies in electricity supply, coal mining, and gas sales, and extensive regulation of the oil sector. Official government statements recently reflected a strong resolution to develop nuclear power: "France has no viable alternative to nuclear power other than economic recession and dependence."[26] The vigorous nuclear program is supported by the huge Eurodif uranium enrichment plant, which started production in 1979. It was envisaged that by 198549 reactors would provide 50 percent of French electricity.[27] (In August 1980, there were 19 French reactors in operation with a capacity of 10,000 MW.) The French Communist Party, and the Communist-dominated trade union federation CGT, have supported this direction. Socialists and environmental groups, however, have opposed nuclear power in the past and the Mitterrand government now appears to be formulating a policy which compensates for reduced growth in nuclear power with coal and massive investment in conservation and alternative energy sources.

France's attempts to reduce dependence on oil have been accompanied by stress on

[24] Ministère de l'Industrie, *The Energy Policy of France* (Paris: 1980).

[25] See Robert J. Lieber, "Energy Policies of the Fifth French Republic: Autonomy Versus ('cons traint, " in C. And rews and .S. Hoffman (eds.), *The Fifth French Republic* (New York: State University of New York Press, 1980).

[26] Ministere de 1' Industrie, op. cit., p. 7.

[27] Nicholas Wade, " France's All-Ou t Nuclear Program Takes Shape," *Science*, Aug. 22, 1980.

Table 87.— France's Energy Balance, 1979

	Oil	Gas	Coal	Nuclear	Geothermal hydro and imported electricity
Total energy requirements:					
	63.9%	12.3%	18.6%	1.7%	3.8%
184.9 mtoe	117.8	22.7	34.2	3.2	7.0
Energy imports:					
—as percent of total energy requirements	75.5%	8.7%	10.9%	—	0. 7%
176.8 mtoe	139.1	16.1	20,2	—	1.4
Energy exports: 18.0 mtoe					

SOURCE Business Information Display op cit.

diversifying geographical sources of oil supply. In 1979, Saudi Arabia and Iran supplied more than 40 percent of France's crude oil imports. As table 85 shows, France relied on Soviet oil and products for less than 5 percent of all imports in this category during 1979 and for some 5.5 percent of oil and products consumed in that year. Soviet gas amounted to 9.9 percent of total gas imports and 7.4 percent of gas consumption. While gas from the U.S.S.R. could contribute to a reduction in OPEC oil imports, spokesmen in the previous French Government have expressed concern that such imports not rise too quickly.[28] (More than 60 percent of French gas supplies come from the Netherlands.) Soviet coal constitutes an even smaller share of French coal consumption. While, overall, France is very dependent on imported energy, supplies from the Soviet Union make up less than 5 percent of its total fuel imports and total energy consumption (see table 85).

French leaders are perhaps more interested in energy cooperation with the U.S.S.R. because of the export possibilities it raises. East-West trade makes up only a very small share of French trade worldwide, but certain industrial sectors such as steel have important stakes. France was the third largest supplier of energy-related equipment and technology to the U.S.S.R. during the 1975-79 period, and this trade has become increasingly important (see table 84).

[28] Interview with French Foreign Ministry officials.

The political incentives for energy cooperation with the U.S.S.R. relates to French desire to strengthen detente. Both business and government leaders in France have viewed trade with the U.S.S.R. as normal and desirable. This attitude was reflected in French reluctance to participate in the post-Afghanistan economic sanctions initiated by the United States. In 1980, the French steel firm Creusôt-Loire won a Soviet contract for a steel sheet manufacturing plant, a contract originally awarded to Japanese and American firms and canceled when participation of the latter was prohibited by the United States on political grounds. France thus appears unwilling to use trade as a political lever in East-West relations, and indeed, the French Foreign Ministry has regarded efforts to assist CMEA–particularly the U.S.S.R.–as necessary and mutually beneficial. By helping the Soviet Union to develop its resources, they say, the Soviet Union will be less likely to extend its influence-military and otherwise—into the Persian Gulf.

FRANCO-SOVIET ENERGY TRADE, 1970-80

French Energy Equipment and Technology Exports

France has never been as important a supplier of energy equipment and technology to the U.S.S.R. as has West Germany, but French exports to the Soviet Union have

been significant in certain areas. French steel firms, especially Creusôt-Loire and Vallourec, have shipped large amounts of pipe and plants for pipe manufacturing, and French companies have also sold petrochemical equipment and plants to the U.S.S.R. One French firm recently signed a contract with the U.S.S.R. to produce offshore oil exploration equipment. In many cases the U.S.S.R. has paid for these in shipments of oil or gas.

At the same time that French firms have attempted to enlarge their sales to the Soviet Union, the French government has sought economic ties. The first Franco-Soviet Economic Cooperation Agreement, signed in 1971 and later extended, identified several areas for cooperation, including power generation and the development of new energy technologies,[29] and commissions have been established to discuss mutual research in such areas. These commissions and numerous associated working groups provide a forum where French and Soviet specialists share technical information. Since both industry experts and government officials participate, information about potential contracts and projects is disseminated. French participants have repeatedly demonstrated their reluctance to discuss certain types of energy projects—such as exchange of technical information about nuclear powerplants, or Soviet proposals for joining the European and Soviet electricity grids-at these meetings. There is, however, shared interest in fusion technology, and a French delegation has recently visited a Soviet fast breeder reactor.

In sum, like the West Germans, the French take a positive view of sales of energy-related equipment. At the governmental level, mechanisms for cooperation in energy technology development have been established and energy trade with the U.S.S.R. is supported by official policies as well as by the informal efforts of businessmen.

French Energy Imports From the U.S.S.R.

Soviet energy has played a modest role in the French energy balance. During the period following the Iranian revolution, the Soviets raised oil prices to France. These increases presented particular problems for companies like French BP, which depends on Soviet crude oil for as much as 25 percent of its supplies. In 1980, the Soviets cut back oil deliveries to France by 15 percent; French Government leaders were particularly concerned about these reductions since they included some 300,000 tons of oil contracted under a compensation agreement.[30] It appears unlikely that Soviet oil exports to France in the next decade will claim a higher proportion of total French oil imports than in 1979.

France has imported gas from the Soviet Union since 1976, although until 1980 Soviet gas was traded for Dutch gas originally destined for Italy. Since then, Soviet gas has flowed directly to France via a pipeline which crosses into Eastern Europe at the Czech border. In 1979, France imported about 1.9 bcm of Soviet gas (1.54 mtoe/yr or 0.03 mbdoe), almost 10 percent of total gas imports and 7.4 percent of the gas consumed during that year. Thus, French reliance on Soviet gas has not been as great as that of West Germany or Italy (see table 85).

[29] Axel Krause "F'rance S1ows Down on Soviet Gas Deal," in International *Herald T'ribune,* Jan. 22, 1981,

[30] *Petroleum Intelligence Weekly,* Jan. 21, 1980.

ITALY

Italy has been importing energy from CMEA since the late 1950's, and Italian policies toward energy relations with the U.S.S.R. and Eastern Europe resemble those of West Germany and France. Italy's political relationship with the U.S.S.R. is

less sensitive than that of West Germany. However, Italy's position is distinguished by the existence of a Communist party, the PCI, with 30 percent of the national vote. Despite its differences with Moscow, the importance of PCI influences Italian-Soviet political and economic relations.

ENERGY COOPERATION BETWEEN ITALY AND THE U.S.S.R.

Italy's dependence on imported energy in general and on oil as a share of its total energy requirements is higher than that of any other Western nation considered in this report. In 1979, oil made up more than 70 percent of total energy consumed, and Italy is well aware of the need to reduce its dependence on oil and diversify its energy suppliers. In late 1979 the Italian Government adopted measures, including higher gasoline prices, to restrain energy demand, but progress in implementing these plans was slow.[31] Official energy forecasts project rising levels of oil imports during the present decade.

The main reason for this projected trend is that nuclear power development has fallen behind plans. Forecasts for nuclear power, which in 1979 contributed less than 1 percent to total Italian energy requirements, have been scaled down dramatically to less than one-half the levels projected a few years ago. If all goes according to this revised plan, nuclear power will contribute about 7 percent of total energy consumed in 1990. Reaching this goal will require 12 new nuclear powerplants, only one of which was under construction in 1980.

