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CIA/RR Project 6-51: Contribution to NIE-33

THE EUROPEAN SATELLITE POWER COMPLEX

PART I
INDIVIDUAL SATELLITE COUNTRIES:
ECONOMIC STRENGTHS AND WEAKNESSES

POLAND

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CIA/RR
Project 6-51

THE EUROPEAN SATELLITE POWER COMPLEX
(Contribution to NIE-35)

PART I
INDIVIDUAL SATELLITE COUNTRIES:
ECONOMIC STRENGTHS AND WEAKNESSES

POLAND

Summary and Conclusions.

Poland's industrial development not only is strengthening the domestic economy but also is contributing to the Soviet military economic potential. This contribution can be expected to increase through 1952. Poland has the largest population among the Satellites. Its industrial capacity is equal, if not superior, to that of any other Satellite, and its transportation system, which is of considerable importance militarily, is strong and is improving. Its bargaining position in international trade is strong because of its ability to export coal, minerals, industrial raw materials, and foodstuffs. Soviet control of Poland's economy is already widespread and will not be relaxed. Its economy is being increasingly integrated with those of the other Soviet Bloc countries under the direction of the Soviet-dominated CEMA (Council of Economic Mutual Assistance).

Since World War II, control of Poland's economic organization and activity has progressively shifted to Moscow. Through CEMA and other agencies the USSR has directed changes in the Polish State Planning Commission and in the Ministry of Foreign Trade. Soviet personnel have been placed in key positions in Polish industry, and under Soviet guidance pacts of economic collaboration with other Satellites have been concluded. Soviet control is further exercised through the Polish Six Year Plan (1950-55), which is closely modeled after the economic blueprints of the USSR.

The level of labor productivity in Poland is relatively high for Eastern Europe and is rapidly improving despite poor housing and exacting working conditions resulting from the accelerated industrialization.

Poland is dependent on essential industrial imports from the West and has to a large degree succeeded in obtaining these imports because of the strong bargaining position afforded by Western European requirements for Polish coal. Without Swedish iron ore, production in Poland's iron and steel industry would be seriously reduced unless this loss were compensated at considerable cost by the USSR. Poland is dependent on overseas trade for rubber and tin.

Although it is characterized by small peasant farms producing at subsistence levels, Polish agriculture has made food supplies for domestic consumption available at levels above prewar and has produced surpluses of grain, sugar, and meat for export or stockpiling. The tempo of the collectivization program slowed down in the first part of 1951 as compared with 1950. By

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far the larger number of collectives are in the former German territories, where resettlement has been made contingent on joining collective farms.

The reconstruction and expansion programs of the Six Year Plan rank the iron and steel industry second in importance only to the coal industry. Iron and steel production is sufficient for domestic demand and provides a small surplus for export. Poland's ferrous metal industry is dependent on Soviet and Swedish iron ore for 30 percent of its requirements. Domestic production of metallurgical coke provides a large exportable surplus.

In the field of nonferrous metals, Polish production of lead and zinc provides important surpluses for export which add to the Soviet Bloc's economic-military potential. Poland must nevertheless depend principally on the Bloc for imports of copper, aluminum, and antimony.

The Polish coal industry holds a most important position in Poland's economy. In addition to meeting domestic requirements, coal is the major item of export and the prime commodity of foreign trade both with Western and Eastern Europe.

As a result of boundary changes, Poland has become a petroleum deficit area and depends upon imports from the Bloc for 75 percent of its requirements. Refining capacity is insufficient to meet domestic demand, but the synthetic refinery plant scheduled to begin production in 1952 will reduce dependence upon imports for petroleum products.

The electric power industry is a basic element in large-scale production in the coal, electrolytic, chemical, and metallurgical industries. These industries are important not only to the domestic economy but also to Poland's foreign trade position. The electric power industry is dependent on non-Bloc sources for the new equipment needed for expansion.

Poland's chemical industry is producing at above prewar levels, but dependence on imports for some chemical requirements will continue. Synthetic ammonia, the principal basic chemical produced in Poland, is used chiefly to make nitrogenous fertilizers but could be quickly diverted to munitions production.

Development in the engineering industry is not sufficiently advanced to enable Poland to meet domestic requirements or to contribute to the war potential of other members of the Bloc. Production of broad-gauge locomotives is the outstanding exception to this situation, and Polish locomotive exports significantly strengthen the Bloc's war-making capabilities. Under favorable circumstances machine tools may be available for export in small quantities in 1952.

The Polish transportation system is of key importance to the USSR both because of the strategic commodities carried and because Poland lies on the

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major Soviet supply route for any large-scale military operation in Western Europe. The bulk of Polish coal exports to the USSR is moved by rail, as are Soviet shipments of ore and metals to East Germany and Poland for processing and subsequent Soviet use. Postwar increases in domestic economic activity and the heavy burden of Soviet-German rail traffic across Poland necessitate maximum use of available facilities.

Current allocations of resources place predominant emphasis on the development of heavy industry. In 1949, industry accounted for 49 percent of the national income as compared with 35 percent in 1938 and is scheduled to account for almost 60 percent in 1955. In contrast to the rapid rate of increase in the industrial sector of the economy, agricultural production in 1955 is to be only 50 percent over 1949 levels, a modest goal. Production of consumer goods receives little attention in the Six Year Plan.

Although Polish plans for industrialization may be aimed primarily at economic goals, their accomplishment will significantly enhance Poland's contribution to the war capabilities of the Soviet Bloc. The increasing conversion of the engineering industry to munitions production in 1950 is a clearer indication of preparation for war. A further clue to war intentions will be provided if anticipated meat and grain surpluses are stockpiled in 1952.*

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I. Trends in the Structure of the Economy.

Summary

Soviet control of Poland's economic planning and development was sharply intensified in 1950, and the revised Six Year Plan (1950-1955) clearly indicates the Soviet intention to integrate Polish economic development with that of the Soviet Bloc. By placing Soviet or Soviet-trained personnel in key Polish government agencies and by directing Polish participation in economic pacts, trade agreements, and joint councils with other members of the Bloc, the USSR exercises direct control over Polish economic development. Responsibility for implementing the economic program is delegated largely to the Polish Economic Commission of the Council of Ministers. Responsibility for plan fulfillment is then divided among the various individual ministries and passed down through numerous enterprises, establishments, and socialized institutions. With tight Soviet control on every level, Polish progress toward a socialized economy closely paralleling that of the USSR seems assured.

In 1950, about two-thirds of the Polish economy was socialized. Nationalized enterprises in that year accounted for 96 percent of total industrial output, and state control in the fields of finance, labor, raw materials, and trade was widespread. Collective and state farms, however, produced only 6.5 percent of the total value of agricultural output in 1950. The cautious collectivization policy being pursued by the state is a result of peasant resistance, a shortage of farm machinery, and the need to maintain uninterrupted agricultural production.

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1. Control of the Economy by the Government (including Direct Control by the USSR).

a. Economic Planning.

(1) Preparation of Plans.

The decree 1/ of 22 April 1949 established a firm framework within which nearly all Polish economic planning is conducted and gave the State Commission for Economic Planning extensive powers of plan preparation and plan control. Planning procedures and the levels of responsibility in the planning hierarchy, as illustrated in 1950 in the preparation of the Six Year Plan (1950-55), are as follows 2/:

Outline of Polish Economic Planning

Agency	Responsibility
Council of Ministers (probably through its Economic Committee)	Approves the Detailed Six Year Plan. Submits the draft decree to the Sejm. Decrees supplements and changes in the tasks as may be necessary in the course of practical realization of the Plan. 2/
Central Committee of the United Polish Workers' Party	Approves the revised Six Year Plan covered by the draft decree.
The Sejm (probably through its Economic Plan and Budget Commission)	Approves the draft decree on Six Year Plan as received from the Council of Ministers.
Chairman of the State Economic Planning Commission	Approves the Detailed Economic Plan for 1950.
State Economic Planning Commission	Approves plans prepared by the ministries and other central authorities on the basis of the Detailed Economic Plan.
Ministers and heads of other central planning units	Approve plans for departments on the basis of the plans approved by the State Economic Planning Commission.
Departments	Approve plans for units.
Units	Approve plans for plants.

2/ This last function is significant because the Sejm has authorized the Council to issue decrees when the Sejm is not in session.

Soviet domination of Polish economic planning is apparent in the revision of the Six Year Plan, which obviously undertakes to synchronize Polish planning and economic development with Soviet planning and development. Control over Polish planning and its integration with the needs of the Soviet Bloc also are accomplished through (1) mutual assistance pacts with the USSR and other Satellites; (2) trade agreements with all members of the Bloc; (3) creation of joint Councils for Economic Collaboration with Czechoslovakia and Hungary, the former coordinating planning and statistical work; and (4) Poland's membership in CEMA. 3/

These instruments of Soviet control are supplemented by the presence of Soviet or Soviet-trained personnel in Polish government agencies. The appointment of Marshal Rokossovsky as Minister of National Defense, for example,

resulted in a revision of the Six Year Plan to emphasize military production. 4/

(2) Plan Control.

The Council of Ministers is entrusted with systematic control of the fulfillment of the Six Year Plan. 5/ This is accomplished through the Economic Commission of the Council, which is responsible for the operation of plans assigned to each of the several individual ministries by the State Economic Planning Commission. 6/ Each ministry or other central planning unit is responsible for the execution of its own plan, and the same principle is extended to administrative and planning units below the ministerial level. 7/ The main burden of mobilizing the working population to meet the various tasks of the Plan falls upon the ministries, enterprises, and socialized institutions. 8/

The Supreme State Control Chamber, charged with special supervision of the implementation of Party Resolutions and working directly under the Council of State, maintains a constant check on all plants and institutions which receive state aid or perform duties in the field of public administration and national economy. It acts as a whip to insure the attainment of plan quotas, as does its Soviet counterpart, the Ministry of State Control. 9/

b. Administrative Control.

(1) Control by the Government.

Administrative control of the Polish economy is exercised by the Council of Ministers through its Economic Commission, 10/ which is composed of those members of the Council of Ministers who have a direct official interest in the national economy. In addition to directing the various ministries represented by its membership, the Economic Commission has final jurisdiction over the following central organizations 11/: the Central Council of Trade Unions, the Central Federation of Cooperatives, the Association "Union of Peasant Self-Help," the Polish National Bank, the Central Board of Vocational Education, and the Main Bureau of Statistics.

Polish "self-criticism" indicates that the industrial supply organization continued to be deficient in 1950. Remedial changes undertaken in this sector included clearer direction of the supply functions, establishment of a unified organization linking all levels of supply into one system applying to the entire economic structure, and the establishment of the "commodity organization" to replace the "functional organization" in the industrial supply system. 12/ A trend toward greater unification of economic services and firmer control by the central authorities is evident in the unified administration set up for the ports of Gdansk, Gdynia, and Szczecin by the Economic Commission of the Council of Ministers to secure coordination of the economic plans for these ports. 13/

In the field of agriculture the contract purchase system remains an important factor in the execution of state plans. This system, an instrument of indirect government control of agriculture, has probably become a permanent institution. 14/ Greater control of agricultural science may be expected as a result of the creation of special research institutes for various branches of agriculture and from the establishment of a central agricultural institute to control the research institutes. 15/

(2) Control by the USSR.

The Soviet Union exercises considerable administrative control of the Polish economy. Industry is being intensively reorganized on the basis of plans prepared in Moscow, and the location of industrial installations is frequently based on the interests of the Bloc as a whole rather than on Polish interests. 16/

Extensive penetration of government offices by Soviet personnel is an important means by which the USSR has acquired economic control in Poland. 17/ Since December 1949, hundreds of Polish intellectuals and engineers have been moved to the USSR and replaced by Soviet citizens. The USSR attempts chiefly to fill important posts in industry, but Soviet engineers, foremen, and manual laborers also are sent to Poland in great numbers. 18/

Among the most important forms of economic "cooperation" between the USSR and the Satellites are the enterprises in which the Soviet Union and the local governments jointly participate, ostensibly on the principal of "parity" but actually under Soviet domination. 19/ Such arrangements have not been a major factor in Soviet control of Polish economy, but the current pattern in Eastern Europe indicates that joint Polish-Soviet companies may become an important instrument of control in the future.

