

14838

~~Confidential~~



DIRECTORATE OF
INTELLIGENCE

Intelligence Memorandum

USSR: Marked Slowdown in Growth of the Fuels Industries

CIA HISTORICAL REVIEW PROGRAM
RELEASE IN FULL 1998

~~Confidential~~

ER IM 69-90
July 1969

Copy No. 27

WARNING

This document contains information affecting the national defense of the United States, within the meaning of Title 18, sections 793 and 794, of the US Code, as amended. Its transmission or revelation of its contents to or receipt by an unauthorized person is prohibited by law.

GROUP 1
Excluded from automatic
downgrading and
declassification

~~CONFIDENTIAL~~

CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
July 1969

INTELLIGENCE MEMORANDUM

USSR: Marked Slowdown in Growth
of the Fuels Industries

Summary

Growth in production of fuels in the USSR has been declining for several years and without substantial increases in investment is unlikely to improve in the near future. During 1968, plans were not fulfilled for production of natural gas, coal, and petroleum equipment or for construction of oil and gas pipelines. Only the 1968 production goal for crude oil was attained, but the 7.4 percent increase was the smallest annual growth in the postwar period. During the first quarter of 1969, production of all fuels lagged behind that of the first quarter of 1968, partly because of severe winter weather.

The generally poor performance of recent years has led to a reduction of plan goals in the fuels industries, but even the reduced goals will be difficult to achieve. Future increases in production of oil and gas will come mainly from deposits located at greater depths, and frequently in areas more remote from centers of consumption than those exploited thus far. Exploitation of these deposits will require the use of more advanced technology and equipment and the construction of long-distance pipeline systems. Increased investment in oil refining facilities, especially in secondary refining equipment, will also be necessary if the growing demand for higher quality petroleum products is to be met. The coal industry will need stepped-up investments if it is to make better progress in its program to modernize, re-equip, and mechanize mine operations. As a consequence of recent shortfalls

Note: This memorandum was produced solely by CIA.
It was prepared by the Office of Economic Research.

-4'

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

in supplies of fuels for winter needs, the Council of Ministers in May 1969 allocated additional capital investment for the development of the coal and petroleum industries.

Neither improvement in the Soviet fuel supply situation nor any significant increase in oil exports to the Free World appears likely in the next few years. Demand for fuel, both in the USSR and in Eastern Europe, continues to rise more rapidly than Soviet fuel production. This is especially true of demand for oil and gas. The present program for paralleling the Friendship crude oil pipeline system from the USSR to Eastern Europe indicates that the USSR intends to continue to supply the lion's share of the oil consumed by East European Communist countries, other than Romania. These countries, for the foreseeable future, probably will take most of the additional Soviet oil available for export, thereby precluding any significant increase in Soviet exports of oil to the Free World.

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

Declining Performance in Recent Years

1. The record of plan fulfillment in the Soviet fuels industries in 1968 was the worst in recent years. Only the goal for production of crude oil -- 309 million tons -- was attained, and this achievement was far from outstanding in view of past production records. Output of oil in 1968 increased by only about 7 percent, the lowest annual percentage increase achieved in the postwar period (see the table).

2. Annual goals for production of natural gas have not been met during the past decade, largely because of inadequate investment in producing and consuming equipment and in pipeline facilities. The output of natural gas (including small amounts of manufactured gas derived from coal and oil shale) in 1968 was reported at 171 billion cubic meters, about 2 billion cubic meters below plan. The absolute increase in gas production -- almost 12 billion cubic meters -- declined for the third consecutive year, and the 7 percent increase in output was the smallest percentage increase since 1952, when this branch of the petroleum industry was still insignificant.

3. Construction of oil and gas pipelines faltered badly in 1968 because of shortages of equipment such as valves, compressors, and pumps and because of difficult supply problems in remote areas, especially in western Siberia. Only about 3,400 kilometers of gas lines and 1,000 kilometers of oil lines were built in 1968, the lowest total in any year since 1962. This record followed a creditable performance during 1966-67, the first two years of the present five-year plan period.

4. Output of petroleum products is not reported in Soviet statistics, but technical journals indicate that demand for higher quality fuels is increasing rapidly. Since 1965, efforts have been made to produce larger quantities of high-octane gasolines and low-sulfur diesel fuels, but the secondary refining units required to provide such products are not being installed as rapidly as needed. Moreover, new secondary refining facilities are not being operated at design capacity, primarily because of lack of experience in operating such equipment on a commercial scale.