A dominant trend in Italy's energy balance has been the rising importance of natural gas. Since the early 1970's, Italian natural gas imports have grown steeply, while domestic production has remained stable.[32] As table 85 indicates, in 1979 Italy imported over 43 percent of its natural gas from the U. S. S. R., which provided 23.7 percent of Italy's gas requirements in that year. Italian dependence on Soviet gas is currently the highest of any of the Western industrial nations OTA has studied, although Italy plans to lessen this dependence through a trans-Mediterranean pipeline, currently under construction, which will carry Algerian gas.

Italy is facing continuing economic problems, particularly in export competitiveness, and its leaders tend to take a positive view of trade with the Communist world. Italy has been an important supplier of pipe to the U.S.S.R. for many years, and continued exports are important for Italy's steel industry, which, like steel industries in other West European nations, has been experiencing a recession. Italian corporations, with government encouragement, hope to increase cooperation with the Soviet Union in hydrocarbon exploitation and production. In recent years, Italy has had a negative balance of payments with the U.S.S.R. and would like to remedy that situation.[33]

Italy also has a political interest in the promotion of trade with the Soviet Union. While Italian officials are less likely to argue that Western trade with the U.S.S.R. can act to moderate Soviet political ambitions, they view cooperation in energy development as mutually beneficial and overall trade as part of their traditional relationship with the U.S.S.R.

ITALIAN-~SOVIET ENERGY TRADE, 1970-80

Italian Energy Equipment and Technology Exports

The U.S.S.R. and Italy signed their first postwar bilateral trade agreement in 1948, and since the early 1960's trade in energy-related equipment has been a major component of Italian exports to the Soviet Union.

[31] See IEA, op. cit., p. 139

[32] "Italy, " in OECD, *Economic" Survey*, March 1980, p. 47.

[33] In 1979 total imports from the CME A amounted to 5 percent of all imports; exports were valued 3.6 percent of all exports for the year. Department of State, Bureau of Intelligence and Research, "Trade of NAT() Countries With Communist Countries, 1976 -79," report No. 31 -AR, Dec. 1, 1980.

Italian firms have exported large-diameter pipe, refinery and telecommunications equipment, gas turbines, electricity generators, and compressor stations.

Some Italian firms do as considerable a business with the U.S.S.R. as do German companies such as Mannesmann. Finsider, a subsidiary of state-owned IRI, has been selling large-diameter pipe to the U.S.S.R. since 1962, when Italy defied the U.S.-initiated NATO pipe embargo. Under current contracts, Finsider will sell 2,5 million tons of large-diameter pipe and 5,000 tons of steel pipe and special pipe to the U.S.S.R. over the next 5 years.[34] In all, some 25 to 30 percent of the firm's annual production in pipe and other steel products goes to the Soviet Union. Finsider has concluded 5-year agreements that provide for partial payment by the U.S.S.R. in coal, iron ore, and scrap metal. The company issues promissory notes which are subsequently discounted and repurchased, an unusual practice in East-West trade.

There is considerable cooperation between Italy and the Soviet Union in energy development. Finsider is currently considering a proposal to assist in the construction of a coal slurry pipeline from the Kansk-Achinsk basin in Siberia to the Western U.S.S.R. Italian firms such as Nuovo Pignone, a subsidiary of EN I, have been important suppliers of equipment for gas pipelines—compressor and booster stations. ENI has also discussed prospects for cooperation with the U.S.S.R. in offshore oil development.

As with West Germany, there have been discussions for years about joint nuclear power development involving Italy and various CMEA members. In the Italian case, agreement in principle has been reached to build a nuclear power station–in the U.S.S.R. or Czechoslovakia.[35] Since more than 4,000 workers are now unemployed due to setbacks in Italy's domestic nuclear program, there is strong interest among the Italian corporations involved in such a project. If constructed, the joint Soviet-Italian powerplant would supply some electricity to Italy. Reports also indicate that a consortium (Ansaldi Nucleari), in which both the Italian firm IRI and General Electric are participants, will build two nuclear powerplants in Romania, each with a capacity of 700 MW. Since Romania plans to build more than 10 power stations in the next decade, this contract may provide the basis for additional Italian participation in CMEA nuclear power development.]' Italy has thus come closer than any other European nation to joint development of nuclear power with CMEA.

In order to encourage Italian exports, the Italian Government, like the French and British but unlike the West German, subsidizes credits to Communist nations.[37] Until 1972, this system of cheap credits evidently worked fairly smoothly, but since that time the consensus on interest has broken down and many Italian firms have criticized the policy of granting low-interest rates to the U.S.S.R. In 1980, previously arranged credits having expired, the Soviet invasion of Afghanistan led to controversy over the renewal of these cheap credits. The Italian Government, heeding U.S. wishes, stopped all negotiation with the U.S.S.R. on the subject, but Socialist and Communist deputies in the Italian parliament sharply criticized Italy's support of the United States. In the end, Italy announced that a new credit agreement would not be extended, but that loans would be granted on a case-by-case basis. This move was unprecedented for Italy, given its past commitment to East-West trade. There may, however, have been domestic economic reasons for halting the credits.

[34] *Soviet Business and Trade*, June 15, 1980, p. 4.

[35] Interview with Dimitri Zhimerin, Vice President of Soviet State Committee for Science and Technology, reprinted in *Il Fiorino*, July 29, 1980.

[36] Rupert Cornwell, " Romania to Buy Reactors From 1talian-U.S.Group, " *FinancialTimes*, Mar.3, 19N 1.

[37] -1 n 1966, for example, 1 taly extended a $367 million credit w it h a 14-year mat uration period for t he construct ion of a Fiat plant in the U.S. S. R. See (dlen Alden **Smith,** *Soviet ForeignTrade* (New York: Praeger, **197:11,** p.166.

Finally, a number of bilateral forums have been established for discussions of energy cooperation with the U.S.S.R. involving government officials, businessmen, and technicians. There have been a number of private joint symposia on Soviet energy development. At one such meeting in Moscow in 1979, a major topic was proposed nuclear cooperation; at another, held in Italy in 1980, new developments in energy technology—including nuclear, geothermal, biomass, and pipeline technologies—were discussed.[38] Government-to-government energy meetings, the most recent of which was held in March 1981, also provide opportunities for exploring potential energy development projects.

Italian Energy Imports From the U.S.S.R.

In 1979, more than 9 percent of all Italy's energy imports and nearly 10 percent of all the energy it used came from the Soviet Union. Since 1958, Italy has been importing Soviet oil under the terms of a series of 5-year agreements. In 1979, these imports amounted to 6.7 mmt (0.135 mbd) of oil and oil products,[39] about 5.6 percent of Italy's oil imports and 7.2 percent of its total oil requirements for that year. During 1976-81, the Italian company ENI alone imported 4 mmt of oil annually (about 80,000 bd) from the Soviet Union. In 1981, however, for the first time, the supply agreement was not renewed. At the same time all Western importers of Soviet oil—with the exception of Finland—were the subjects of delivery cuts, which some attribute to Soviet failure to achieve production targets. Italian experts believe that a new supply agreement will soon be signed and that ENI will receive Soviet oil at about the same level as in the past. Since official energy plans project growing oil imports, the share of Soviet oil is likely to decline as part of total Italian oil imports.

Italy has imported gas from the U.S.S.R. since 1974. In 1979, 7 bcm (5.7 mtoe/yr or 0.11 mbdoe)—over 40 percent of Italy's gas imports and nearly 24 percent of its total gas requirements came from the U.S.S.R. Most of the Soviet gas is imported by SNAM, a state-owned company which is part of the EN I group, and distributed throughout Italy. Soviet gas is evidently competitively priced.

SNAM has arranged a variety of contracts with Libya, the Netherlands, the U.S.S.R. and Algeria, to cover Italy's projected rise in gas requirements over the decade. Beginning in the fall of 1981, Italy will receive Algerian gas via a new submarine pipeline to Sicily. Arrangements have been made for as much as 15.9 bcm (12.9 mtoe) to be supplied to Italy through this pipeline in the event of an emergency.

Italy's official energy plan foresees a rise in gas requirements from about 30 bcm (24.1 mtoe) in 1979 (see table 88) to about 40 bcm in 1985. While domestic production is expected to remain stable at about 12 bcm, imports will rise sharply to about 28 bcm. Informed estimates show that in 1985 Libya will supply about 3, the U.S.S.R. 7, the Netherlands 6, and Algeria 12 bcm.[40] If this does in fact occur, the Soviet Union will be providing about one quarter of Italy's total gas imports in 1985—considerably less than the current percentage.