2. Factors Relating to the Effectiveness of Control.

a. Proportion of the Economy under Direct Government Control.

In 1950 about two-thirds of the Polish economy was socialized. 20/

(1) Extent of Nationalization of Industry and Services.

By the end of 1949, 96 percent (by volume) of Poland's total industrial production came from nationalized enterprises. 21/ In addition, the government cautiously and gradually has gained control of finance, labor, raw materials, and trade. By mid-1949, two-thirds of the retail trade enterprises were government-owned, and expansion of the network of state-owned retail outlets, accompanied by a decree which compels all merchants to belong to an organization of private trade, foreshadows the elimination of the remainder of private retail sector. Wholesale trade was almost entirely nationalized in the middle of 1950. The 1950 currency reform, a severe blow to private traders, small

artisans, and individuals living on savings, reduced speculative activities and increased the pressure to join the socialized system. 22/ All Polish ship brokerage companies were disbanded by 1 January 1951, and the government now supervises all Polish shipping through the Morska Agencja (Sea Agency). 23/

(2) Extent of Collectivization of Agriculture.

Since the summer of 1948, when the Polish collectivization program was launched, actual progress has been small. By the end of 1950, only 1.5 percent of all agricultural land had been collectivized. 24/ The state has taken over all holdings larger than 50 hectares (except church properties), but collectivization has proceeded at a slower pace than was originally planned. The slowness of the collectivization drive is the result of a lack of farm machinery, peasant resistance, and the pressure of immediate agricultural needs. 25/ Thus far the government has chosen to avoid a showdown on the issue.

A new stage in the development of collectivation began in 1950 when the number of production cooperatives rose rapidly, the term "collectivization" came into official use, and collectivization of a considerable number of small and medium-sized farms was projected. The Party, however, apparently intends to continue its cautious policy toward the peasantry, feeling that a drastic move would threaten the success of important parallel aims, such as increased crop production. 26/ The pace of collectivization, first accelerated in early 1950, slackened in early 1951. 27/

A large proportion of the Polish collectives are in the former German territories, where permission to resettle has been made contingent on joining cooperatives. So far no major successes have been made against the peasant opposition to collectivization in old Poland, nor are there any indications that a more rapid collectivization in this area is imminent. 28/

Second in importance to the producers' cooperatives are the state farms, the counterparts of the Soviet kolkhozes. These state-owned enterprises have been created chiefly from former private estates in the Recovered Territories. There were 4,800 state farms at the end of 1949 covering about 10 percent of this area and accounting, together with the producers' cooperatives, for 6.5 percent of the total value of agricultural production.

Plans for future collectivization envisage a substantial increase in the number of producers' cooperatives. One of the five main goals of the Six Year Plan is a voluntary transition to collective farming by a considerable number of the small and medium peasant landholders and the abolition of the "sources of capitalist development" in the rural areas. Eight percent of the sums allocated for agricultural investment under the Plan will be utilized in the development of the socialized sector. Although owners of small and medium farms are to be financially assisted, a policy seemingly contradictory to the main goal of collectivization, the number of farms to be collectivized is termed "very considerable," and the producers' cooperatives are to take over an

"important number" of small and medium holdings. The government reportedly plans to collectivize 35 percent of the farms by 1955 or 1956, but because of a critical shortage of specialists, not more than 22 percent may actually be collectivized by that time.

Polish Communists are reported to believe that collectivization will not be completed until 1960 at least, because the pace for creating collective farms will depend largely on the supply of tractors. 29/ Although the Party probably will have to contend with peasant resistance for some years to come, the rate of collectivization probably will increase in the second half of 1951 and in 1952.

b. Nongovernmental Organizations as Instruments of Control.

The Polish government, which exercises complete political control, has been able to utilize nominally nongovernmental organizations to tighten its grip on the national economy. Trade unions, for example, have become mere tools of the state (the Central Council of Trade Unions is under the jurisdiction of the Economic Commission) and are used extensively to execute economic plans and to organize work competitions. Neither the trade unions nor the factory councils, however, may overrule the plant administration on production matters. Trade unions are designed to create proper conditions for the achievement or overfulfillment of the production norms. In 1949 the trade unions had 5.8 million members, or 45 percent of the urban population and 16 percent of the total population, and their importance has since increased. 30/

Economic control is further supplemented by the Central Work Institute, established in 1948. The Institute's Department of Organization of Industry studies modern methods of industrial organization and production utilized in "technically advanced" countries, particularly the USSR, whereas its Foreign Realtions Department establishes commissions for the exchange of information with Czechoslovakia and the USSR. A Department of Organization of Commerce was being established in 1950. 31/ The Polish Chamber of Foreign Trade, which is in charge of the annual trade fairs in Poznan, is another nominally private organization which acts entirely in the interests of the government. 32/

II. Capacity of Human Resources for Economic Development.

Summary

From 1950 to 1955, nonagricultural employment in Poland is scheduled to rise from 4.4 million to 5.1 million and agricultural employment to decrease from 7.4 million to 7.2 million. This represents almost the maximum possible expansion of the industrial labor force. Larger numbers of technically trained personnel will be entering the labor force, improving the ratio of such personnel to total workers. Productivity has been raised slightly above prewar levels. Unless essential employment goals were abandoned, mobilization, without impairing essential employment goals, would require further employment of women, reductions in administrative and nonessential personnel, and further withdrawals from agriculture.

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1. Size and Distribution of the Labor Force.

Although war, deaths, territorial shifts, repatriations, and resettlement caused a net population loss in Poland of about 12 million persons in the 1940's, these changes improved the demographic balance by increasing somewhat the proportion of males of working age and replacing some of the Germans expelled from the western areas. 1/ A deficit of males of working age remains, however, and its effects can be offset only by greater employment of women.

In 1950, nonagricultural employment in Poland was 4.4 million, and agricultural employment was 7.4 million, totalling 11.8 million. During the Six Year Plan (1950-55), total employment is to increase by 1 million. Nonagricultural employment is to increase by 1.3 million, with a reduction in agricultural employment of 300,000. 2/ The increase in the socialized sector of the economy is to be 2.1 million, of which approximately 800,000 will come from the private sector of industry and 300,000 from agriculture. 3/ The annual increase of approximately 250,000 in population of working age 4/ is not sufficient for the planned growth of the nonagricultural labor force, because of military conscription, the slow rate of employment of females, and the delay in entry into the labor force caused by advanced schooling.

Polish Civilian Labor Force
1950-53

Thousands

Sector	1950	1951	1952	1953
Agriculture	7,400 5/	7,350 6/	7,300 6/	7,250 6/
Nonagriculture	4,450 7/	4,700 8/	5,000 9/	5,100 a/
Industry and Construction	2,650 10/	2,750 11/	3,050 12/	3,150 12/
Transport and Communications	550 13/	570 b/	590 b/	610 b/
Commerce and Public Employment 14/	1,350	1,380	1,360	1,340
Total	11,850	12,050	12,300	12,350

a/ Calculated from scheduled increase in Six Year Plan.
b/ Calculated from scheduled total increase and previous increases in transport.

The increased emphasis on the expansion of industrial employment (particularly in heavy industry) is apparent in all official statistics and discussions of the Six Year Plan. In accordance with planned expansion of plant capacity and other construction needs, the construction labor force is to expand by 74 percent between 1950 and 1955. 15/ Military and paramilitary conscripts also are used on various projects.

2. Level of Technical Training, Skill, and Efficiency.

Poland is short of technically trained personnel and at the beginning of 1950 had only the following percentages of total requirements in specific industries 16/:

Industry	Engineers	Technicians
Metallurgy	34.8	50.0
Metal Products	26.0	80.0
Coal	32.0	75.0
Power	65.0	53.0
Food Processing	52.0	68.0

Shortages of skills are similar for other sectors of the economy. From 1950 to 1955 the number of persons with higher technical education is to increase from 26,000 to 73,000; those with average technical education, from 85,000 (in the socialized sector of the economy) to 242,000; and those with average professional education, from 275,000 to 615,000. 17/ At best the number available will still be short of requirements, and many of the newly educated will have little experience.

Labor efficiency and productivity have improved since the war and have approximated prewar levels by late 1949. 18/ In 1950, productivity per worker rose by 9 percent in all nationalized industry, but in coal mining and some other sectors of nationalized industry planned increases were not achieved. Various control measures were instituted to combat shirking, carelessness, absenteeism, and a high rate of alcoholism. 19/ The increase in productivity in 1951 is planned to be 12.2 percent. 20/

3. Expansibility and Adaptability of the Labor Force.

The number of legal holidays in Poland has already been reduced from 17 to 12 and could in an emergency be reduced further. 21/ Overtime is legally limited to 4 hours a day and 120 hours a year. 22/ By reducing holidays and increasing overtime an additional labor input of about 10 percent might be derived from the present industrial labor force. If the planned employment goals are to be achieved, however, mobilization for war would require further employment of women, reductions in personnel in administrative and other nonessential employment, and some withdrawals from agriculture.

III. Living and Working Conditions.

Summary

Living standards in Poland have not regained prewar levels. Members of the Communist elite enjoy a higher standard of living than the rest of the population, and workers are favored over nonworkers. Families with only one wage earner find it difficult to support themselves. Housing conditions will probably remain poor in 1951 and 1952. Food supplies, although adequate, are expensive, and the average diet contains a disproportionate amount of grain and potatoes. Health services are inadequate.

Working conditions are severe because of manpower controls and the promotion of work competition. To induce higher production, the government keeps basic wages at a low level and grants premiums for the overfulfillment of established norms, but the periodic raising of these norms prevents any significant improvements in working conditions and incomes.

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1. Living Conditions.

a. General.

Polish living standards, despite recent improvement, are below prewar levels and vary considerably among the three urban classes created by postwar changes in the social structure. 1/ The Communist elite, which has eliminated and replaced the upper and middle classes, enjoys the highest standard of living. Nearly all nonagricultural workers are included in the category of state employees, who can supplement their normal income with bonuses and purchases in "socialized" stores and state dining rooms. Widows, pensioners, and the aged, who make up the third social class, have below-subsistence incomes.

Although incomes of the elite group are kept secret, it is estimated that government dignitaries, members of the Central Committee of the (Communist) Workers' Party, directors of various economic sectors, writers, journalists, actors, and architects earn from 2,000 to 4,000 zlotys* per month. These relatively high salaries are supplemented by various privileges entitling members of this group to draw upon state "supply offices" and receive free living quarters, light, heating, telephones, and official automobiles.

Workers and office clerks, who with their families comprise about 95 percent of the urban population, are dependent for survival upon the combined wages of several members of a family or upon premiums derived from long working hours. The average basic wage in this group in 1950 was 400 zlotys a month.

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* One US dollar equals 4 zlotys at the official rate.

Since 1,200 zlotys a month are needed to support a family of four, 2/ it is clear that families with only one wage earner who earns only the basic wage find it difficult to exist. Those incomes are supplemented by both legal and quasi-legal means. Legal supplementary income accrues from premiums and bonuses earned in "socialist work competitions." Trading in bonuses and scarce consumer goods is a quasi-legal source of income.

Incomes of the third social group, including the aged, widows, and pensioners, are so far below the subsistence level that most of these people are forced to live with wage-earning families.

Despite government propaganda regarding the lowering of prices for some articles on 1 January 1951, food prices on the list were reduced only by from 5 to 10 percent. The prices of electrical items were reduced by 18 percent, of certain metal articles by 30 percent, and of window glass by 37 percent. On the other hand, the currency reform of October 1950 raised prices by rounding odd price figures in the conversion to the new currency, and, in addition, some prices rose following the reform. The net result is that the general price level is about the same as it was in October 1950.

b. Housing.