~~CONFIDENTIAL~~

CONFIDENTIAL

Growth of Output of Fuels in the USSR, 1958-75

Year	Crude Oil			Natural Gas			Coal		
	Million Metric Tons	Average Annual Rate of Increase a/ (Percent)	Billion Cubic Meters	Average Annual Rate of Increase a/ (Percent)	Million Metric Tons	Average Annual Rate of Increase a/ (Percent)	Production	Annual a/ Increment	Annual Rate of Increase a/ (Percent)
	Production	Annual a/ Increment	Production	Annual a/ Increment	Production	Annual a/ Increment	Production	Annual a/ Increment	Average Annual Rate of Increase a/ (Percent)
1958	113.2	14.9	28.1	9.5	493.2	51.1	493.2	32.2	7.0
1959	129.6	16.3	35.4	7.3	503.3	26.0	503.3	10.0	2.0
1960	147.9	18.3	45.3	9.9	509.6	28.0	509.6	6.3	1.3
1961	166.1	18.2	59.0	13.7	506.4	30.2	506.4	-3.3	-0.6
1962	186.2	20.2	73.5	14.5	517.4	24.7	517.4	11.0	2.2
1963	206.1	19.8	89.8	16.3	531.7	22.2	531.7	14.3	2.8
1964	223.6	17.5	108.6	18.7	554.0	20.9	554.0	22.3	4.2
1965	242.9	19.3	127.7	19.1	577.7	17.6	577.7	23.7	4.3
1966	265.1	22.2	143.0	15.3	585.6	12.0	585.6	7.9	1.4
1967	288.1	22.9	157.4	14.5	595.2	10.1	595.2	9.6	1.6
1968	309.4	21.3	169.3	11.9	594.0	7.3	594.0	-1.2	-0.2
1969 plan	326.5	17.1	185.8 b/	16.5 b/	595.3	9.9 b/	595.3	1.3	0.2
1970 plan									
Original	345-355		225-240 b/	29.2 b/	665-675	15.7 b/	665-675	27.2	4.6
Revised	346-350	19.5-23.5	215 b/		622.5		622.5		
1975 plan									
Original	450-470		380-400 b/	13-	900	5.4	900	15.5 c/	2.4
Revised	450	20-20.8 c/	280-300 b/	17 b/ d/	700	6.9 b/	700		

a. Based on unrounded data.
 b. Including small amounts of manufactured gas from coal and oil shale.
 c. Average for period since last entry shown.

CONFIDENTIAL

~~CONFIDENTIAL~~

5. Production of oil industry equipment, primarily refining equipment, has fluctuated within wide limits during the past 15 years -- from a low of about 49,000 tons in 1955 to a high of almost 148,000 tons in 1966. Irregular delivery of equipment probably has contributed to the failure to complete refinery construction on schedule. In 1968, output of oil equipment amounted to about 125,000 tons, approximately 15,000 tons less than in 1967 and only 89 percent of the plan, which apparently called for 140,000 tons.

6. Exports of oil from the USSR in 1967 and 1968 increased by only 7 and 6 percent, respectively, considerably less than the average annual rate of about 19 percent attained during 1959-66. In 1968 -- for the first time since 1955, when the USSR became a net exporter of oil -- there was little or no increase in Soviet exports of oil to the Free World. Exports of oil to the Free World have been the largest single source of foreign exchange for the USSR during the past several years. Hard currency earnings from such exports amounted to \$350-\$400 million in 1968.

7. Production of coal in 1968 was about 594 million tons, about 1 million tons less than in 1967. This decline in output was the first since 1961 and only the second in the postwar period (see the table). Commissioning of additional mining capacity lagged badly in 1968, amounting to only 12 million tons, compared with 20 million tons in 1967 and an average of about 17 million tons per year during 1961-66. Huge deposits of low-cost, low-quality coal in the eastern regions have not been developed as expected, because of the lack of nearby consumers. In contrast, greater attention is being given to the production of coking coal, as there is no adequate substitute for coke in the production of iron and steel.

8. Soviet exports of coal and coke during 1966-68 have remained fairly constant at about 26 million tons. Of this total, about 9 million tons per year, valued at approximately \$110-\$120 million, were exported to the industrialized countries of the Free World.

~~CONFIDENTIAL~~

Impediments to Growth

9. The increasingly poor performance of the fuels industries in recent years results from the failure to solve several chronic problems related to the allocation of investment and the management of investment programs. Growing demand for fuel coupled with depletion of resources in older producing regions is forcing development and exploitation of reserves in new areas. The distances between centers of consumption and new producing regions, severe climatic conditions, and changing patterns of demand are making obsolescent some of the production techniques and equipment now employed. Modernization and re-equipment will require substantial capital investment, but instead the recent past has seen declining rates of increase in investment accompanied by ever smaller rates of growth in output per unit of investment.