Until 1981 Italy received stable and dependable gas supplies from the U.S.S.R. These imports came during the early part of the 1970's primarily from the Ukraine, and later from Urengoy in West Siberia. It was reported that in 1981 Soviet supplies of gas to Italy fell 30 percent—a fact which some attribute to "technical difficulties, " and others to rising Soviet exports to Eastern Europe.[41] If such supply shortfalls persist, the U.S.S.R. is unlikely to be able to provide

[38] See *Staffetta Quotidinia Petrolifia*, July 2, 1980.

[39] *Petroleum In telligence Weekly*, July 21, 1980, compiled by Petro Studies.

[40] These import projections, and much of the information in this section, can be found in U.S. Department of State, Outgoing Telegram, Rome, Mar. 28, 1980, "The Italian Petroleum and Natural Gas Industry, 1978-79."

[41] Interview with officials from Italian Ministry of Foreign Trade.

Table 88.—Italy's Energy Balance, 1979

	Oil	Gas	Coal	Nuclear	Geothermal hydro and Imported electricity
Total energy requirements					
	70.9%	18.3%	8.0%	0.15%	3.2%
132.5 mtoe, ...	93.4	24.1	10.6	0.2	4.2
Energy Imports					
—as percent of total energy requirements	91.7%	10.0%	6.9%	—	0.46%
143.8 mtoe.	120.9	13,2	9.1	—	0 6
Energy exports.					
22.4 mtoe					

SOURCE Business Information Display *op* cit.

the projected amounts of gas mentioned above.

Italy also imports CMEA coal. In 1979, nearly 7 percent of its hard coal imports and almost 6 percent of its hard coal requirements came from the U.S.S.R. (see table 85). Coal imports from the U.S.S.R. have fallen steadily over the past decade—from more than 2,000 metric tons in 1970 to only 925 tons in 1979.[42] Poland has remained a more important source of Italy's coal, providing 26 percent of its coal imports in 1979. (Italy imports the bulk of its coal from the United States; deliveries from America made up 32 percent of Italian coal imports in 1979.) Since late 1980, coal imports from the Soviet Union have fallen still further, as have those from Poland.

[42] "'A 1970 figure from Soviet trade data; 1979 figure from *World Energy Industry,* op. cit., p. 108,

Italy, like West Germany and France, has used Soviet uranium enrichment services. However, due to delays in the Italian nuclear program, there will be excess capacity in Eurodif, the French enrichment facility in which Italy participates. This means that Italy could easily depend on Eurodif if necessary.

In sum, Italy is more reliant on CMEA for imports of natural gas than the other West European nations examined here. In addition, Soviet oil and coal have played significant roles in its energy imports. Altogether, the U.S.S.R. fulfills nearly 10 percent of Italy's total energy requirements. This comparatively high level of dependence, together with past patterns of Italian exports of pipe and other energy-related commodities, indicate an overall relationship of energy and trade interdependence with the Soviet bloc stronger than that of France and on a par with that of West Germany.

THE UNITED KINGDOM

The United Kingdom has also been favorably disposed toward East-West energy cooperation, but a variety of factors differentiate the British approach from those of the other countries discussed here. Most important among these is the fact that the United Kingdom is more nearly self-sufficient in energy than any of these other nations. Britain's enviable position derives from North Sea oil and gas, discovered in 1969. In 1979, the United Kingdom imported 81.6 mtoe of energy *commodities and* exported more than 51 mtoe. Its total energy requirements amounted to 224 mtoe (see table 89). Therefore, Britain imported energy to meet only about 13 percent of all its

Table 89.—United Kingdom Energy Balance, 1979

	Oil	Gas	Coal	Nuclear	Geothermal hydro and imported electricity
Total energy requirements:					
	40.3%	19.3%	39.0%	1 .3%	.2@
224 mtoe.	90.3	43.2	87.2	2.8	.5
Energy imports:					
—as percent of total energy requirements	31.4%	3.6%	1.3%	—	—
81.6 mtoe.	70.4	8.2	3.0		
Total exports:					
54.9 mtoe					

SOURCE Business Information Display op cit

energy requirements. It can afford to be quite distanced from the U.S.S.R. in its role as energy supplier.

A political factor also distinguishes the current British approach. The United Kingdom refused to follow the 1962 NATO pipe embargo, and in the past it has generally pursued a course of separating trade with the Soviet bloc from politics. However, the Thatcher government has been the strongest supporter of U.S. initiatives aimed at using trade sanctions as a lever against the Soviet Union. Dissenters have questioned the efficacy of such an approach, but Britain's political stance has been considerably more distanced than that of the continental Europeans to East-West trade and energy cooperation issues.[43] Britain's weaker involvement with the Soviet bloc is illustrated in the trade data. In 1979, only about 1 percent of all British exports went to CMEA, and energy-related trade represented only about 12 percent of all British exports to the Soviet Union (see table 84).

ENERGY COOPERATION BETWEEN BRITAIN AND THE U.S.S.R.

As noted above, Britain's very limited energy relationship with the U.S.S.R. is primarily determined by its own fortunate energy situation. The United Kingdom has substantial reserves of oil and gas and enough coal to last 300 years at current rates of extraction. Table 89 shows Britain's 1979 energy balance. Energy use by the United Kingdom is more balanced among a variety of fuel sources than in most other Western industrialized nations, and its dependence on oil is low—about 40 percent of its energy requirements. Coal occupies a position of about equal importance to oil, with gas third.

Britain's long-term national energy policy is based on the development of a balance among four fuels (oil, gas, coal, and nuclear), and the further reduction of energy imports through increased domestic production. By 1985, the government hopes to achieve a net surplus in oil. In the year 2000—when North Sea oil and gas production will have peaked—the plan calls for an equal balance among various types of energy. National energy planning in Britain is facilitated by the fact that many energy industries are owned or guided by the government.

[43] For a dissenting opinion, see I louse of Commons, Fifth Report for the Foreign .Affairs Committee, Session 1979-80, *Afghanistan: The Soviet Invasion and Its Consequences for British Policy* (London: Her Majesty's Stationery office, 1980), p. xxxi. The report warns: "... Despite large Soviet reserves of oil, technical difficulties with extraction could produce circumstances in which a Western embargo of oil technology might lead the Soviet Union or its allies to action in the Gulf to acquire oil on terms which would be detrimental to Western interests."

BRITISH-SOVIET ENERGY TRADE, 1970-80

British Energy Equipment and Technology Exports

Only a very small portion of total British exports go to CMEA, and the United Kingdom has not been as important an exporter of energy-related equipment to the U.S.S.R. as have the other Western nations studied here. Between 1975 and 1979, the United Kingdom ranked a distant sixth among Western nations in such sales.

British experts are skeptical about claims that Western technology is critical for Soviet energy development, but they do believe that Western exports can nevertheless make a significant contribution in speeding or easing this development. In the past, British companies such as John Brown Engineering and Rolls Royce have sold gas turbine compressor units and engines for use in the Orenburg pipeline. The most promising area for energy-related exports in the future is undoubtedly in oil and gas exploration and production equipment. Britain has considerable experience in offshore oil and gas development in the North Sea, and such technology could contribute to the development of the Soviet Baltic and Barents seas.

In 1976, British Petroleum signed a technological cooperation agreement with the Soviet Union which covered certain energy-related areas—modernization of refineries, secondary and tertiary oil recovery technologies, and offshore exploration. But despite the fact that the British government has extended credits to facilitate this agreement, little concrete action has yet been taken on the Soviet side, and there exists no elaborate system of working groups (as is the case in France) to manage the details of specific projects.

The British Government provides subsidized credits to Communist nations through its Export Credit Guarantee Department. In recent years, the Soviet Union has not taken full advantage of this cheap credit. The long-term U.K.-Soviet trade agreement expired in early 1980, but as was the case with Italy, the Afghanistan invasion led to no new agreement being reached, and since then credits have been supplied on a case-by-case basis.[44]

British Energy Imports From the U.S.S.R.

The United Kingdom imports no Soviet gas and in 1979 imports of Soviet oil and oil products amounted to 2.9 mtoe (two-thirds of it in the form of crude oil), about 4 percent of the nation's oil imports and 3 percent of its oil requirements (see table 85). During the same year the United Kingdom exported more than 49.7 mtoe of oil and oil products. Soviet oil imports are clearly not critical to Britain's energy balance. Nor could it be argued that coal imports (from Eastern Europe) are important, since domestic coal production is so large.

In sum, Britain's relatively high level of energy self-sufficiency gives it less incentive for involvement in energy trade with the U.S.S.R. than other West European countries. In addition, as past patterns of trade in energy and energy-related equipment with CMEA show, the United Kingdom is less involved with CMEA in this area than any of the other four West European nations reviewed here. Should these trends change and a policy of expanded trade with the Soviet bloc be instituted, however, Britain's experience with North Sea oil and gas could put it and its corporations in a good position to assist Soviet offshore petroleum development.