Despite intensive postwar rehabilitation of damaged buildings and construction of new buildings, housing in Poland is believed to be inadequate because of the construction priority given to industrial plants and government offices. Provisional figures of the December 1950 census, including rural and urban communities, report 5.9 million dwellings with 13.7 million rooms. Although there were only about 4.4 million rooms in 1946, much of subsequent increase may be accounted for by the simple patching up of numerous dwellings which required minor repairs. Current figures place the average for Poland at less that two persons per room, but continuing complaints from certain areas indicate that living conditions are probably extremely crowded.

c. Food.

The average Pole consumes about 2,900 calories a day, equal to the pre-war intake. Grain and potatoes are the dietary staples. Although food is unrationed, the government controls consumption by setting prices at high levels and by making some commodities available only to privileged groups. Restrictions in the consumption of foodstuffs reflect the sacrifices imposed on the Polish people for the sake of developing heavy industries. Domestic supplies of dairy products and meats, for example, are reduced by diverting part of production for export to hard currency countries in order to pay for Polish imports of capital goods.

d. Health.

During the German occupation, Polish health services, perennially inadequate, deteriorated seriously. At the end of the war only about 6,000

doctors, some 3,000 nurses, and a small number of dentists were left in Poland. Of 75,000 hospital beds, about 10,000 were destroyed, and some 54,000 were rendered unusable. It was estimated that the effectiveness of hospitals had been reduced by 70 percent at the end of the war. 3/ The estimated number of doctors in 1951 is about 10,000. Since the present population is 25 million as compared with about 35 million before the war, there are now 4 doctors per 10,000 inhabitants as compared with 3.7 in 1938, but because of higher postwar disease rates, the strain on medical personnel and facilities is even worse than before.

In the early postwar period the incidence of disease was extremely high, and the food supply was inadequate to maintain or rebuild health. Since 1947 the public health system in Poland has been operating within the scope of economic planning, and since early 1950, when the objective of building a unified "socialist system of public health" was announced, all health services have been nationalized. Although there has been considerable improvement in health services, medical facilities are still inadequate. A system of compulsory health insurance is supposed to cover all employees and their families, including agricultural workers and domestic servants, but on 1 September 1950 the total number of insured was only 5.6 million, about 20 percent of the total population. 4/

Tuberculosis and venereal disease are the most common illnesses. The incidence rate of tuberculosis mounted rapidly during the war, and official Polish estimates in 1949 reported about 280,000 cases of infection and a death rate of 50,000 a year. 5/ The incidence of venereal disease reached epidemic proportions after the war. A statistical survey conducted by the Ministry of Health at the beginning of 1947 reported from 100,000 to 150,000 Syphilis victims plus an equal number infected with other venereal diseases. 6/

c. Trends.

The Plan allocations of capital and manpower to producer goods industries are expected to prevent any significant improvement in living standards in 1951 and 1952.

2. Working Conditions.

Almost all nonagricultural employees work for state enterprises and are subject to manpower controls. Th 1950 the Sejm passed several labor control laws designed (a) to prevent the transfer of employees in professions or occupations important to the socialized economy, (b) to provide legal sanction for the freezing of workers in certain jobs and to suspend their right to quit, (c) to provide a legal basis for ordering workers to new jobs, and (d) to channel graduates from secondary vocational schools and institutions of higher learning to designated industries and plants. 7/ Those guilty of quitting work in spite of orders are subject to 6 months' imprisonment and a large fine. Severe penalties are provided for tardiness and absence from work.

a. Wages and Hours.

Conditions of work and pay are set by the government. The official work week is 48 hours. Wages in railroad shops range from 270 zlotys a month for unskilled workers to 830 zlotys a month for higher officials. In addition, rent supplements in certain parts range from 22 zlotys to 63 zlotys a month, depending upon the wage category. 8/ The range of wages is similar in other industries, although coal miners receive higher pay. Since regular wages are inadequate to meet the cost of living, workers tend to work faster and longer in order to earn extra premiums offered for the attainment and overfulfillment of production goals.

b. Norms and Production Campaigns.

Earnings generally depend upon the fulfillment of established norms, which, as in the Soviet "Stakhanovite" system, are frequently raised to promote speed-up contests. The first work competition programs were characterized by periodic strain and slackening as workers, warned that the Plan would not be met unless production was increased, spurted at the end of each month and slowed down at the beginning of the next. Beginning in 1950, however, the government introduced mass long-range pledges designed to sustain work competition at a high level. In addition, frequent campaigns seek to honor certain events by increasing production above established norms.

c. Comfort and Safety Conditions.

All workers in industry and trade are entitled to annual vacations of 12 days after 1 year's work, 15 days after 3 years' work, and 1 month after 10 years' work. 9/ Government control was extended to workers' leisure time on 4 February 1949, when the Sejm passed an act to centralize the organization of workers' leisure activities and established a single body to administer the Workers' Leisure Fund. 10/ Conditions of industrial safety, according to a 1949 report, 11/ are poor, and the industrial accident rate is high. About 3,000 cases of blindness reported in 1949 were due to a total lack of eye-protecting apparatus. Women employed at the Cegielski machinery plant rarely managed to work longer than 6 to 8 months, and those dipping metal parts in oil were afflicted with boils because no hand protection was provided. Coal mines also lack safety equipment.

d. Trends.

Working conditions in Poland are expected to become more severe in 1951 and 1952. Work competition is being vigorously promoted by the Polish government, and established work norms are periodically revised upward. The government policy for keeping basic wages considerably below the subsistence level in order to stimulate greater production is expected to continue. The

recent relaxation of restrictions on the employment of women in certain types of heavy work,* and government criticism of rest periods indicate that Poland will seek to increase its utilization of manpower with little regard for the deterioration of working conditions which may result.

* The law forbidding the employment of women in underground mines was repealed in 1951. 12/

IV. Foreign Trade and Finance.

Summary

Poland's imports include both raw materials and finished goods. Iron ore, petroleum, cotton, wool, rubber, chemicals, and numerous types of machinery and capital goods are received from both Bloc and non-Bloc countries. Coal and foodstuffs are the chief Polish exports, and smaller amounts of chemicals, textiles, and industrial goods also are exported.

Before World War II, present members of the Bloc accounted for only 3 percent of Poland's total foreign trade. In 1949, however, about 50 percent of Polish trade was with the USSR and the Satellites, and the Six Year Plan (1950-55) calls for further increases in intra-Bloc trade which will raise it to 70 percent of total Polish trade in 1955.

Since Poland's demand for capital goods exceeds domestic requirements, foreign trade will play a vital part in the nation's industrialization program. An increasing proportion of manufactured imports will come from the Soviet Bloc, especially from the USSR. Poland, in exchange for these imports, will continue to export raw materials until its new domestic industries come into production. Such new production is not expected to become significant before 1952, and until that time at least Poland will remain a drain on the Bloc's supplies of manufactured goods. Because of its strong trading position as an exporter of coal and foodstuffs, however, Poland is able to obtain a large part of its requirements for manufactured goods from Western Europe.

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1. Import Requirements.

a. Trade with the Soviet Bloc.

Major Polish imports from the Soviet Bloc are iron ore, petroleum, textile raw materials, chemicals, timber and wood products, and industrial equipment. Iron ore is the most important import in volume terms, but measured in value industrial equipment is of greatest significance. Polish production is scheduled in 1955 to increase to more than 4 million metric tons a year, and the bulk of the iron ore required must be imported from the USSR. Imports of manganese and chrome ore will also be large and likewise must come from the Bloc countries. Deliveries in 1950 of Swedish iron ore, which does not require sintering, amounted to $6.3 million, but Poland is seeking to increase its sintering capacity for greater utilization of Soviet ores. The USSR could send Poland ore which would not require this processing and thus eliminate dependence on Sweden.

Although a small quantity of British petroleum was imported from the Middle East in 1950, Poland is normally able to obtain its oil requirements

from the Soviet Bloc. Although Poland is to receive 80 percent of its cotton imports from the USSR, 30 percent was supplied by the West in 1950. Chemical imports, second in volume only to iron ore, consist chiefly of artificial fertilizers and will come primarily from East Germany.

Poland is importing a considerable portion of its requirements of capital goods from the Soviet Union. These imports are financed in part by a $550 million Soviet loan on which deferred repayments are scheduled to be completed in 1958. Receipts of East German machinery and precision and optical equipment; Czech rolled metal, steels, machine tools, industrial equipment for plant installation, motors, and agricultural machinery; Hungarian machine, electrical, tool, and railway equipment; and the scheduling of Soviet deliveries of varied materials of similar types indicate that nearly half of Poland's requirements of capital goods are obtained from within the Bloc.

b. Trade with the West.

Western European demands for coal and foodstuffs enable Poland to obtain a large variety of commodities from non-Bloc countries. Polish imports from the West include hides and skins, nonferrous metals, wool, rubber, specialty foodstuffs, certain chemical raw materials, and cotton. Because of inadequate production within the Bloc, Poland buys from the West timber and wood products and capital goods, but dependence upon the West for these items should decrease as the production plans and trade agreements of the Bloc are implemented.

Polish bilateral trade agreements with the West call for imports of metals; textile raw materials; and industrial, agricultural, mining, and precision machinery. Poland has been willing to make advance deliveries to Western Europe for future deliveries of Western production equipment and industrial machinery, and the Polish export surplus with OEEC (Organization for European Economic Cooperation) countries in 1948-50 amounted to nearly $250 million. This arrangement, unique among the Satellites, is probably the result of Soviet realization of the magnitude of the task of Polish industrialization. In general, Poland has fulfilled its agreements more readily than have its Western European trade partners.

c. Clandestine Imports.

Because of European coal shortages, Poland finds it relatively unnecessary to go through devious channels to procure Western imports. In fact, Western European countries must commit themselves to deliver controlled strategic commodities in order to obtain Polish coal.

2. Exports.

a. Trade with the Soviet Bloc.

Polish exports to the Soviet Bloc consist primarily of coal, coke, and foodstuffs and include small amounts of chemicals, textiles, rolled metal

goods, nonferrous metals, and other minerals. Values are estimated as follows:

Estimated Polish Trade with the Soviet Bloc
(Imports plus Exports)
1950

Million US Dollars

Country	1949 Plan	Percent Increase of 1950 Plan over 1949	Planned Total Trade 1950
Albania	4	N.A.	N.A.
Bulgaria	20	40	28
Czechoslovakia	117	N.A.	N.A.
Hungary	20	100	40
Rumania	32	40	50
East Germany	152	60	243
USSR	270	34	362
Total	615		723
Reported Total Trade with Czechoslovakia in 1950			171
Total Estimated Polish-Soviet Bloc Trade in 1950			894

Polish exports to the USSR consist of coal, textiles, railroad equipment (primarily rolling stock), sugar, cement, and mechanical equipment. Poland continues to deliver as reparations from the "Recovered Territories" 12 million metric tons of coal a year. The price charged for this coal is about $1.25 a ton, whereas the world price sometimes exceeds $28 a ton. Poland's exports to the USSR will increase after 1952, when two Soviet loans of $550 million become repayable in industrial goods.

Polish exports to East Germany consist of foodstuffs, coal, and small amounts of other commodities. Exports to Czechoslovakia are chiefly coal, zinc and lead, foodstuffs, and electric power. Chemicals, textile products, ceramics, and paper products are also delivered in quantities that are small relative to total Czech availabilities and requirements. Poland's exports to Rumania include a far greater proportion of industrial products than do its exports to any other state. Polish machine tools, electric machinery, railroad equipment, and motors are significant contributions to the Rumanian economy, and Rumania also receives coal, coke, nonferrous ores, and textiles from Poland.

b. Trade with the West.

Coal is by volume the most important Polish export. Another major Polish export is foodstuffs. In 1949, some 86 percent of total exports by value to Western Europe consisted of coal (55 percent), foodstuffs (26 percent), and timber (5 percent). By value, foodstuffs constitute about 95 percent of deliveries to the UK, 50 percent to Benelux, 75 percent to West Germany,

and 15 percent to Denmark. Coal constitutes almost the whole of deliveries to Austria and Norway and about 80 percent to Denmark, France, Italy, and Sweden. About 10 percent of Polish exports to Italy are iron and steel products amounting to $2 million, and this constitutes the major Polish export of industrial products to the West.