10. In the petroleum industry, investment allocations in recent years have been inadequate to provide the following badly needed items: (1) new equipment and technology for exploration and deep drilling in remote areas of western Siberia and central Asia; (2) large-diameter pipe and ancillary equipment to build long-distance pipeline systems for oil and gas; (3) equipment for construction of associated gas-processing facilities to recover valuable liquid hydrocarbons and to recycle dry gas to producing formations for reservoir pressure maintenance; and (4) new refinery capacity and secondary processing units to improve product quality and to vary the product mix. Furthermore, increases in production per unit of additional investment have been growing smaller, at least in part because more output has come from remote, high-cost areas.

11. Despite Soviet claims of prolific reserves of crude oil and natural gas, success in discovery and exploration of proved reserves in recent years has not kept pace with increases in production. Soviet experts have reported that while production of crude oil has more than doubled since 1960, proved reserves have risen by only about 50 percent. As a result, proved reserves are adequate for only about 14-16 years at the present rate of production, well below the level of 20 years regarded as desirable. To provide for increased reserves of oil and gas and for future growth in production, Soviet petroleum

~~CONFIDENTIAL~~

experts recommend a technical reequipment of drilling enterprises, similar to that accomplished in the mid-1950's.

12. Future increases in production of oil and gas will come mainly from reserves located at depths below 3,000 meters in the older producing areas in the Caucasus and Urals-Volga regions and in newly explored areas of western Siberia, western Kazakhstan, and offshore in the Caspian Sea. Exploitation of these deposits will require improved exploration and production technology and equipment. The USSR, however, lacks modern seismograph equipment and techniques for mapping deep-lying structures and drilling equipment suitable for their development. The turbodrill, used in about 80 percent of Soviet drilling work, is an excellent device in shallow, hard-rock formations such as those encountered in the Urals-Volga, the present major producing region. It loses efficiency, however, below 1,500 meters and is ineffective below 3,000 meters as a result of accelerated bit wear and declining penetration rates. Because of the adverse climate, difficult terrain, inadequate services, high labor turnover, and long distances for pipeline transport of oil and gas to consuming centers, unit production costs in the new fields, especially in western Siberia, are about five times greater than in the Urals-Volga area.

13. Although the USSR leads the world in the use of large-diameter pipelines, shortfalls have occurred in pipeline construction because of shortages of line pipe, valves, compressors, pumps, and related operating equipment. The difficult terrain and extremes of climate mentioned above have also contributed to delays in construction. Priority has been given to construction of gas pipelines, as natural gas is a low-cost, clean, and efficient source of energy that can be transported economically only by pipeline. As a result of the lower priority given to building oil pipelines, about 40 percent of all oil moved in the USSR is transported by rail at a cost about three times that of movement by pipeline.

14. Until the USSR invests in facilities for processing gas in the field, gas condensate deposits cannot be developed properly, and the loss of liquid hydrocarbons will continue to constitute a serious waste of valuable raw material for the oil and chemical industries. Such processing equipment is expensive.

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

but is needed to recover the liquid products and to permit recycling some of the dry gas to the producing formations to maintain reservoir pressures.

15. New refining technology and processes have not been introduced on an adequate scale or utilized properly. Refineries have not been completed on time, and the proper mix of products to meet seasonal and regional demands has not been provided. Rapid improvement is not in prospect. Soviet sources report that not a single new oil refinery was started during 1962-68 and that two important refineries planned in 1965 have not as yet reached the blueprint stage.

16. The program for modernizing and re-equipping coal mines, which started about 1964, is lagging far behind schedule. Most of the capital investment in the coal industry has been allocated to the development of high-cost underground mining areas, such as the Donets Basin. In the extension of mining to greater depths, unforeseen and difficult geological conditions were encountered that led to markedly higher unit costs. Consequently, increased investment has resulted in little or no increase in output of hard coal. During 1962-68, investment in the coal industry as a whole increased at an average annual rate of 4.6 percent while coal production rose an average of only 2.3 percent per year.

Plans and Prospects

17. Oil and gas will constitute an increasing share of the Soviet fuel balance at the expense of coal. In the future, coal will be consumed mainly in those sectors of the economy where it cannot be replaced or where it is cheaper than oil or gas. Increases in coal output will depend to a large degree on expanding production of coke for use in the metallurgical industries and on the use of coal as fuel in thermal powerplants. During the next five to six years, Soviet demand for oil and gas probably will rise at a more rapid rate than increases in production. As a result, the petroleum supply situation will get tighter, and no significant increase in Soviet exports of oil to the Free World is foreseen.