SUMMARY

The previous sections have briefly examined the energy-related trade relations between West Germany, France, Italy, the United Kingdom, and the Soviet Union. This survey has shown that, although East-West

[44] **Testimony of Christopher Mallaby** from the F'oreign and Commonwealth Office in the House of Commons, op cit.. p. lo.

trade makes up only a small portion of the overall trade of these nations, energy-related exports in 1979 constituted about one-third of Italian, approximately one-quarter of West German and French, and about 10 percent of British exports to the U.S.S.R. (This may be compared with 45 percent for Japan and 7 percent for the United States.) In absolute amounts, this translates into nearly $1 billion worth of energy-related exports in 1979 for West Germany, and nearly one-half billion each for France and Italy. Particularly in West Germany, much of this trade is concentrated in the steel industry, where a significant number of jobs depend on it. Important industrial sectors in Western Europe, therefore, have strong interest in trade with the U.S.S.R,

These nations also import energy from the Soviet Union. The most important Soviet energy export to Western Europe is gas. At present, 43 percent of Italy's and about 20 percent of West Germany's imported gas comes from the U.S.S.R. The corresponding figures for gas consumption show that Italy imports from the U.S.S.R. nearly 24 percent and West Germany about 16 percent of the gas they require. These figures may be interpreted in several different ways. In no country examined here, for instance, does Soviet energy constitute more than about 9 percent of total energy imports or 10 percent of total energy consumption. Once again, it is clear that while overall "dependence" on the U.S.S.R. is low, the importance of certain forms of Soviet energy -i.e., gas–may be disproportionately prominent in the imports of some West European countries.

FUTURE PROSPECTS FOR ENERGY INTERDEPENDENCE: THE WEST SIBERIAN GAS PIPELINE PROJECT

OTA's examination of past patterns of energy cooperation and trade between Western Europe and CMEA reveals increasing, but at present still limited, levels of interdependence. Except in specific sectors of energy or equipment trade (gas imports for FRG and Italy; energy equipment exports for FRG, France, and Italy), levels of interdependence have remained relatively low. This situation will not necessarily persist. The "Yamburg" gas pipeline project has the potential for raising the level of Soviet-West European energy interdependence in both quantitative and qualitative terms.

one reason for the controversy surrounding this project is that it embodies the classic dilemmas of interdependence with the Soviet bloc. The U.S.S.R. has been anxious to enlist Western participation—particularly that of Japan, FRG, and Italy–because in terms of sheer construction and manufacturing capacity, the project may well be beyond the ability of the Soviet gas industry alone to handle efficiently and expeditiously. The U.S.S.R. possesses the technical knowledge to construct such a pipeline itself, but could not without massive domestic economic adjustment produce pipe of adequate quantities and quality. Moreover, equipment could be paid for in exports of gas to the West. This is a clear case in which Western equipment and know- how could make a significant contribution to speed Soviet energy development.

In return, the pipeline will provide Western Europe with greatly expanded gas deliveries. **The gas may largely replace exports of Soviet oil. This may somewhat offset projected levels of dependence on Soviet energy as a whole,** but that level is likely nevertheless to rise. Likewise, the fact that the project offers opportunities for Western exporters of energy-related equipment raises the potential for Soviet manipulation of competing suppliers. Much of the equipment to

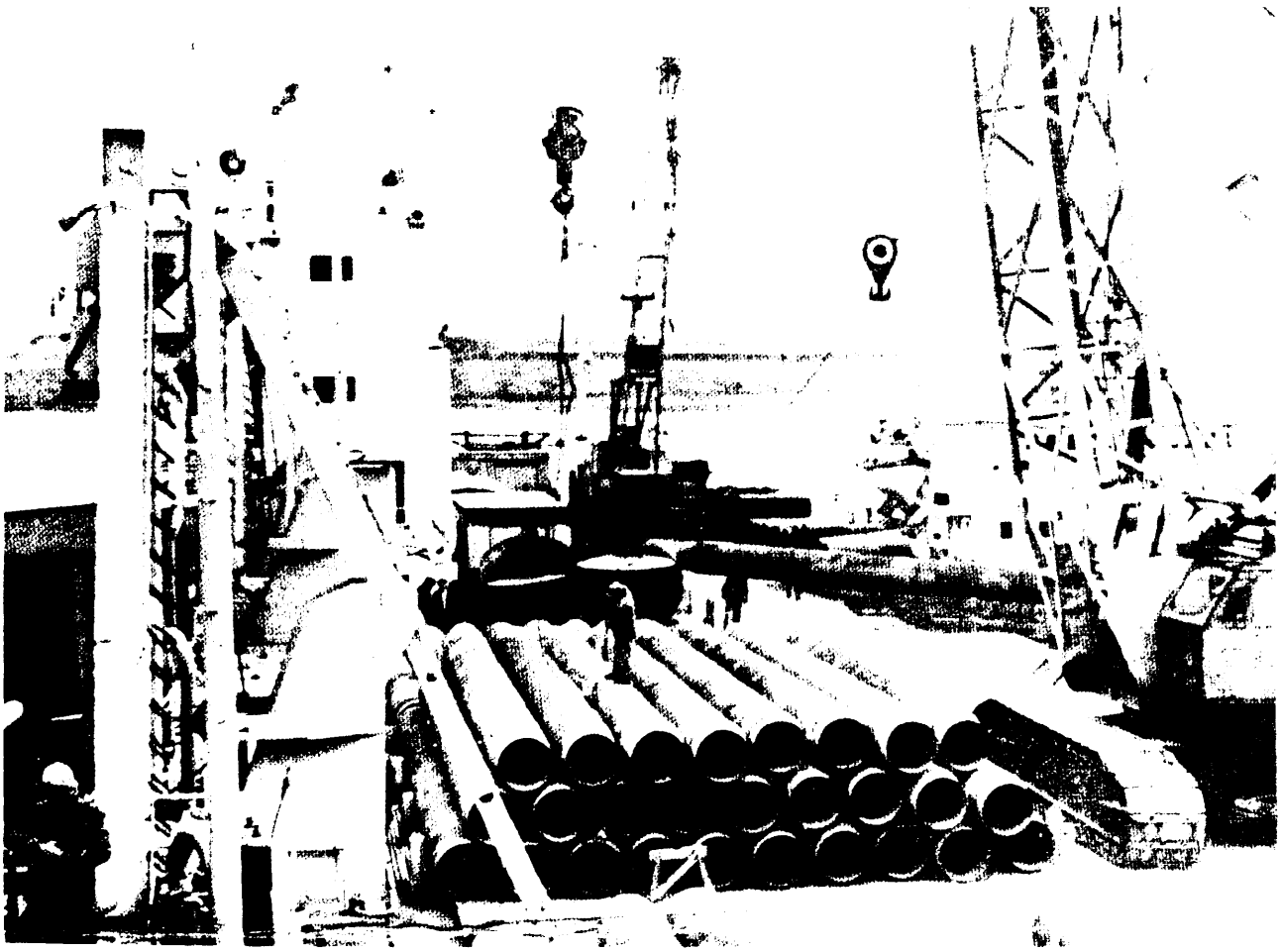


photo Credit Oil and Gas Journal

Soviet gas pipelaying barge used in the construction of pipeline from Urengoy to the Ukraine

be used in this project–compressor stations, pipelaying, and telecommunications equipment, for instance, could be manufactured by firms in several Western countries. There is, therefore, strong competition among various potential Western suppliers. Moreover, discussions over the export pipeline are occurring in a period of heightened East-West tension. The difficulty of assessing these costs and benefits, together with the magnitude of the deal and its timing, make it a test case for East-West energy relations that may well set a precedent for future projects.

A great deal of confusion has surrounded the West Siberian gas export project.[45] One reason is that negotiations are still underway and many details have yet to be settled. A second problem is the lack of a single authoritative source of information; accounts must often be assembled from periodicals in a number of different countries, and these are sometimes inconsistent or contradictory. Third, and perhaps most im-

[45]Material for this section is from Wharton Econometric Forecasting Associates, Inc., Centrally Planned Economies News Analysis, Aug. 20, 1981.

portant, incomplete information on changing Soviet plans, together with a general Western lack of familiarity with Soviet geography and geology (particularly the status and location of Soviet gas deposits), has led to the persistence of a number of misconceptions about the proposed route of the new pipeline and the source of the gas which it is to carry.