Polish deliveries to non-European areas, though increasing, are small and relatively unimportant to either party. These shipments consist of coal, textiles, foodstuffs, and small amounts of industrial commodities.

3. Percentage of Trade with Non-Soviet Bloc Areas.

Before World War II, only about 6 percent of Poland's foreign trade was with the present members of the Soviet Bloc. In 1949, total trade was about evenly divided between the Bloc and the rest of the world. Intra-Bloc trade rose by about one-third in 1950, while OEEC trade fell by about one-third. Non-Bloc trade in 1951 is considerably less than 50 percent of total Polish foreign trade. Under the original Six Year Plan, Polish trade with the non-Bloc areas was scheduled to decline by 1955, to about 30 percent of its total trade.

4. Unilateral Transfers and Capital Movements.

a. Transfers to the USSR.

According to the frontier and reparation agreement of August 1945, Poland was to have 15 percent of all reparations received by the USSR from both East and West Germany. In return (or as the share of reparations owed by the Recovered Territories), Poland was to make coal deliveries to the USSR. The original agreement called for deliveries, from 1950 until the end of the Soviet occupation of East Germany, of 12 million metric tons a year, for which Poland would receive about $1.25 per ton. Press releases have reported discussions of adjustment of these terms, but the current status is assumed to be as originally agreed.

b. Transfers to Satellites.

Under the terms of the trade agreement signed after the setting of the Oder-Neisse boundary in 1950, Poland was to extend to East Germany a series of short-term credits of unknown value and terms, in the form of coal and foodstuffs. Albania also has received short-term credits from Poland.

c. Soviet Transfers to Poland.

Poland was granted two loans by the USSR totaling $550 million which are to be transferred in the form of production equipment and industrial installations, but schedules of Soviet deliveries are not known.

[redacted]

5. Trends--Including Indications of Mobilization for War.

The Six Year Plan envisages a considerable growth of the Polish economy which will require an expansion of imports. Foreign trade under the original plan was scheduled to rise some 40 percent, or $600 million, between 1949 and 1955, but these goals have been revised upward. The recently completed long-term Soviet Bloc agreements reflect Soviet designs for reducing dependence upon Western supply sources.

Through 1952 and possibly 1955, Poland will be able to obtain goods of almost every category from the West because of Western coal and food shortages. As the Soviet Bloc program of economic integration and specialization develops, Polish dependence on Western Europe should decrease, and Western procurement from Poland should become more difficult. On the other hand, industrialization is likely to increase Poland's demand for goods not produced by the Soviet Bloc.

[redacted]

V. Agriculture

Summary

Agriculture in Poland is characterized by small, subsistence-level peasant farms producing primarily grain and potatoes. The important postwar export crops are sugar, rye, and pork products. It is expected that these surpluses will increase and will be available to the USSR for export or stockpiling. There are indications that substantial stockpiles of grain and meat have been built up in Poland and will be further increased.

The cotton textile industry is totally dependent upon imports, and 70 percent of the raw cotton is obtained from the USSR. The woolen textile industry is dependent upon imports for almost 90 percent of its raw material requirements, and the greater part is obtained from the British Dominions.

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1. Grain.

a. Production.

In the World War II period, Polish grain acreage dropped to an average of 9.2 million hectares.* Following the war, acreage dropped still further to 8.6 million hectares in 1948 and production to 10.8 million metric tons, largely because of population changes, particularly the displacement of peasants of German extraction. Grain acreage improved somewhat in 1950, reaching 8.8 million hectares with an estimated production of 11.2 million metric tons.

Latest Annual Estimates of Grain Production
1948-50

	Thousand Metric Tons	
Year	Estimate	Probable Range of Variation of Estimate
1948	10,840	10,560 to 11,120
1949	11,260	10,970 to 11,550
1950	11,240	10,950 to 11,520

b. Probable Production.

The fall of 1950 was too rainy to favor seeding for the harvest of 1951, and spring seeding also has been hampered by too much rain. As a result, 1951 acreage is 8.7 million hectares, 2 percent less than that seeded

* Grain unless otherwise specified includes wheat, rye, barley, oats, and such minor grains as meslin, buckwheat, and millet.

for the harvest of 1950. Under normal weather conditions this acreage could be expected to produce 11.6 million metric tons of grain.

Estimated Grain Production
1951-52

Year	Estimate (Thousand Metric Tons)	Probable Range of Variation of Estimate (Thousand Metric Tons)
1951	11,620	11,000 to 12,230
1952	11,770	11,390 to 12,390

Barring further inclement weather or other unfavorable factors, the 1952 acreage should equal that of 1948 and should produce 11.8 million metric tons. It is not expected that collectivization will materially affect either acreage seeded or production in 1951 and 1952.

c. Domestic Requirements.

Poland's domestic requirements of grain* during the consumption year, 1 August 1950 through 31 July 1951, is estimated at 10.5 million metric tons (the probable range of variation being 10.4 million to 10.6 million). Balancing this requirement against production indicates that Poland in the present consumption year has a surplus for export or stockpiling of 760,000 metric tons (the probable range being 550,000 to 950,000 metric tons).

Estimated Domestic Requirements of Grain
1948-53

Year	Estimate (Thousand Metric Tons)	Probable Range of Variation of Estimate (Thousand Metric Tons)
1948-49	10,150	10,010 to 10,230
1949-50	10,400	10,320 to 10,490
1950-51	10,480	10,400 to 10,570
1951-52	10,660	10,480 to 10,830
1952-53	10,830	10,650 to 10,910

d. Stockpiles.

Information on which to base estimates of grain stockpiles in Poland is limited or entirely lacking. It is probable that on 31 July 1948,

* For food, seed, livestock feed, and industrial use.

when the crop of that year began to flow into consumption channels, stockpiles were either lacking or considered by the government as unimportant. The production of that year is estimated at 10.8 million metric tons, and domestic utilization is estimated at 10.1 million tons, indicating an indigenous surplus of 0.7 million tons, from which 0.6 million tons were exported. This leaves a statistical uncovered availability of 0.1 million metric tons (the range being none to 0.3 million metric tons) as of 31 July 1949 to be stockpiled within Poland itself or otherwise used.

In succeeding years additional quantities of grain have been available for secret disposition by the USSR or for stockpiling within Poland, so that on 31 July 1950 the cumulated statistical unallocated grain availability is estimated to be 0.7 million metric tons.

Estimated Stockpiles of Grain
1950-51

	Thousand Metric Tons	
Year	Estimate	Probable Range of Variation of Estimate
31 July 1950	727	330 to 1,127
31 July 1951	N.A. a/	N.A. a/

a/ N.A. means information not available. It is estimated that by the end of July 1951 about 750 thousand metric tons will be available in addition to the surplus on hand at the end of 1950 and that other sizable surpluses will become available in 1951-52 and 1952-53.

e. Surplus or Deficit.

The probable surplus of grain as of 31 July 1952 and 31 July 1953 is given below without taking into account carry-over stocks or net trade.

Estimated Surplus of Grain (Domestic Production)

	Thousand Metric Tons	
Year	Estimate	Probable Range of Variation of Estimate
1951-52	960	530 to 1,390
1952-53	940	510 to 1,380

f. Trends--Including Indications of Mobilization for War.

There are no indications that the area seeded to cereals in Poland will increase in the near future. In Old Poland the distribution of acreages among the various field crops is more or less static. In the territories acquired from Germany the lag behind prewar production is more pronounced, but the government is facing difficulties in colonizing the German territories with peasants, who must be recruited from Old Poland. Emphasis on livestock increases and greater production of meat for export, particularly of pork, indicates an expansion of potato acreage rather than grain, since in Poland potatoes are the chief feed for fattening hogs.

Estimated Grain Acreage and Production
Prewar and 1948-52

Year	Acreage (Thousand Hectares)	Production (Thousand Metric Tons)
Prewar	9,800	13,850
1948	8,620	10,840
1949	8,880	11,260
1950	8,850	11,240
1951	8,670 a/	11,620 b/
1952	8,850 c/	11,770 b/

a/ Acreage reduced 2 percent because heavy rains in the fall of 1950 and 1951 prevented expected seeding.
b/ Expected production, provided no adverse weather conditions develop before harvest.
c/ Assumed to be about equal to 1950 acreage.

2. Meat.*

a. Production.

Before the war the areas now comprising Poland produced an average (1934-38) of 1.1 million metric tons of meat and exported 205,000 metric tons. An average of 32,000 metric tons were exported from Old Poland, and an average of 163,000 pounds of meat, including poultry, were shipped from the territories recently acquired from Germany to other parts of the Reich. On the average, 905,000 metric tons of meat were available for domestic consumption, indicating a per capita availability of 28.3 kilograms a year for a population of 32 million.

* The term "meat" as used in this statement comprises the carcass weight of slaughtered cattle, swine, sheep, and goats, including edible offals but excluding edible fats (tallow, leaf lard, and fat cuts), as well as horse-meat, poultry, and rabbits.

The impact of war and the emigration of persons of German extraction resulted in a sharp decrease in the numbers of livestock and a consequent decrease in potential meat production. The land reform in Poland, following the pattern of land reforms in other Eastern European countries, resulted in increasing numbers of livestock on peasant holdings, so that by 1950 meat production had recovered to 760,000 metric tons, or 68.5 percent of the prewar average. From this production, 100,000 metric tons were exported, leaving 660,000 metric tons available for domestic consumption and a per capita availability of 26.9 kilograms in 1950-51 for a population of 24.6 million.

Latest Annual Estimates of Meat Production
1948-52

		Thousand Metric Tons
Year	Estimate	Probable Range of Variation of Estimate
1948	645	613 to 661
1949	700	665 to 718
1950	760	722 to 779

b. Probable Production.

The desperate need of foreign exchange and a favorable position for making barter agreements has caused the Polish government to foster the natural tendency of small peasant farmers to increase their numbers of livestock. Available reports on the numbers of livestock as of 1 January 1951 indicate a meat production in the period from 1 August 1951 to 31 July 1952 of 802,000 metric tons, or an increase of 5.5 percent over 1950-51. Provided there are no disrupting factors, meat production in 1952-53 should be about 4.8 percent above the 1951-52 level.

Estimated Meat Production
1951-52

		Thousand Metric Tons
Year	Estimate	Probable Range of Variation of Estimate
1951	802	761 to 822
1952	840	798 to 861

c. Domestic Requirements.

In a Communist country the government controls the quantities of meat made available to the nonfarm population, in which case requirement in the strict sense of the word is seldom met, particularly when the government is forcing exports. In the following table the so-called "requirements" are production less exports for the consumption years (1 August through 31 July) 1948-49, 1949-50, and 1950-51. The projected "requirements" for the years 1951-52 and 1952-53 are the product of the estimated population for each of these years multiplied by the computed availability for the year 1950-51.

Estimated Domestic Requirements of Meat
1948-53

Year	Estimate	Thousand Metric Tons Probable Range of Variation of Estimate
1948-49	595	563 to 611
1949-50	640	605 to 658
1950-51	660	622 to 679
1951-52	671	633 to 690
1952-53	682	643 to 702

d. Stockpiles.

It is improbable that there were any appreciable stockpiles of meat in storage in Poland on 31 July 1950. For the same reason, it is doubtful if any significant quantity will be stockpiled as of 31 July 1951.

e. Surplus or Deficit.

Since Poland in 1950-51 exported all meat surpluses, it is considered that the surpluses of that year are equal to the exports, and consequently no range of estimate is indicated.

Estimated Surplus of Meat (Domestic Production)
1950-52

Year	Estimate	Thousand Metric Tons Probable Range of Variation of Estimate
1950-51	100	
1951-52	130.5	129 to 131

The surplus for the year 1951-52 is computed to be the production less the product of the estimated population multiplied by the annual per capita availability of meat for domestic consumption in 1950-51. If the per capita quantity of meat made available for the consumption of the nonfarm population is reduced below that computed for 1950-51, the surplus in 1951-52 will be greater than indicated above.

f. Trends--Including Indications of Mobilization for War.