18. Production of crude oil in 1969 and 1970 clearly will be less than called for in the original five-year plan. In 1969, output of crude oil is

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

scheduled to reach 326.5 million tons, only about 17 million tons more than in 1968. If attained, this would be the smallest absolute increase since 1959 and the lowest annual percentage increase (5.5 percent) in the postwar period. Even this low rate of growth may be difficult to achieve, however, as the increase in crude oil output during the first quarter of 1969 was only about one-third as great as that in the first quarter of 1968, mainly as a result of severe winter weather. Because of this shortfall, the Council of Ministers in May 1969 adopted a resolution designed to control the use of fuels and power and to insure adequate supplies of fuel for the winter of 1969-70. Additional capital investment also was allocated for the development of the petroleum and coal industries. The goal for production of crude oil in 1970, set at 345-355 million tons by the five-year plan, is now being cited by various Soviet sources as 346-350 million tons. The goal for production of oil in 1975 was recently reported at 450 million tons, the low end of the original range of 450-470 million tons set in 1967. As seen in the table, achievement of this target will require an absolute increase of only 20 million tons per year or an average annual rate of growth of about 5 percent, well below the increases achieved during 1966-68.

19. Early in 1969, V.D. Shashin, Minister of the Petroleum Extraction Industry in the USSR, stated that Soviet exports of oil will not increase significantly in the future, because of rising domestic demands for oil. He said that the USSR will maintain a high level of exports to Eastern Europe, but doubted that exports to the West will continue to increase indefinitely. Preliminary estimates indicate that in 1970 the USSR may export about 90 million tons of oil, only about 8 percent above the level of 1968.

20. The Soviet Union evidently is committed to supply larger amounts of oil to meet the rapidly rising needs of Eastern Europe. Therefore, the USSR is paralleling the Friendship crude oil pipeline system from the USSR to Poland, East Germany, Czechoslovakia, and Hungary. As a result, Soviet exports to the Free World probably will gradually decline, along with earnings of hard currency from such exports. Eastern Europe on the other hand is developing refining capacity somewhat in excess of its immediate requirements

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

and may be able, at least temporarily, to increase its earnings of foreign exchange by exporting petroleum products derived from imported Soviet crude oil. To enable the USSR to provide the oil and gas that they need, the East European countries have agreed to invest in the development of Soviet petroleum and other industrial resources.

21. The USSR plans to supply large amounts of natural gas to Eastern Europe, possibly as much as 10 billion cubic meters per year by 1975. Before any such quantities can be exported, however, additional pipelines now under construction or planned must be completed. At present, only about 2 billion cubic meters of Soviet natural gas are exported to Poland and Czechoslovakia. Some of the gas exported to Eastern Europe will be replaced in the Soviet economy by low-cost gas imported from Afghanistan and Iran. Imports from Afghanistan began late in 1967, and deliveries of Iranian gas are to begin in 1970. By the mid-1970's, some 14 billion cubic meters per year are to be imported from these sources to supplement supplies from deposits in contiguous parts of the USSR.

22. The 1969 plan calls for producing 185.8 billion cubic meters of natural gas, almost 15 billion cubic meters more than in 1968. This goal appears to be extremely ambitious, especially in view of the fact that output of gas during the first quarter of 1969 increased only 5 percent, well below the 9-percent rate of growth during the first quarter of 1968. The five-year plan goal for 1970 originally called for production of 225-240 billion cubic meters, but was subsequently lowered to 215 billion cubic meters. Unofficial reports in the Soviet press indicate that the target for 1970 may actually be 200 billion cubic meters, a much more realistic figure. The original production goal for 1975 of 380-400 billion cubic meters was reduced to 300-340 billion cubic meters in February 1969, and further reduced in March to 280-300 billion cubic meters.

23. Construction of oil and gas pipelines during 1966-68 has not been adequate to permit fulfillment of the 1970 goals. At the end of 1968 the length of the gas pipeline system was about 56,000 kilometers. To reach the 1970 goal of 70,000 kilometers, 14,000 kilometers of gas pipeline would have to be constructed during 1969-70, the same amount of pipe

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

that was laid during 1966-68. The oil pipeline network extended for about 33,400 kilometers in 1968. To fulfill the goal of 41,000 kilometers of oil pipeline by the end of 1970, almost 8,000 kilometers would have to be constructed during the next two years -- a little more than 1.5 times the amount added during 1966-68. It is extremely doubtful that either the oil or the gas pipeline construction plans can be met.

24. Soviet difficulties in providing modern refining equipment on a timely basis have prevailed since the mid-1950's and probably will continue in the future. The desire for higher quality products will lead to a requirement for more specialized and expensive secondary refining units, some of which may be purchased from the Industrial West.

25. The output of coal in 1969 is planned to be 595.3 million tons, about the same as in 1967 and 1968. However, this goal may not be achieved. During the first quarter of 1969, coal output declined by 0.8 percent, compared with a 1.0 percent increase during the first quarter of 1968. Goals for production of coal in 1970 and 1975 have been revised downward in recent months. In 1970, production is to reach 622.5 million tons instead of the 665-675 million tons planned previously, and output in 1975 is to be 700 million tons rather than 900 million tons. These new goals appear to be much more realistic.

~~CONFIDENTIAL~~

~~Confidential~~

~~Confidential~~