Yamburg is a supergiant gasfield located in West Siberia and extending north toward the Arctic Ocean. It is said to contain one of the world's largest untapped proven resources of gas—an estimated 2.6 trillion cubic meters. (This is equal to 2.1 billion tons or 15.6 billion barrels of oil equivalent.) But although this field has given its name to the new gas export pipeline which will supply Western Europe, it is itself not expected to produce gas until at least the end of the decade. Until that time gas destined for Western Europe will come from Urengoy, the world's largest gasfield, about 150 miles to the south. Initially, this gas will be transported through additions to the existing pipeline network. For instance, construction of a 56-inch pipeline which parallels the Northern Lights line to the Czech border is now well underway. (In April 1981, this new string had reached some 250 miles northeast of Moscow.) This line is scheduled to be put into service in 1984, and is only one of several new 56-inch pipelines planned for construction after 1982.

Another high-pressure 56-inch pipeline from Western Siberia is also planned. It is the latter which is commonly referred to as "Yamburg." The new export pipeline may eventually have two legs. It would seem that the U.S.S.R. now plans to build the first of these by the mid-1980's, reserving the latter for the end of the decade.

There are both economic and political advantages for the U.S.S.R. in exporting Urengoy gas. Unlike Yamburg, Urengoy is already a producing field. It will be significantly cheaper for the Soviets to further develop Urengoy than to initiate operations at Yamburg, and it thus makes good economic sense to postpone development of the latter. Because key segments of the new line will follow the existing routes, construction and borrowing costs should be significantly reduced. This is an important consideration. Estimates of the cost of this project have ranged from $15 billion to $20 billion to as much as $40 billion. On the political side, this plan may well be designed, at least in part, to minimize political controversy over the entire export scheme. The Western equipment which the U.S.S.R. will need can now be purchased for expansion of the existing pipeline network, without necessarily specifying for which project the equipment will be used.

Regardless of where the gas is to come from, the new pipeline to Western Europe (hereafter referred to as Yamburg to conform to popular usage), together with the additional pipeline capacity already under construction, will allow a significant increase in Soviet natural gas exports to that region. Eventually this pipeline could bring Soviet gas to as many as 10 West European nations—West Germany, France, Italy, Belgium, Austria, Finland, the Netherlands, Switzerland, Sweden, and Greece. One Western estimate is that by 1985, Soviet natural gas exports to Western Europe will increase 120 percent over 1980 levels; by 1990, they could exceed 1980 levels by 270 to 330 percent.[46] These projections are shown in table 90. The 1988-90 projections shown here, 90 to 105 bcm, are the equivalent of 73 to 85 mmt/yr or 1.5-1.7 mbd of oil. In 1980, the U.S.S.R. exported about 66 mmt of oil (1.3

[46] Ibid,

Table 90.—Soviet Exports of Natural Gas to Western Europe (in billion cubic meters)

Year	Total	Exlstlng transit pipeline and additions	Planned new West Siberian (Yamburg) pipeline
1980	24.5	24.5	—
19811983 ".	25.0	25.0	
1984	32-46	32-46	—
1985	53.0	53.0	—
1986	62-76	53-58	9-18
1987	71-91	53-63	18-28
1988-1990	90-10.5	53-68	37.0

SOURCE Wharton Econometric Forecasting Associates, Inc.

mbd). The energy of value of Soviet gas exports to Western Europe could therefore exceed that of its oil exports by the end of the decade.

WEST EUROPEAN POLICY PERSPECTIVES

At the heart of controversies over Yamburg has been the question of whether or not Western nations might become unacceptably subject to Soviet economic, political, and energy leverage by virtue of their participation. If Western nations such as West Germany and France become more dependent on the U.S.S.R. for their gas, will they become in fact hostage to Soviet political pressure? This section reviews the relevant policy perspectives of groups in West Germany, France, Italy, and the United Kingdom. These reflect concern about increasing dependence on Soviet energy among West Europeans, but also fairly strong support for the project and considerable competition among the potential participants for contracts and sales. From the West European perspective, the Yamburg pipeline offers attractive export and import possibilities, and private firms likely to expand their sales if the project materializes have been at the center of negotiations.

West Germany

The FRG has taken a leading role in all aspects of the Yamburg discussions, with West German equipment suppliers–particularly the steel firms—playing key roles. West German banks and Ruhrgas, the country's largest gas importer and distributor, have also participated. Industrial and financial groups have evidently coordinated their efforts closely with the West German Government. But while the negotiations have primarily been carried on between Soviet officials and West German manufacturers and bankers, the scope of the project and its political sensitivity mean that government officials throughout Europe have been consulted.

In recent months, there has been a good deal of debate about Yamburg among informed policy makers in West Germany. The general consensus is that the pipeline is desirable for both economic and political reasons. This conclusion is based not only on the general orientations of West German industrialists and bankers toward trade with the East, but also on a fairly detailed assessment of security implications, policymakers believe that trade acts as an incentive to restrained Soviet behavior in Europe, and many claim that the Yamburg negotiations may well have acted as a deterrent to a Soviet invasion of Poland.

Although the focus of much of the discussion between the United States and the FRG about Yamburg has been energy imports, the primary incentive for West Germany has been equipment exports. For West German firms such as Mannesman Steel Works, which last year exported to the U.S.S.R. 60 percent of the large-diameter pipe it produced, Yamburg represents the latest and largest in a long series of pipeline projects which help to to employ a few thousand workers. In fact, many West German government and business spokesmen generally view East-West trade as mutually beneficial, and the Yamburg project is particularly attractive because of the jobs it is likely to create.[47] It is not surprising that West German steel firms, including state-owned Salzgitter, have actively lobbied for the project.

A second important attraction of the pipeline is its potential for expanding energy supplies and diversifying energy sources. Several factors—levels of total imports from the U. S. S. R., projected West German domestic production, and imports from alternative suppliers—affect calculations of the significance of Yamburg for the FRG. West Germany already receives about 16 percent of the natural gas it consumes from the Soviet Union. The new pipeline would sig-

[47] See interview with Salzgitter Director Ernst Pieper, *Der Spiegel*, No. 8, Feb. 18, 1980. Salzgitter is a state-owned West German steel company.

nificantly increase Soviet gas supplies, but the exact levels of dependence likely to result are difficult to predict. This is partly due to the abandonment of the IGAT II project, which has now reduced anticipated gas supplies from the U.S.S.R. Yamburg could not only make up for IGAT II; it could also more than double the volume of Soviet gas imported by the FRG in 1979 (9.8 bcm).

Forecasts of FRG dependence likely to result from Yamburg vary not only according to assessments of IGAT II, but also according to forecasts of overall West German dependence on natural gas in the years ahead. If the FRG increases its consumption of natural gas from 60 to 80 bcm between 1980 and 1990, and if supplies from the U.S.S.R. rise to 24 bcm, then Soviet gas might represent more than 30 percent of West German gas consumption. The West German cabinet in 1980 announced that importing up to 30 percent of its natural gas from the Soviet Union would not constitute a security risk.[48] However, German gas firms do not need the permission of the government to import gas. Some observers estimate that by the year 2000 the FRG could be importing 40 percent of its gas from the U. S. S. R.,[49] but there is no concrete evidence to suggest that this is likely.

Evaluations of future dependence also hinge on assessments of the reliability and availability of alternative suppliers of gas. Some West German observers view the Soviet Union as a reliable supplier—at least in comparison to the Dutch, who have threatened to cut off gas because of a dispute over prices. Algeria is another alternative, but it has recently reneged on a contract for a natural gas liquefaction plant. Norway, which will be supplying small amounts of gas to the FRG beginning in 1985, could potentially provide more if the Norwegians decide to develop more of their gas,[50] but Norway has proved extremely difficult to deal with in these matters. Nigeria will begin supplying West Germany after 1984; and a variety of other nations might also sell LNG to West Germany.

Another factor which will influence the impact of increased levels of Soviet gas on FRG energy import dependence is West German domestic gas production. While some observers anticipate that domestic output will continue to supply Germany with about 30 percent of its gas needs, others worry that the level of domestic production might fall, partly because important deposits may be technically difficult to exploit.