Since 1948 the trend of meat production and exports in Poland has been steadily upward. It is not expected, however, that production or domestic availability (requirements) will reach prewar levels for some time. Present trends of production and export do not indicate mobilization for war, but if the government should cut off exports without increasing availability for domestic consumption, this would be a positive indication of stockpiling in conformity with the program of the USSR.

3. Sugar.

a. Production.

Poland is one of the more important sugar-producing countries in Europe. Postwar boundary changes increased the Polish acreage of sugar beets from 130,000 to 225,000 hectares. The new acreage before the war had substantially higher yields than the acreage in prewar Poland. Prewar production in the areas now comprising Poland was 1 million metric tons, a level reached for the first time since the war in 1950. Probably as the result of Soviet pressure, sugar production has been given special emphasis by the Polish government.

Latest Annual Estimates of Sugar Production (Raw Value)
1948-50

	Thousand Metric Tons	
Year	Estimate	Probable Range of Variation of Estimate
1948	695	660 to 730
1949	825	780 to 865
1950	1,000	950 to 1,050

b. Probable Production.

It is believed that the production of sugar in Poland is reaching its upper limits. This is reflected in the following estimates.

Estimated Sugar Production (Raw Value)
1951-52

Year	Estimate	Thousand Metric Tons Probable Range of Variation of Estimate
1951	1,050	1,000 to 1,100
1952	1,050	1,000 to 1,100

It is estimated that production in 1951 and 1952 will level off at about 1.05 million metric tons provided average weather conditions prevail and there is no increase in peasant resistance to government policies.

c. Domestic Requirements.

An analysis of sugar requirements is essentially an analysis of sugar consumption habits. Because sugar has a high caloric value per unit of weight and is a quick source of energy, it is an important constituent of Soviet military rations.

Estimated Domestic Requirements of Sugar (Raw Value)
1948-53

Year	Estimate	Thousand Metric Tons Probable Range of Variation of Estimate
1948-49	390	370 to 410
1949-50	420	400 to 440
1950-51	425	405 to 445
1951-52	432	410 to 455
1952-53	440	420 to 460

Before the war, Poland annually consumed 540,000 metric tons of raw sugar, or 16.9 kilograms per capita. By the 1950-51 consumption year, Polish consumption had reached the prewar per capita level. Total consumption, however, was 120,000 metric tons below prewar consumption because of the greatly reduced population. It is believed that future consumption will be held near present levels.

d. Stockpiles.

There is no firm evidence on which to base estimates of Polish sugar stockpiles. Most of the surplus production has been going to the USSR, the balance being exported to Western European countries.

e. Surplus or Deficit.

According to estimated production and consumption, Poland should have an annual surplus of approximately 600,000 metric tons of sugar. It can be assumed that the USSR will supervise the disposition of this surplus, with most of it going to the USSR or to Polish stockpiles.

Estimated Surplus of Sugar (Domestic Production--Raw Value)
1951-53

	Thousand Metric Tons	
Year	Estimate	Probable Range of Variation of Estimate
31 July 1951	575	545 - 605
31 July 1952	618	590 - 645
31 July 1953	610	580 - 640

f. Trends--Including Indications of Mobilization for War.

It is not expected that the 1948-50 rate of increase in sugar production will be maintained. It is believed that sugar production in the 1952-53 season will not exceed the 1950-51 output by more than 5 percent.

The production and stockpiling of cube sugar would be an indication of war, because it is in this form that sugar is supplied in the Soviet combat ration. So far there has been no evidence of the production of unusual quantities of cube sugar.

4. Cotton.

a. Production.

There is no indigenous production of cotton in Poland, whose cotton textile industry must rely entirely on imports for raw materials. In the prewar period the US supplied 75 percent of all cotton imports, averaging 70,000 metric tons in the period 1934-38. After the war the US continued to be the chief source of supply until 1948, when the USSR became the mainstay of Poland's cotton textile industry. Estimates for 1950-51, based on the reported production of cotton textiles, indicate that the USSR is supplying some 70 percent of Poland's import requirements. The remaining 30 percent comes from other countries, not including the US. In the consumption year 1950-51 there has been no allocation of US cotton to Poland or to any other Eastern European country.

Poland's demand for ginned cotton, greater than that of any other Satellite country, has surpassed prewar levels because of the greater capacity of the cotton textile industry, which has manufactured larger quantities of cloth and other cotton materials for exports.

b. Domestic Requirements.

Estimates of Polish domestic cotton textile requirements are based on the 1948 per capita consumption. Compared with prewar standards of consumption the 1948 level appears higher, but this favorable comparison is the result of a considerable reduction in population rather than increased textile production.

Estimated Domestic Requirements of Cotton
1948-52

	Thousand Metric Tons	
Year	Estimate	Probable Range of Variation in Estimate
1948	68.0	61.2 to 74.8
1949	70.0	63.3 to 77.7
1950	73.5	66.2 to 80.0
1951	74.4	67.0 to 81.8
1952	75.0	67.5 to 82.5

The capacity of Poland's cotton spinning mills is sufficient to produce enough thread to cover the cotton textile requirements by operating on a 1.5 shift basis. The ratio of the capacity of looms to spindles is adequate for weaving the required finished goods.

c. Stockpiles.

The world shortage of cotton and Poland's inability to obtain adequate supplies except from the USSR make it probable that there are no significant stockpiles of cotton in the country.

d. Trends--Including Indications of Mobilization for War.

The present trend of the Polish textile industry is toward producing finished products for export to the USSR. Considering total Polish requirements and the reported production, the volume of finished goods returned to the USSR is too insignificant to be of material advantage.

5. Wool.

a. Production.

The average prewar (1935-39) production of wool in the territories now comprising Poland is estimated at 1,700 metric tons, which supplied 10 percent of domestic requirements. In the latter years of the war and immediately thereafter, heavy losses of sheep through uncontrolled slaughtering reduced wool production to 1,200 metric tons in 1948. Because of the slow rate of reproduction, estimates of wool production for the years 1948-50 are still below prewar levels.

Latest Annual Estimates of Wool Production
1948-50

Year	Estimate	Metric Tons Probable Range of Variation of Estimate
1948	1,222	1,039 to 1,405
1949	1,422	1,209 to 1,635
1950	1,497	1,273 to 1,721

b. Probable Production.

Projections of probable production indicate that in 1952 domestic production will still be 6 percent below the prewar level.

Estimated Wool Production
1950-52

Year	Estimate	Metric Tons Probable Range of Variation of Estimate
1951	1,547	1,315 to 1,779
1952	1,597	1,358 to 1,836

c. Domestic Requirements.

Requirements for wool are estimated to be 12,000 metric tons in 1948, and for each successive year additional allowances have been made for population increases and the reported volume of imports. The requirement standard thus set is about average for Eastern European countries but, as in the cases of the other Satellites, is very unfavorable if compared with Western European countries. Poland is extremely vulnerable to any interruption of supplies from the non-Soviet world.

Estimated Domestic Requirements of Wool
1948-52

Year	Estimate	Metric Tons Probable Range of Variation of Estimate
1948	12,000	10,200 to 13,800
1949	13,400	11,300 to 15,500
1950	13,400	11,400 to 15,600
1951	13,700	11,700 to 15,800
1952	13,800	11,800 to 15,900

[redacted]

Production capacities of existing textile equipment are adequate to process a much larger volume than is currently produced. The equipment losses which accrued in the war years have been measurably restored through repairs and foreign purchases, and under emergency conditions Poland could contribute materially to fill Soviet military needs for textiles.

d. Stockpiles.

It is improbable that there were any significant stockpiles of wool in Poland as of 31 July 1950, and there is little likelihood that on 31 July 1951 there will be any stocks other than working supplies at the mills.

e. Surplus or Deficit.

The deficit position shown below emphasizes the dependence of the Polish wool textile industry upon external supplies.

Estimated Deficit of Wool
1950-52

Metric Tons

Year	Estimate	Probable Range of Variation of Estimate
1950	11,903	10,100 to 14,000
1952	12,003	10,200 to 14,100

Of the total deficit, 95 percent is supplied or to be supplied by the British Dominions, and purchases have been made possible through the extension of a revolving credit granted by the UK in 1949. Closing this source of supply could significantly affect Polish living standards. At present, however, no agreement has been reached by the major world producers and consumers which would limit or restrict the flow of wool to the Satellite and Soviet areas.

f. Trends--Including Indications of Mobilization for War.

Every effort is being made to increase wool textile production in Poland, and the intended increment is probably destined for export rather than domestic consumption. Small increases in domestic production, however, cannot be construed as a definite indication of mobilization for war.

6. Collectivization.

The Polish government has proceeded cautiously in its collectivization program. In order to obtain support for, or at least avoid strong opposition to collectivization, a drastic land reform to distribute the lands of the large estates among the needy peasants, particularly in Old Poland, was launched. The peasants in Old Poland have stubbornly resisted

[redacted]

collectivization, and up to 1951 the government has not seen fit to invite a showdown in this area. In the newly acquired German territories, however, the resettlement of groups of Polish peasantry has been made contingent on collective cultivation of the land made available to them, and a large proportion of existing collectives are found in these former German territories.

Early in 1951, new collectives in Poland were being created at a rate of a little more than 160 a month, slightly less than the monthly rate in early 1950. There are about 2,500 small collectives in Poland, representing about 2 percent of the arable land. Only about half of the collectives are modeled after the Soviet kolkhoz, the remainder differing in terms of ownership and remuneration. The area of grain land cultivated collectively is too small to have any appreciable effect on acreage or production in 1951.

[redacted]

VI. Industrial Capacity and Levels of Production.

A. Ferrous Metals.

Summary

By 1949 the postwar recovery of Poland's ferrous metals industry carried production beyond prewar levels in all major categories except iron ore. Continued increases are expected in 1951 and 1952, and the Six Year Plan (1950-55) calls for the investment of 250 billion zlotys in the industry.

Domestic supplies of metallurgical coke are ample, but 73 percent of iron ore requirements must be met by imports. Deficits also exist in supplies of iron and steel scrap and ferroalloys, but total iron and steel production provides Poland with a small surplus for export.

Internal limitations on the ferrous metals industry, in addition to the lack of raw materials, include shortages of equipment and inadequate numbers of technically trained personnel. With the imposition of export controls by the Western industrial nations, the USSR is attempting to supply the capital equipment for Polish iron and steel expansion. The integrated steel mill at Krakow, which has a planned annual capacity of 1.5 million metric tons of raw steel, is not expected to be completed during the Six Year Plan period.

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1. Production.

Production in the Polish ferrous metals industry recovered rapidly from severe war damage and surpassed prewar levels in 1949 in all major categories except iron ore. Production is estimated as follows:

Estimated Production of Ferrous Metals
1948-50

	Thousand Metric Tons		
	1948	1949	1950
Metallurgical Coke	1,800	2,300	2,400
Iron Ore (30-33% Fe)	630	700	800
Pig Iron	1,100	1,300	1,500
Raw Steel	1,850	2,000	2,250
Rolled Products	1,175	1,500	1,600

[redacted]

2. Estimated Possible Production and Capacity.

Possible production in the ferrous metals industry in 1952 is estimated as follows:

Estimated Production of Ferrous Metals
1952

	Thousand Metric Tons
Metallurgical Coke	2,500
Iron Ore (30-33% Fe)	850
Pig Iron	1,600
Raw Steel	2,400
Rolled Products	1,725

It is estimated that in 1952 production will equal capacity.

The Six Year Plan contemplates an expansion of steel output to a level of 4.6 million metric tons of raw steel in 1955, more than double the 1950 production. Corresponding goals for pig iron and rolled products are 3.5 and 3.2 million metric tons. In order to achieve these targets, 250 billion zlotys are to be invested in the industry. Iron-ore sintering plants are to be expanded and new ones constructed, more than 70 open-hearth furnaces and several large electric furnaces and milling mills are to be added, an intensive study of modern production methods will be made and applied to the Polish industry, and further mechanization of processes and improvement in plant transportation systems are to be undertaken. It was planned to purchase most of the installations, machinery and equipment in the West, but since the imposition of export controls the only possible source of such assistance is the USSR.

Under the terms of the Soviet-Polish Capital Goods Agreement of 26 January 1948 the USSR promised Poland a steel mill with an annual capacity of 1.5 million metric tons of raw steel. Construction began in 1949 in a suburb of Krakow, but progress has been slow, and it is not expected that the plant will be in operation by 1955.

3. Input Requirements.

The following figures indicate Poland's input requirements in 1949 and 1950:

Estimated Domestic Requirements of Ferrous Metals
1949-50

	Thousand Metric Tons	
	1949	1950
Metallurgical Coke	1,500	1,700
Iron Ore	2,500	3,000
Iron and Steel Scrap	950	1,100

Requirements for pig iron, raw steel, rolled steel products, and ferroalloys cannot be estimated.

4. Stockpiles.

There were no stockpiles of ferrous metals in Poland in 1950.

5. Surplus or Deficit.

Domestic production of metallurgical coke provides Poland with a large surplus for export. Deliveries of metallurgical coke to the Bloc and to Western Europe in 1950 totaled 800,000 metric tons, and a similar export tonnage, most of it destined for the Bloc, is expected in 1952. But 150,000 metric tons of high-grade metallurgical coke has to be imported from Czechoslovakia in 1950, and Poland is expected to require from 150,000 tons to 300,000 tons from the same source in 1952.

Although Poland possesses large reserves of low-grade iron ore (from 30 percent to 33 percent Fe), the ore seams are thin, extensive timber reinforcements are required, and domestic production in 1950 was only 800,000 metric tons, leaving a deficit of 2.2 million metric tons, or 73 percent of requirements, which was met by imports from the USSR, Sweden, Norway, East Germany, Bulgaria, and India. In 1952 the ore deficit is expected to be 2.5 million metric tons and will be met through imports from the same countries, with the possible exception of Norway.

Iron and steel scrap deficits will persist through 1952, but their extent and the capability of the Bloc to meet them cannot be estimated. Ferroalloy supplies will be obtained largely from the USSR, from India, Norway, and Turkey (manganese), from Norway and Albania (chrome), and from Sweden (tungsten). Domestic production of chromite is insufficient for the needs of the industry. A small surplus exists in iron and steel products.

6. Internal Limitations.

Poland is dependent upon the import of raw materials, particularly high-grade Swedish iron ore, for the maintenance of production of the iron and steel industry. If Sweden should sharply reduce shipments of iron ore, production would immediately drop. To use an increased proportion of Soviet ore would require construction of more sintering equipment to agglomerate the "fines," or powdered ores, from Krivoi Rog before the ore could be used in Polish blast furnaces.

Despite the fact that the Polish steel industry made a remarkable post-war recovery, the country has been unable to purchase replacements for badly worn and obsolescent machinery and equipment. Several attempts were made to procure installations in the West to expand production. Before US export controls were put into effect, a contract was signed with a Pittsburgh firm for a $17 million blooming and slabbing mill, urgently needed to balance Polish facilities for the production of raw steel with rolled products capacity and to curtail the uneconomic importation of blooms and slabs from Czechoslovakia. Denial of a US export license for this mill in June 1949 was a serious blow to Polish plans for an integrated steel industry.

Poland also is in critical need of modern production practices and techniques and of trained engineers and technicians to improve plant conditions and expand production.

7. Trends--Including Indications of Mobilization for War.

Until the integrated steel mill which is being built at Krakow with Soviet assistance is placed in operation, there will be little increase in the production of the Polish iron and steel industry. Completion of this mill will not be accomplished by 1955.

B. Nonferrous Metals.

Summary

The principal nonferrous metals produced in Poland are lead and zinc. The production of copper, estimated at about 2,000 metric tons in 1950 with no appreciable increase likely through 1952, is of minor importance. Requirements of copper are estimated at 25,000 to 30,000 metric tons annually for the 1951-52 period, and in this sector Poland is a liability to the Soviet Bloc. Poland has no production of aluminum, antimony, or tin and also relies on the Bloc for these materials.

The production of zinc is estimated at 95,000 metric tons in 1950, and that of lead at 20,000 tons. It is estimated that annual production in 1951 and 1952 may reach from 100,000 to 120,000 metric tons of zinc and 20,000 to 25,000 tons of lead. The smelting capacity for these two metals is adequate. Domestic requirements are estimated at 87,000 metric tons a year for zinc and from 10,000 to 15,000 tons a year for lead, indicating surpluses of from 13,000 to 33,000 tons of zinc and from 6,000 to 10,000 tons of lead which contribute to the Soviet war potential.

Zinc and lead reserves are ample, and the supply of technical personnel is believed to be adequate. Disaffection of labor, which might result in deliberate slowdowns or sabotage or both, as well as the shortage of equipment, could be limiting factors in the reported expansion plans for 1950-55.

1. Copper.

a. Production.

Copper production in Poland was negligible before the war but has increased with the acquisition of copper deposits in Lower Silesia. The latest estimates available 1/ of output are for the first and second quarters of 1947 and indicate a 6-month production of 942 metric tons. Total production for 1947 is estimated at from 1,800 to 2,000 metric tons, and it is believed there was no significant increase through 1950.

b. Domestic Requirements.

Poland depends upon imports of copper to meet its requirements. It is estimated that annual requirements for 1951 and 1952 will be from 25,000 to 30,000 metric tons a year.

c. Surplus or Deficit.

Poland's requests for copper in various 1950 trade agreements indicate a deficit estimated at from 23,000 to 28,000 metric tons a year.

d. Internal Limitations.

Before World War II, Poland had some small low-grade copper deposits which were not in operation. As a result of the war, Poland has acquired an area in Lower Silesia in which the copper mines are estimated to contain about 2 million metric tons of copper with ore content between 0.9 and 1.2 percent. According to the revised Six Year Plan, extraction of copper ore is to reach 3.2 million tons by 1955. At that rate, ore production of concentrates would be approximately 27,000 tons a year.

2. Lead and Zinc.

a. Production.

Poland is one of the large zinc-producing countries of the world. Before World War II, annual production was up to 118,000 metric tons of zinc. About 60 percent was produced from Polish ores, and the remainder from imported ores, largely German.

The following table gives lead and zinc production figures for 1948 and estimates for 1949 and 1950:

Smelter Production of Lead and Zinc
1948-50

	Metric Tons		
	1948 a/	1949 b/	1950 b/
Lead	16,874 2/	18,000	20,000
Zinc	87,089 3/	92,000	95,000

a/ Reported.
b/ Estimated.

b. Estimated Possible Production and Capacity.

(1) Possible Production.

Zinc production has steadily increased since the end of the war, but Plan goals were not met in 1947-49. Output was 89.6 percent of the planned output in 1947, 96.7 percent in 1948, and 83.7 percent in 1949. Lead production exceeded target levels in 1947 and 1948, when output was 118

percent and 112.6 percent, respectively, of the Plan goal but fell to 90.1 percent of planned production in 1949. 4/

Performance before World War II and the steady increase in production since then indicate that production of zinc and lead in 1951 and 1952 will be as follows:

Estimated Production of Lead and Zinc
1951-52

	Metric Tons	
	1951	1952
Lead	20,000	25,000
Zinc	100,000	120,000

(2) Capacity.

The zinc and lead smelting capacity before World War II greatly exceeded the productive capacity of the mines and concentrating plants. The industry was efficiently organized and in competent hands. At that time, 10 zinc smelters and 2 electrolytic zinc plants were in operation, whereas the lead industry consisted of 4 smelters. The capacity of zinc plants in 1939 was 211,000 metric tons a year, and lead capacity was 54,800 metric tons a year. 5/ Information is lacking on the present capacity of these plants, but production of lead and zinc is rapidly approaching prewar levels, an indication of accelerated rehabilitation of those plants destroyed during the war.

c. Domestic Requirements.

Domestic requirements for zinc are estimated at 71,000 metric tons in 1948 and 87,000 metric tons a year from 1949 to 1952. Consumption schedules set up in the First Plan for Economic Reconstruction 6/ indicated that from 1947 to 1949 about 21 percent of primary zinc production was to be exported, and from 54 percent to 60 percent was to be used for zinc sheets. Consumption plans for zinc sheets showed exports increasing from 37 percent in 1947 to 43 percent in 1949, although use in construction was to decline from 45 percent to 38 percent over the same period.

Polish lead consumption was reported to be 13,600 metric tons in 1938. 7/ Domestic lead requirements are estimated at from 10,000 to 15,000 metric tons a year from 1948 to 1952.

d. Stockpiles.

It is believed that all lead and zinc surpluses are exported and that no stockpiles exist in Poland.

e. Surplus or Deficit.

Estimated Surplus of Lead and Zinc
1951-52

	Metric Tons	
	1951	1952
Zinc	13,000	33,000
Lead	6,000	10,000

f. Internal Limitations.

In 1938, Polish reserves were reported at 33 million metric tons of zinc-lead ore averaging 15 percent zinc and 3.5 percent lead. 8/ These reserves are concentrated in the Gorno-Slask area, which is the center of the zinc industry. In addition to these reserves, substantial deposits of lead-zinc ores exist in the territory taken from Germany after World War II. These deposits are also in the Gorno-Slask area, just across the former German-Polish border.

There is no shortage of technical personnel. Manufacture or procurement of equipment, however, may be a limiting factor in the expansion plans for 1950-55. Labor difficulties could result in a deliberate slowdown or sabotage or both.

Before World War II there was adequate capacity to treat all the ores produced in Poland, as well as the substantial quantities imported from Germany and elsewhere. Although the plants reportedly incurred great losses and devastation during the war, 9/ they were rebuilt and put into operation at a relatively rapid pace. Poland is expected to make every effort to raise the capacity of the plants to prewar levels or at least to achieve a balance among the mines, mills, and smelters.

g. Trends--Including Indications of Mobilization for War.

The trend in zinc and lead production and the production of zinc sheets is definitely upward. According to the Six Year Plan the output of zinc is expected to be doubled, 10/ but this is rather an ambitious program and may not be accomplished. On the basis of 1949 production, output thus would be from 180,000 to 200,000 tons of zinc and 40,000 to 50,000 tons of lead.

3. Other Nonferrous Metals.

Poland has no production of aluminum, antimony, or tin, and any requirements for these metals must be met by imports. Information concerning the imports and consumption of these metals is lacking except in the case of tin.

[redacted]

Tin Imports and Consumption
1948-50

Import Sources 11/	1948	1949	Long Tons 1950
Malaya	815	1,585	0
Belgium	100	182	0
Netherlands	546	993	1,171
Total	1,461	2,760	1,171
Consumption 12/	2,117 a/	1,767	1,200 b/

a/ Figures officially reported to the Combined Tin Committee as actual or estimated consumption.
b/ Estimated.

Tin procurement from non-Bloc sources is expected to become increasingly difficult and dependent upon clandestine trade.

[redacted]

C. Coal.

Summary

Coal mining is Poland's most important industry, and nearly every country in Europe depends to some extent on imports of Polish coal. Output in 1950 is estimated at 77 million metric tons of bituminous coal and 4.8 million tons of brown coal. Nearly a third of the bituminous coal and 80 percent of the brown coal are exported.

Coal shortages have existed in Europe since the latter part of 1950, and Poland is exploiting the situation by charging excessive prices for coal and demanding strategically important products in exchange. Shipments to Western Europe were about 10 million metric tons in 1950, and the balance went almost entirely to countries within the Soviet Orbit.

Poland has about 80 bituminous coal mines and 8 brown coal mines in operation and expects to open 11 more by 1955, when bituminous production is expected to reach at least 95 million metric tons. In 1951 and 1952 it is estimated that output will be approximately 80 million tons and 85 million tons, respectively.