West German spokesmen are skeptical about the prospect of increased Soviet leverage over the FRG by virtue of its energy exports. First, at least until quite recently, the Soviet Union had the reputation of being a reliable exporter. It is true that in 1981 the U.S.S.R. announced a 30 percent cutback of gas deliveries to the FRG, but these reductions caused little difficulty because West Germany had alternative supply arrangements.[51] On the other hand, while West German observers point out that Algerian and Libyan suppliers have been less reliable than the Soviets in years past, the Soviet Union may be said to have a far greater political interest in West Germany. The incentives to use such threats for political purposes may therefore be stronger. Similarly, some argue that the Soviets would be unlikely to suddenly withdraw or threaten gas cutoffs to the FRG since the Soviets themselves need the equipment and the hard currency which gas exports will provide. While this argument makes sense in the short term, according to this logic, after the pipeline is in place, West Germany could be more vulnerable to a supply cutoff, or the threat of one.

A third line of reasoning holds that viable alternatives to Soviet gas provide a deterrent to the U.S.S.R. use of political pressure. The FRG could buy gas from a number

[48] *Der Spiegel*, No. 26, 1980.

[49] Wolfgang Mueller-Hassler, "Die Verantwortung der Gasmanner," *Frankfurter Allgemeine Zeitung*, Jan. 10, 1981, p. 11.

[50] "Norwegen will mehr Gas Liefern" *Süddeutsche Zeitung*, Dec. 23, 1980.

[51] Otto Graf Lambsdorff, "Plädoyer für sowjetishes Erdgas," *Rheinische Merkur, Christ und Welt*, No. 4, Jan. 17, 1981.

of nations, including Holland. Current plans are to reduce Dutch imports as more West Siberian gas begins to flow, but the Dutch have evidently agreed in principle to provide supplies in the event of shortfalls of Soviet gas. There is also the possibility of LNG from the Persian Gulf. Secondly, since the West German gas pipeline network is interconnected, shortfalls could be equalized through the country, and deficiencies in supply from the Soviet Union could be compensated for by increased supplies from the North Sea, to which a pipeline now extends.[52] Another protection lies in underground storage—about 2.5 bcm of gas are now stored underground and this is to be increased. (West Germany also has oil stockpiles for about 100 days.) Fourthly, many contracts with industrial users are "interruptible," meaning that industries are responsible for providing alternative energy for periods of up to 50 days if necessary. And finally, more dual-fired burners will be used in industry so that power stations can switch to oil or coal in connection with interruptible contracts. In short, according to spokesmen from the gas industry, the FRG could now survive a total cutoff in gas from the Soviet Union if it were forced to do so.[53]

One major, as yet unanswered, question surrounding the effect of a Soviet gas cutoff concerns which customers would be most affected. Most Soviet gas will go to Bavaria in southern Germany, site of the automobile and chemical industries. These may be less vulnerable to energy supply interruptions than the more energy-intensive steel industry, concentrated in the north. The proportion of gas going to households is also an important variable. Given present information, there is no way of evaluating the likely impact of cutoffs on these various consumers.

The tone of the West German debates about contingency planning and substitute supplies suggests that under current conditions, the West German Government believes that most consumers would not be greatly affected by a cutoff in supplies from the Soviet Union—all other things being equal. However, if such a shortfall were associated with a worldwide energy crisis, perhaps precipitated by an OPEC oil embargo, the ramifications could be much more serious. To the extent that West German dependence on Soviet gas increases, contingency planning becomes even more important. Timelags associated with substitution of alternative forms of energy for Soviet gas might cause hardship for certain consumers. While West Germany seeks to develop alternative supplies and contingency arrangements, these cannot completely eliminate the potential threat of a gas cutoff by the U.S.S.R.

At one time, financing was the most problematic aspect of the pipeline for the West Germans. The Soviet Union has been a reliable creditor, paying back loans for previous gas-pipe deals an average of 3 years early. The West German Government does not subsidize export credits. While the banks would probably prefer to use a system of floating credit rates for at least part of the loans, West German equipment suppliers object to this arrangement since floating rates would allegedly complicate supply contracts. The Soviet Union at first established a tentative arrangement for $5 billion in credits. This involved a consortium of more than 20 West German banks, led by the Deutsche Bank.[54] In early 1981, a deal was worked out whereby the banks would offer a fixed interest credit worth 9.75 percent (a nominal external rate of 7.75 percent plus a 2-percent increase in charges for West German equipment). The credit was to last for ten years. As interest rates rose in West Germany, however, the Deutsche Bank and others began to reconsider the Soviet credits.[55] The West Germans have now found a new, acceptable credit formula and negotiations

[52] Answer to State Secretary A. von Wuerzen to Bundestag member Lint net- i n I Deutscher Bundestag, *Drucksache*, 9/35, pp. 9-10.

[53] Heinz Günther Kemmer, "Wenn Moskau an Gashahn dreht," *Die Zeit*, Jan. 23, 1981, p. 23.

[54] Kevin Dare, "Soviet Gas Project Loans Deadlock," *Financial Times*, Mar. 16, 1981.

[55] See John M. Geddes, "Germans offer Loan to Soviets for Gas Pipeline," *Wall Street Journal*, Feb. 2, 1981.

have turned to the question of gas prices. Credits are to be provided in stages, an arrangement that not only allows for the contingency that interest rates may go down, but which also helps to reduce the political sensitivity of the deal. West German financing, instead of being concluded in dramatic, billion dollar segments, will take on a much lower profile, incremental aspect.

In sum, both the official position of the West German Government, and informal opinion in the FRG business community, strongly favor the pipeline project. Although groups within opposition parties have expressed reservations and asked for risk assessments, no party has come out in open opposition.[56] Interest in contingency planning to minimize risks is growing. It appears that, failing a Soviet invasion of Poland or counterproductive pressure from Moscow over the terms of the deal, the pipeline will be built with strong support from West German firms.

France

French policy makers are interested in the pipeline project for the same reasons as the West Germans–expanded gas supplies and equipment export opportunities. Delivery of 8 to 10 bcm/yr of Soviet gas will add significantly to French dependence.[57] In 1979, France received 1.9 bcm–less than 10 percent of its imported gas and about 7 percent of its gas consumption—from the U.S.S.R. Some observers estimate that by 2000 the U.S.S.R. might be providing almost 30 percent of French gas.

The Soviets have been negotiating with French firms for credits, which could amount to $4 billion, and for equipment, but these discussions slowed in early 1981 in anticipation of the French election. Negotiations over French credits continue, with the Credit Lyonnais taking the lead for a consortium of French banks.

Like the West Germans, French policymakers have been generally positive toward the Yamburg project. They have tended to believe that the Soviet Union will have a long-term interest in assuring continued supplies of Western equipment, and that the U.S.S.R. will be a reliable supplier of energy. These beliefs were apparently unshaken by the fact that in the winter of 1979-80, gas shipments from the U.S.S.R. to France fell about 30 percent, due primarily to weather conditions. The shortfalls evidently did not cause any great hardships.

It would be technically possible for the Soviet Union to reduce or cut gas supplies to France without affecting West Germany, although the reverse is impossible—i.e., a cutoff of West Germany would also involve France. It would seem, however, that potential Soviet economic or political leverage over France is relatively small and there are at present no obvious incentives for such a cutoff. Additionally, the French have considered—perhaps more carefully than the West Germans—contingency arrangements in the event of gas supply shortfalls. France currently has 4 bcm of gas stored underground, and this stockpile will be doubled in the next 10 years. Moreover, French planners intend to place a ceiling on domestic gas use, allowing no more than 45 percent of the total to be used for household consumption. Gaz de France also hopes to increase interruptible supply contracts with industry during the next decade to about 30 percent of all industrial contracts. Company spokesmen say that all Soviet gas will be sold on the basis of interruptible supply contracts, and that none of it will be used for home heating.

Despite this stress on contingency planning and risk assessment, however, it would be a mistake to suggest that France would be unaffected by a Soviet gas cutoff. As is the case with West Germany, if Soviet gas supplies reach levels of 30 percent or more of total gas consumption, the effect of a cutoff

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[56] Heinz Riesenhuber in CDU CSU *Pressedienst*, Jan. 7, 1981

[57] For estimates of Yamburg gas exports to various West European nations, see Robert W. Ball, "Europe Warms to Soviet Gas," *Fortune*, June 1, 1981, p. 78.

could be significant, particularly if it occurred in the context of a worldwide energy crisis.

On the whole, it appears that while the French Government has supported the export pipeline, it has been less enthusiastic than the FRG. The new Socialist government may in time develop a different attitude toward the project, but all the major French parties have in the past indicated their support. The French have left it to the West Germans to take the lead in negotiations, but they are nonetheless committed—both to the prospect of increased Soviet gas imports and to the idea of continued trade with the U.S.S.R.