The chief weakness of the Polish coal industry is the poor condition of machinery and equipment, much of which needs replacement. Since Poland has very limited facilities for providing its own requirements of mining machinery, it depends almost entirely on foreign sources. The Soviet Union has thus far given little aid, and practically all postwar equipment has been obtained from the West. If Poland were able to import all the machinery needed, operating conditions and labor productivity would sharply improve and would alleviate much of the current labor trouble. Labor efficiency is still below the prewar level, a situation caused largely by the poor condition of equipment.

The consumption pattern for 1948 shows that the domestic use of bituminous coal was approximately as follows: transportation, 16.2 percent; industry, 22.3 percent; coke plants, 13.6 percent; electric power plants, 14.3 percent; gas plants, 1.5 percent; coal mines and plants, 7.5 percent; briquette plants, 1.6 percent; and heating and other uses, 23 percent. The requirements of coal in Poland are estimated at from 51 million to 52 million metric tons of bituminous coal and 775,000 tons of brown coal (300,000 tons hard coal equivalent) in 1950 and will probably increase to about 56 million tons by 1952. Poland's total surplus of coal is expected to be about 27 million metric tons of bituminous coal and 4 million tons of brown coal in both 1951 and 1952.

[redacted]

1. Production.

Coal mining is Poland's most important industry and gives employment to more than 300,000 people. The country ranks fifth among the coal-producing nations of the world and is second only to the US as an exporter of coal. Approximately 35 percent of the total output of coal is exported, and nearly every country in Europe, with the notable exceptions of the UK and West Germany, depends on Polish coal imports for its fuel supplies.

The acute shortages of coal, in part because of rearmament, that developed in Europe in the latter half of 1950 have afforded Poland an opportunity to obtain prices in Europe equal to and in some cases exceeding the delivered cost of coal from the US or to compel Western countries to supply strategic products in exchange. It has been reported that prices for coal of the best quality range up to $28 a ton, but payments in machinery and materials that are critically needed in the Bloc are more readily accepted.

The output goal for 1950 was an increase of 3.2 percent in bituminous coal production, 1/ indicating that the objective was probably 76.5 million metric tons. The plan figure for brown coal is not definitely known. It has been reported that the coal plan was fulfilled 102 percent 2/ which, if this is assumed to mean bituminous coal, indicates a 1950 output of 78 million tons, but other estimates give 76 million tons 3/ and 77.7 million tons. 4/ It is assumed that the brown coal mines produced a little more in 1950 than in the previous year, and the amount is estimated at 4.8 million metric tons.

There are approximately 80 bituminous mines in operation in Poland, and all except 7 are located in the Upper Silesian basin. The basin is divided into 9 districts, each of which has 6 to 12 mines and furnishes from 9 to 13 percent of the basin's total production. Most of the mines are concentrated in the northern part in the vicinities of Dabrowa, Katowice, Chorzow, Bytom, Zabrze, and Gliwice. The operations are large, some mines having an annual production of about 1.5 million tons.

The Upper Silesian basin accounts for approximately 92 percent of Poland's output of bituminous coal, but only a small part of the product has good coking characteristics. Almost the entire production of Upper Silesian coke is from gas-type coal, which produces a poor quality of coke. About 1 percent of the reserves in the Upper Silesian basin are coking-type coals, but over 40 percent of the coal in the Lower Silesian basin is of a type producing coke of outstanding quality. The coal seams in Lower Silesia are much thinner, and mining conditions are far more difficult than in the Upper Silesian basin. There are only seven mines operating in the Lower Silesian basin, and they provide Poland with the bulk of its good-quality coking coal. By blending a small quantity of Lower Silesian coal with that from Upper Silesia, the strength of the inferior coke is increased 20 percent. 5/

There are seven or eight mines in operation producing brown coal with a total annual capacity of about 6 million metric tons, but the Turow mine represents about 80 percent of the capacity 6/ and accounts for over

60 percent of the extraction. 7/ The Turow mine is a large open-cast operation which produces a low-grade lignite (from 1,900 to 2,200 calories per kilogram) that is sent to the Hirschfelde power plant in East Germany.

2. Estimated Possible Production and Capacity.

The original Six Year Plan called for production in 1955 of 100 million metric tons of bituminous coal and 8.4 million tons of brown coal, 8/ but some Polish sources state that the target for 1955 is 95 million tons of bituminous coal, 9/ a figure which seems more in accord with capabilities.

Eleven new bituminous mines with an annual capacity of 11 million metric tons are to be built or started by the end of 1955. 10/ Three new mines were under construction in 1950, and work was to start on three others in 1951. Since development requires several years, it is not expected that these mines will contribute any significant production until after 1952.

It is probable that the production of bituminous coal will closely approach the figures of 80 million metric tons in 1951 and 83 million tons in 1952. 11/ It is estimated that the brown coal mines will furnish about 5 million metric tons in 1951 and 5.2 million tons in 1952, but this depends on the success of operations at the Turow mine.

3. Domestic Requirements.

Poland consumes only about two-thirds of its production of bituminous coal and one-fifth of its brown coal, the remainder being the country's chief item of export. At least 20 percent of coke production is exported, although the balance available for home consumption must be augmented by imports of from 150,000 to 200,000 metric tons a year from Czechoslovakia.

The Polish consumption pattern for 1948 shows that bituminous coal was used domestically approximately as follows: transportation, 16.2 percent; industry, 22.3 percent; coke plants, 13.6 percent; electric power plants, 14.3 percent; gas plants, 1.5 percent; coal mines and plants, 7.5 percent; briquette plants, 1.6 percent; and heating and other uses, 23 percent. 12/ Brown coal was used in 1948 about as follows: briquette plants, 40.2 percent; electric power plants, 38.3 percent; industry, 18.4 percent; and heating and other uses, 3.1 percent.

The 1949 plan is reported to have called for allocations of 48.9 million metric tons to the home market as follows: industry, 31.6 million tons (including 7.6 million tons for coke ovens and briquette plants); transportation, 6.7 million tons; and domestic heating, 10.6 million tons. 13/ Estimated consumption in 1949 was about 46.7 million metric tons of bituminous coal and 775,000 tons of brown coal, considerably less than planned but still about a million tons more than in the previous year. Exports of brown coal declined 400,000 metric tons from the 1948 level, but bituminous exports increased 2.8 million tons and apparently were about 1.5 million tons higher than originally planned. Coke plants are estimated to have increased consumption by more than a million metric tons of hard coal in 1949, or an increase

of 17.5 percent over 1948 levels, and an additional 800,000 tons went to power plants and various industries. However, allocations for transportation and heating declined an estimated 900,000 tons, and the amount of hard coal used in 1949 for heating is estimated to have been 600,000 tons under Plan goals.

The difference between estimated production and exports in 1950 indicated domestic consumption of about 51 million to 52 million metric tons, or at least 4.5 million tons more than in 1949, but it should be emphasized that production and export figures are not exact. Despite the apparently greater availability of coal, shortages were reported in the fall of 1950, but these may have been due to distribution difficulties. It appears that the government has been allocating sufficient fuel for essential requirements of transportation and industry, but household consumers have not always received adequate supplies.

It is estimated that domestic requirements will be approximately 53 million metric tons in 1951 and about 56 million tons in 1952.

Estimated availability and requirements of bituminous coal, brown coal, briquettes, and coke are shown in the following tables:

[redacted]

Estimated Polish Availability and Requirements of Bituminous Coal
1948-52

Availability	1948	1949	1950	1951	1952
	Thousand Metric Tons				
Production	70,260	74,104	77,000	80,000	83,000
Stocks (As of 1 Jan)	N.A.	N.A.	a/	a/	a/
Imports	0	0	0	0	0
Total	70,260	74,104	77,000	80,000	83,000
Exports	24,624	27,447	25,000	26,500	27,000
Stocks (As of 31 Dec)	N.A.	N.A.	a/	a/	a/
Total Availability	45,636	46,657	52,000	53,500	56,000
Requirements 14/					
Coal Mines and Plants	3,440	3,625	3,800	3,900	4,150
Briquette Plants	721	700	735	760	790
Coke Plants	6,189	7,270	7,450	7,500	7,750
Electric Power Plants	6,512	6,900	7,400	7,800	8,400
Gas Plants	703	700	735	775	825
Railroads	7,234	6,831	7,400	7,600	7,800
River Shipping	93	50	100	120	140
Bunker Fuel	60	54	65	70	75
Industry	10,161	10,507	12,500	13,500	14,500
Heating and Other	10,523	10,020	10,800	11,250	11,500
Total Requirements	45,636	46,657	50,985	53,275	55,930

a/ Believed to be relatively small.

[redacted]

[redacted]

Estimated Polish Availability and Requirements of Brown Coal
1948-52

				Thousand Metric Tons	
Availability	1948	1949	1950	1951	1952
Production	5,041	4,628	4,800	5,000	5,200
Stocks (As of 1 Jan)	N.A.	N.A.	a/	a/	a/
Imports	0	0	0	0	0
Total	5,041	4,628	4,800	5,000	5,200
Exports	4,261	3,853	4,000	4,100	4,200
Stocks (As of 31 Dec)	N.A.	N.A.	a/	a/	a/
Total Availability	780	775	800	900	1,000
Requirements 14/					
Coal Mines and Installations	4	4	5	5	5
Briquette Plants	310	415	475	550	610
Electric Power	296	257	220	245	285
Industry	142	79	80	80	80
Heating and Other	20	20	20	20	20
Total Requirements	772	775	800	900	1,000

a/ Believed to be relatively small.

[redacted]

[redacted]

Estimated Polish Availability and Requirements of Bituminous Coal Briquettes 1948-52

Availability	1948	1949	1950	1951	1952
	Thousand Metric Tons				
Production	714.9	692.5	725.0	750.0	775.0
Stocks (As of 1 Jan)	N.A.	N.A.	a/	a/	a/
Imports	0	0	0	0	0
Total	714.9	692.5	725.0	800.0	825.0
Exports	1.7	N.A.	b/	b/	b/
Stocks (As of 31 Dec)	N.A.	N.A.	a/	a/	a/
Total Availability	713.2	692.5	725.0	750.0	775.0
Requirements 1/					
Power Stations	0	46.4	50	55	60
Railroads	627.7	568.4	590	610	630
River Navigation	0.1	0	0	0	0
Industries	1.0	1.2	1	1	1
Domestic and Armed Forces	80.2	73.1	80	80	80
Miscellaneous	4.9	4.1	4	4	4
Total Requirements	713.9	693.2	725	750	775

a/ Relatively small.
b/ Probably insignificant, if any.

[redacted]

[redacted]

Estimated Polish Availability and Requirements of Brown Coal Briquettes
1948-52

Availability	1948	1949	1950	1951	1952
	Thousand Metric Tons				
Production	114	153.6	175	200	225
Stocks (As of 1 Jan)	N.A.	N.A.	a/	a/	a/
Imports	0	50 b/	50 b/	50 b/	50 b/
Total	114	203.6	225	250	275
Exports	0	0	0	0	0
Stocks (As of 31 Dec)	N.A.	N.A.	a/	a/	a/
Total Availability	114	203.6	225	250	275
Requirements 14/					
Power Stations	0.4	0.6	0.8	0.8	0.8
Railways	0.5	0.6	0.7	0.7	0.7
Industries	40.1	34.9	50.0	60.0	75.0
Domestic	62.5	120.7	125.0	140.0	150.0
Miscellaneous	3.6	47.6	48.5	48.5	48.5
Total Requirements	107.1	204.4	225.0	250.0	275.0

a/ Relatively small.
b/ Possible imports, from East Germany.