Italy

Italian negotiations over Yamburg are at a more preliminary stage than those of either West Germany or France, Here, financing questions loom large, and only limited discussions have been held between Soviet officials and Italian equipment suppliers.[58] The pipeline was the main topic at the March 1981 meeting of the Italian-Soviet Economic Commission, but the results were inconclusive. The Italian Government has decided to set up an interministerial commission to study the project.[59] The question may eventually be taken to a vote in the Italian parliament—a move that would be unprecedented in Italian relations with the U.S.S.R.

Given these uncertainties, it is difficult to predict the significance of the project for Italy. Yamburg could yield between 5 and 10 bcm/yr of additional gas. Assuming a mid-level of 8 bcm, this would double Italian imports of Soviet gas (in 1979 these were 7 bcm).[60] If Italian gas consumption reaches the expected 40 bcm by 1985, Soviet supplies would account for 40 percent of Italy's gas consumption. Extensive Italian participation in Yamburg would thus ensure a continued high level of dependence on Soviet energy.

Italy does not now have elaborate plans to deal with potential reductions in Soviet energy supplies—a point worth noting, given the present level of Italian import dependence on Soviet gas. While the Italian gas corporation SNAM does not now have interruptible gas contracts, there are plans to introduce such arrangements if and when the pipeline project proceeds. There are also plans to increase stockpiles. At present, however, it would appear that the major contingency plan calls for use of the Algerian pipeline to pump additional supplies in the event of an emergency.

On the equipment export side, a number of Italian firms might participate, but the central issue has been financing. At a meeting of Italian and Soviet government officials in March 1981, the Soviets reportedly asked for credits to cover 85 percent of the financing of equipment exports worth $3 billion to $4 billion, at an interest rate of 7 percent.[61] The Italian Government is clearly doubtful that these conditions can be met. Firms such as Finsider, which sells large-diameter pipe, and Nuovo Pignone, which sells compressor stations, naturally favor the deal, but financing problems have precluded final agreement.

In sum, the Italians favor Yamburg, but with some reservations. If financing problems are solved–and this may be a major obstacle—then the predisposition of Italian leaders is to participate. But there is markedly less enthusiasm here than in West Germany or France. The Italians are both the most dependent of this group on Soviet energy, and the most cautious about continued and increased reliance on the Soviet Union as a gas supplier.

Britain

Of the nations included in this study, Britain has the least vested interest in the West Siberian pipeline project. But although the

[58] *Il Fiorino*, Mar. 8, 1981.
[59] *Il Giornale*, Mar. 17, 1981,
[60] See statement by Enrico Manca, Minister of Foreign Trade, in *Il Messagero*, Mar 14, 1981.
[61] *Il Fiorino*, Mar. 10, 1981.

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U.S.S.R. would not provide gas to the United Kingdom, British firms such as John Brown, Rolls Royce, and Cooper Industries could sell equipment for the project. British financial institutions have discussed the possibility of extending credits to this end, but talks remain at a preliminary stage.

The pipeline has received less attention in Britain than elsewhere in Europe or in the United States. Government spokesmen claim that the question of what constitutes a reasonable or dangerous level of dependence on Soviet energy is something that other governments must decide for themselves. There has been no official comment about the desirability of the project from the perspective of West European energy security. Indeed, the British case illustrates the clear connection between the energy and trade position of each Western nation and its interest in Soviet gas development. More nearly energy self-sufficient than any of the other nations, and traditionally less involved in East-West trade, the United Kingdom is understandably the least active participant in negotiations.

SUMMARY AND CONCLUSIONS

West Germany, France, and Italy all look to the Soviet Union not only as a way to increase energy supplies, but also as an attractive market for equipment exports. Barring unexpected political or economic developments in Europe, therefore, the West Siberian gas export pipeline will probably be constructed, and West Germany, France, and Italy will certainly become more dependent on Soviet gas. While it is very difficult to make precise determinations of the impact of West Siberian gas on the energy balance of each nation, reasonable estimates are that both West Germany and France could depend on the U.S.S.R. for about 30 percent of all gas imports, and that Italy could receive almost 50 percent of its imported gas from the Soviet Union, The corresponding percentages for total gas and total energy consumption would depend on the energy balance of each country at the time—a highly uncertain matter. It must be remembered, however, that to some extent Soviet gas will *replace,* not supplement, Soviet oil in these countries, and that even with these import levels, energy dependence on OPEC is likely to remain much higher than dependence on the U.S.S.R. If the overall energy dependence of each nation examined here on the U.S.S.R. *doubled,* that dependence would range from about 3 percent in the case of Britain to nearly 20 percent in the case of Italy.

A sudden cutoff in gas supplies from the U.S.S.R. would impact each nation differently, but none would be immune from hardship—particularly in the context of a tightened world oil market or energy crisis. All would benefit by the development of more effective contingency plans to allow for substitution of alternative energy supplies in the event of a shortfall in Soviet gas. Such plans would diminish incentives for the Soviet Union to make use of its "gas weapon" to pressure Western Europe. Emergency planning would be most effective if it were undertaken by all the nations involved. Joint planning would reduce the ability of the Soviet Union to divide Western Europe by playing one country off against another. However, the prospects for coordination of West European policy toward trade and energy relations with the U.S.S.R. are not bright.

PROSPECTS FOR WEST EUROPEAN POLICY COORDINATION

One indication of Western Europe's willingness and ability to coordinate policy toward the U.S.S.R. was its response to the trade sanctions initiated by the United States against the Soviet Union following the invasion of Afghanistan. In January 1980, President Carter announced that U.S. exports of certain agricultural commodities and of high technology items would be restricted. In March 1980, these restrictions were intensified.

The extent to which America's allies were prepared to support these sanctions was un-

clear." In the area of "high technology" (including computer systems, other advanced electronic equipment, and automated machine tools) a policy of "no exceptions" to CoCom controls was established. The expectation was that sales in these areas would be drastically reduced. But, except for the United Kingdom, West European nations, on the whole, were and remain unsympathetic to the political use of economic pressures against the U.S.S.R. One important exception was made to the CoCom "no exceptions" policy—exports of spare parts for oil and gas pipelines were not restricted.[63] CoCom's decision was based on the reasoning that it is not in Western Europe's interest to reduce the efficient functioning of the Soviet pipeline system which carries energy to the West.

In fact, the West European response to the economic sanctions initiated by the U.S. was largely one of "every man for himself." As table 91 shows, during 1980 all of the allied nations reviewed here increased their overall exports to the U.S.S.R. (Japan and Britain were the most supportive of U.S. sanctions, and the French and Italian governments did limit credits for the Soviet Union.)[64] West European businessmen openly criticized the sanctions as ineffective and contrary to the fundamental interest of the West. Both West Germany and France officially expressed their wariness of the sanctions; and discussions over the gas export pipeline project and other deals continued throughout 1980. In a number of cases, West German and French firms won contracts which had been nearly completed by U. S., Japanese, or British firms. In Britain, the Thatcher government support for the sanctions was openly questioned in a report for the House of Commons Foreign Affairs Committee. The report concluded that a Western embargo of technology needed by the Soviet Union for energy development might well prove counterproductive by stimulating Soviet aggression in the Persian Gulf. Thus, rather than responding with a set of joint policy initiatives, Western Europe remained divided.

This response not only illustrates the difficulty which the United States has had–and may well continue to have—in influencing West European trade relations with the U.S.S.R. It also reflects the limited ability of EEC nations to coordinate East-West trade policies. The EEC treaty calls for development of joint trade policies toward CMEA. But, despite repeated efforts on the part of EEC to persuade its members to negotiate one multilateral treaty with each CMEA nation, a joint approach has not emerged. EEC has legislation which prohibits the establishment of bilateral trade treaties, but its members have circumvented the substance of this position by concluding separate "cooperation" agreements with East European nations–for example, the FRG's 1978 25-year agreement with the U.S.S.R. for long-term cooperation in energy and trade.

This limited coordination also exists in energy policy, a fact largely the result of the differing resource endowments and differing

[62] U.S. Senate, Committee on Banking, Housing, and Urban Affairs, Subcommittee on International Finance, "U.S. Embargo of Food and Technology to the Soviet Union," Jan. 22 and Mar. 24, 1980, pp. 36 and 117.

[63] Richard N. Cooper, "Export Restriction on the U.S.S.R.," *Current Policy*, No. 211, Aug. 20, 1980.

[64] Federico Bungo, "Cossiga Infuria, Il Piano Manca," *L'Espresso*, June 15, 1980. See also *Il Fiorino*, June 15, 1980.

Table 91.—Exports of Western Nations to U.S.S.R. 1975-80 (millions of U.S. dollars)

	United States	Japan	France	West Germany	Italy	United Kingdom	Total 6
1975	1,625	1,147	2,824	1,020	964	8,914	
1979	3,604	2,461	2,007	3,619	1,220	694	13,605
1980	1,664	3,075	2,712	4,811	n/a	1,162	13,424 (without Italy)
	– 540/o	+ 24.9%	+ 35%	+ 32%	NA	+ 67%	

SOURCE 1975-79 UN SITC 1980 preliminary IMF data

interests of the various EEC members.[65] Discussions of energy security within EEC have dealt with such issues as oil stockpiles, conservation, and substitution of coal and other energy sources for oil, but it is not clear that even the small degree of coordination achieved can be translated into the area of East-West energy relations.

Efforts to promote multinational energy cooperation have also resulted in discussions of an "all-European energy conference. This idea originated in 1971 with a proposal by Soviet Prime Minister Kosygin for greater East-West cooperation in energy.[66] Proposals for such a conference have surfaced over the years at both the United Nations Economic Commission for Europe (ECE) (both the United States and the U.S.S.R. are members) and at the Conference on Security and Cooperation in Europe (CSCE), most recently at the 1980-81 Madrid CSCE meeting. The United States strongly opposes such a conference and little progress has been made on the proposal, although a first step was taken in 1979 when the ECE established an ad hoc group, of "Senior Advisors to the ECE Governments on Energy." The major effort of the group so far has been to collect and study responses from member nations to an energy questionnaire. One problem has been that energy data from the Communist nations, particularly the U. S. S. R., has been either incomplete or unresponsive. In December 1980, ECE published a report on the energy problems of the ECE region," but especially given the opposition of the United States, the future of this effort is uncertain. In fact, the all- European energy conference has become a political issue between the United States and its allies in Western Europe who favor its convening.

[65] "See Georges Brondel, "Energy Policy and the EEC," *Energy Policy*, September 1978, p. 231.

[66] *Pravda*, Apr. 7, 1971.

[67] United Nations Economic and Social Council, Economic Commission for Europe, *Energy Problems and Co-operation in the ECE Region*, Dec. 15, 1980, p. 29.

CONCLUSIONS

Interaction between Western Europe and the U.S.S.R. over the course of the last decade–measured by both the level of exports of Western equipment to, and imports of energy and raw materials from, the Soviet Union–has increased. While trade with the U.S.S.R. does not represent a great portion of the total exports of any of the Western nations examined here, this trade does constitute a significant proportion of production for certain industrial sectors (e.g., steel). Similar patterns exist with respect to imports of Soviet energy. No nation included in this study receives more than about 10 percent of its total energy requirements from the U.S.S.R. However, in West Germany and Italy, dependence on Soviet gas now stands respectively at about 24 and 43,2 percent of gas imports, and 16 and 24 percent of total gas consumption. If the new West Siberian gas pipeline project is completed, such dependence will rise significantly for West Germany, France, and probably Italy. The degree of overall dependence for each West European nation on Soviet energy will also rise, but given the fact that Soviet gas exports will largely replace Soviet oil exports, this increase may not be as large as would otherwise be expected. The existing situation is one of limited overall dependence of Western Europe on energy from and energy-related trade with the U.S.S.R.—but significantly greater dependence in certain industrial and energy sectors. If the West Siberian pipeline is built, Western Europe's interdependence in trade and energy with the Soviet Union will increase further.

To a large extent, this trend may be regarded as a fait accompli. There is strong commitment to energy and trade relations with the U.S.S.R. among all of the nations

studied here, despite considerable variation in the salience of East-West energy and trade for public policy debate. This variation can be attributed to considerable differences in the energy and export situations of the countries. West Germany, by virtue of its historic ties, its geographic proximity, and its political concerns, e.g., with East Germany, is most active—both at the official and at the private diplomatic levels—in actively promoting interaction with the Eastern bloc. Italy, likewise, has developed a pattern of fairly strong energy and trade ties with the U.S.S.R. and its allies. France, and especially Great Britain, appear to perceive less need to promote energy imports (in the latter case because of North Sea oil, and in the former because of plans to rapidly develop nuclear power). France, unlike Great Britain, has played a strong role in exports of energy-related equipment. The prospects for interaction between any of these nations and the U.S.S.R. cannot be understood outside the context of these differing national interests, experiences, and perspectives.

This is not to suggest that there is unanimity in any West European nation over energy imports from the U. S. S. R., participation in the gas pipeline project or support of U.S. economic sanctions against the Soviet Union. Nevertheless, the general predisposition in each country examined here is to promote interdependence and to be unwilling to use trade as a lever in East-West political disputes. The latter Point is well-illustrated by the fact that West Germany, France, and the United Kingdom all actually increased exports to the U.S.S.R. in 1980—despite U.S. calls for trade sanctions. Of course, a variety of domestic political forces could change West European official policies toward trade with the U. S. S. R., but interdependence with the U.S.S.R. is currently viewed as a fact of life. To a great extent, this view is based on a positive attitude (rather than simple resignation) toward the perceived potential benefits which East-West interaction generally, and cooperative energy development with the U.S.S.R. specifically can confer. These benefits are perceived in both political and economic terms.

Unless the political situation changes dramatically, it is likely that the countries of Western Europe will participate in the development of the new West Siberian gas pipeline. If the project proceeds on the scale currently envisaged, it will lead to a significant growth in West European-Soviet energy independence. The value of the equipment needed for the pipeline is double the value of all the exports of the industrial West to the U.S.S.R. in the year 1979. Thus, completion of the project would be tantamount to a quantum increase in Western equipment exports to and credit financing for the U.S.S.R. In addition, while it is difficult to make precise estimates of the amounts of gas the pipeline will provide to any one country individually or to Western Europe as a region, dependence on Soviet energy will probably increase in the FRCI, France, and Italy.

The gas pipeline project marks a significant new development in East-West relations. It will require a multinational effort on the part of Western Europe, and it is precisely this dimension which may be of greatest long-term significance to the United States. More than the increased trade and energy import opportunities which the project offers—and in both of these areas Western Europe's relationship with the U.S.S.R. would still be considerably weaker than its dependence on OPEC–a changed political climate would offer both potential risks and benefits. On the one hand, the project may provide an opportunity for the Soviet Union to lever individual West European nations—thereby challenging overall Western unity. On the other hand, if the project stimulates new types of Western policy coordination, it could change the overall context of East-West relations.

The critical question is whether Western nations, either individually or in concert, can

act to limit the risks involved. (Any coordinated policy would necessarily involve Japan–the nation which supplied one-third of all energy-related equipment exports to the Soviet Union in 1979.) One area in which joint action could be useful is in assessing levels of energy dependence likely to result from new Soviet gas pipeline(s), and planning for contingency arrangements in the event of a supply shortfall. There is precedent for such an effort; IEA has already undertaken such discussions in the context of dependence on OPEC oil. A critical aspect of such a joint policy approach would be plans for gas and oil sharing in the event of a Soviet cutoff, including emergency provision of gas and other energy supplies from alternative sources.

A second area in which joint policy could profitably be developed is in further coordinating project negotiations at both official and private levels. This kind of joint action cannot be simply decreed; it must be built carefully and gradually. The absence of formal Western coordination may provide opportunities for the Soviet Union to play firms in one nation off against another. The U.S.S.R. could, for example, use an attractive offer of credit from one government to bargain with another. These tactics could produce a West Siberian project economically more advantageous to the U.S.S.R. than to the West. While firms generally tend to prefer open competition, in this case there are indications that, informally at least, some degree of cooperation has evolved among participating companies; informal exchange of information concerning prices, interest rates and credit terms has set an unspoken context within which each participant bargains with the U.S.S.R. Such communication, fostered by governments and by publically owned energy companies, could help to maintain Western unity. Recent moves in IEA to establish a system to monitor prices paid for oil are more formal but analogous mechanisms. Maintaining the flow of information about pipeline negotiations is thus an important component of a joint approach.

Some observers argue that a joint West European policy is not feasible–and that the past 10 years of limited progress confirms this view. The question is whether there is any viable alternative for limiting the risks of increasing energy dependence on the U.S.S.R. OTA's analysis suggests that under current conditions, predipositions in Western Europe would preclude the success of any attempt to "stop Yamburg." A more fruitful approach, therefore, would be to develop mechanisms for anticipating and ameliorating any negative consequences for the Western alliance which the project might engender.