[redacted]

[redacted]

Estimated Polish Availability and Requirements of Coke a/
1948-52

Thousand Metric Tons

Availability	1948	1949	1950	1951	1952
Production	4,959	5,815.7	5,960	6,000	6,200
Stocks (As of 1 Jan)	N.A.	N.A.	N.A.	b/	b/
Imports	150	208.7	200	200	200
Total	5,109	6,024.4	6,160	6,200	6,400
Exports	1,261 c/	1,057.7 c/	880 c/	1,000	1,000
Stocks (As of 31 Dec)	N.A.	N.A.	b/	b/	b/
Total Availability	3,848	4,966.7	5,280	5,200	5,400
Requirements 14/					
Electric Power	11.2	8.3	10	10	10
Railroads	65.7	77.8	80	80	80
River Shipping	3.6	1.3	2	2	2
Bunker Fuel	9.4	4.1	5	5	5
Industries	2,395.6	2,672.5	2,800	3,000	3,200
Domestic	497.7	847.4	875	900	900
Miscellaneous	544.3	261.4	250	250	250
Total	3,527.5	3,872.8	4,022	4,247	4,447
Unaccounted for	320.5	1,093.9	1,258	953	953
Total Requirements	3,848.0	4,966.7	5,280	5,200	5,400

a/ Coke-oven and gas coke.
b/ Relatively small.
c/ Minimum amounts.

[redacted]

[redacted]

4. Stockpiles.

Figures concerning the size of coal stocks in Poland are unavailable for recent years, but comparison of production, export, and consumption data does not indicate that stocks have been particularly large. Inability to fulfill trade agreements despite highly favorable prices for coal, as well as some stringencies in supplies in the latter part of 1950, tend to support the conclusion that stocks probably are sufficient only to meet average requirements for a few weeks. It is doubtful that the stocks, including working inventories, were in excess of 2 million metric tons at the end of 1950 and probably were considerably less.

5. Surplus or Deficit.

Poland's ability to export about one-third of its output of bituminous coal and close to 80 percent of its brown coal, or about 25 million metric tons and 4 million tons, respectively, in 1950, represented an important contribution to meeting the fuel requirements of nearly every European country, including the USSR. Roughly 40 percent of coal exports go to Western Europe, and almost all of the remainder goes to other countries in the Soviet Bloc. Poland also has been shipping some coal to Pakistan, Argentina, and probably elsewhere, but the quantities are of minor importance.

It is believed that the annual surplus available for export in 1951 and 1952 will be about 27 million metric tons of bituminous coal and 4 million tons of brown coal. Figures on exports and imports of coke in recent years indicate that there will probably be a net surplus of around 800,000 metric tons of coke, but it is presumed that little of this is of metallurgical grade.

The following tables furnish export figures for the years 1948, 1949, and 1950:

[redacted]

[redacted]

Polish Exports of Bituminous Coal
1948-50

Destination	1948	1949	1950
	Thousand Metric Tons		
Europe (Non-Soviet Orbit)			
Austria	1,328.9	1,482.4	1,500.0
Belgium	343.7	65.6	43.9
Denmark	1,715.0	1,475.9	1,650.0
Finland	1,430.4	772.5	1,430.0
France	1,686.6	1,991.5	700.0
West Germany		98.8	200.0
Ireland	0	50.7	150.0
Italy	1,092.1	1,451.7	1,150.0
Netherlands	466.3	973.1	85.0
Norway	847.7	623.1	600.0
Portugal	0	29.5	70.0
Sweden	3,396.8	2,146.5	2,500.0
Switzerland	255.4	146.2	175.0
UK	51.6	0	0
Yugoslavia	54.4	0	0
Total	12,668.9	11,307.5	10,253.9
Soviet Orbit			
Czechoslovakia	2,222.5	3,460.9	3,850.0
East Germany	1,562.1	2,600.0	3,000.0
Hungary	163.4	96.6	100.0
Rumania	60.0	60.0	75.0
USSR	7,398.0	8,800.0	7,500.0
Total	11,406.0	15,017.5	14,525.0
Other or Unaccounted For	529.1	1,122.0	221.1
Grand Total	24,604.0	27,447.0	25,000.0

[redacted]

[redacted]

Polish Exports of Patent Fuel (Hard Coal Briquettes)
1948

Destination	Metric Tons 1948
Austria	100
Switzerland	1,600
Total	1,700

Polish Exports of Brown Coal
1948-50

Destination	Thousand Metric Tons 1948	1949	1950 a/
East Germany	4,260.6	3,853.0	4,000

a/ Estimated.

[redacted]

Polish Exports of Coke
1948-50

Destination	Thousand Metric Tons 1948	1949	1950
Europe (Non-Soviet Orbit)			
Austria	0	0	0
Denmark	200.0	343.7	170.0
Finland	65.9	119.1	120.0
France	171.0	15.9	0
Norway	63.2	41.1	15.0
Sweden	234.0	73.6	25.0
Switzerland	29.8	0	0
Yugoslavia	216.5	0	0
Total	980.4	593.4	330.0
Soviet Orbit			
Albania a/			
Bulgaria a/			
Czechoslovakia	3.9	0	0
East Germany a/			
Hungary	236.7	214.3	
Rumania a/			
USSR		250.0	250.0 a/
Unspecified	49.8		
Total	290.4	464.3	250.0
Grand Total b/	1,270.8	1,057.7	580.0

a/ Possible shipments.
b/ Minimum amount.

6. Internal Limitations.

Despite the existence of numerous thick seams of coal in the Upper Silesian basin which offer the most favorable conditions for development in Europe, there are certain elements in the coal industry which tend to restrict Poland's ability to exploit these resources as rapidly as planned.

a. Machinery and Equipment.

The principal difficulty that the industry faces is the poor condition of equipment, about 90 percent of which was of German manufacture and was largely worn out at the end of the war. Considerable machinery has been obtained from the Western countries, but the quantities received before 1950 were hopelessly inadequate. The USSR has been able to supply Poland with a few cutting machines and combination cutting and loading devices since 1949, but its own requirements preclude the possibility of giving much aid or a wide range of items.

According to the Six Year Plan the coal industry is to develop its own factories for the production of varied mining machinery such as rock drills, hammers, pumps, coal cutters, loaders, and combines. It was planned that by 1955 the industry would be independent of foreign sources for machinery and equipment and that quantities would be available for export. In May 1951 it was announced that the first series of combination cutting and loading machines (combines) and another type of mechanical loader, both patterned from Soviet models, would be produced in 1952. Progress is likely to prove slower than anticipated, and without supplies of equipment from foreign sources coal production is bound to be adversely affected.

In 1948, there were in use about 430 kilometers of conveyor belting, of which 370 kilometers had been used over 3 years. The frequent breaking of the worn-out belting caused daily stoppages in transport. It was reported in 1949 that, of the the 465 turbocompressors in operation, 180 had been in use over 30 years; 120, between 20 and 30 years; 46, between 10 and 20 years; and the remaining 119, comprising one-third of the total capacity, less than 10 years. The Six Year Plan calls for the erection of 45 large turbocompressors, 44 boilers with a combined capacity of from 450 to 580 metric tons of steam an hour to be installed at the mines, and 19 other boilers with a combined capacity of from 670 to 800 metric tons an hour at the power stations serving the mines.

If Poland cannot obtain from the West the needed quantities of coal cutters, mechanical loading equipment, mine locomotives, sand stowing equipment, hoists, generators, and preparation equipment, a heavy strain will be put on the industry to meet the objectives for coal production.

b. Labor.

According to the current Plan, labor productivity in the coal industry is to increase 35 percent between 1949 and 1955, and average daily output

is to reach 1.70 kilograms per employee. The attainment of these goals is dependent upon the ability to mechanize mining to the extent contemplated. Productivity has been increasing very slightly and is still below the pre-war level. At the present time average individual output is between 1.30 and 1.40 kilograms a day. Mines have been unable to obtain as many new employees as required, and most of the recruits are unskilled. Miners are disgruntled with working conditions, productivity records indicate that they are not working wholeheartedly for the government program, and young recruits for work are reluctant to take jobs in the mines. Large segments of the workers are soldiers who have been detailed to coal mining. Work norms were raised an average of 10 percent in early 1951 but are probably not having the desired effect in raising productivity.

7. Trends--Including Indications of Mobilization for War.

The upward trend in Polish coal production is normal in view of the large export markets available and the expansion of home requirements. Increased coal shipments from the US to Western Europe in 1951 are expected to reduce the power of Poland's trading position and Poland's ability to obtain strategic imports of Western goods for industrialization.

D. Petroleum.

Summary

Postwar boundary changes converted Poland from a petroleum surplus area to a petroleum deficit area. Before the war, about 40 percent of the petroleum production was exported, but today 75 percent of requirements must be imported. Crude-oil production in 1950 was about 180,000 metric tons, and estimated output in 1951 and 1952 is about 200,000 tons. In 1950, 175,000 tons of crude were imported from Albania, Austria, and the Middle East, and approximately 200,000 tons will be provided in 1951 and 1952 by Austria and Albania.

Domestic refinery capacity, although more than adequate for domestic production, is not sufficient to meet Poland's annual requirements of 600,000 metric tons. Imports of refined products from the Soviet Bloc totaled approximately 300,000 tons in 1950 and are expected to increase in 1951. In addition, the synthetic refinery at Dwory is scheduled to reopen in 1952. Although there was no evidence of stockpiling in 1950, there are indications that such a program is being started in 1951.

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1. Production and Estimated Possible Production and Capacity.

Before World War II, Poland was the third largest producer of petroleum in Europe, exceeded only by the USSR and Rumania. The boundary changes at the close of the war deprived Poland of from two-thirds to three-fourths of its oil. After the Drohobyez district and the Stanislowow field were ceded to the Soviet Union, crude-oil output dropped to 116,000 metric tons in 1956, about one-fifth of prewar levels. At the same time, Poland lost its three largest and most modern refineries, which are located in Drohobyez.

By 1950, production of crude oil had risen to about 180,000 metric tons a year. Under the Six Year Plan, output is to reach 394,000 tons in 1955,1/ but since the only oil-producing area in Poland is the area around Jaslo, where some wells have been producing since 1856, the chances of attaining this goal are slight. Estimated production in 1951 and 1952 is 200,000 tons a year. Unless new deposits are uncovered, it is doubtful that output will approach prewar production, and exploration by the government has been fruitless to date.

Over 60 percent of the crude oil comes from five fields in the vicinity of Jaslo. Estimated output by the major fields in 1950, 1951, and 1952 is shown in the table below 2/:

Estimated Production of Crude Oil
1950-52

Thousand Metric Tons

Field	1950	1951	1952
Gorlice-Lipnicki	36	40	40
Turaszowka	20	22	22
Bobrka	13	14	14
Grabownica	23	26	26
Wankowa	20	22	22
Others	68	76	76
Total	180	200	200

Poland has five refineries in operation, with a total annual capacity in 1948 of less than 400,000 metric tons, and a number of small ones which are probably not in operation. The individual capacities of the producing plants are listed below 3/:

Estimated Refinery Capacities
1948

Thousand Metric Tons

Location	Distillation	Thermal Cracking	Total
Czechowici	80	13.5	93.5
Jaslo	75	0	75
Trzebinia	75	0	75
Glinik-Mariampolski	75	0	75
Jedlicze	60	0	60
Total	365	13.5	378.5

The refinery at Trzebinia is reportedly being rebuilt and is to have a capacity of 200,000 metric tons. 4/ Total current capacity is probably about 500,000 tons a year.

Approximately 200,000 metric tons of crude oil are imported annually for these refineries. Most of the crude comes from Albania and Austria, but in 1950 about 50,000 tons were received from the Middle East. The estimated output of refined products is as follows:

Estimated Production of Refined Products
1950-52

Thousand Metric Tons

Product	1950	1951	1952
Motor Gasoline	94	107	107
Kerosene	52	59	59
Gas and Light Oils	68	77	77
Lubricants	65	73	73
Asphalt	30	34	34
Paraffin	5	5	5
Total	314	355	355

In the World War II period, five large synthetic oil refineries were built but were subsequently destroyed or dismantled. One of these, the Dwory plant near Oswiecim, is being rebuilt with equipment from the Schwarzheide plant in East Germany. The ultimate capacity will be 40,000 metric tons of liquid fuels, 5/ and initial production of 10,000 tons of gasoline is planned in 1952. 6/

2. Domestic Requirements.

In 1950, Poland's total requirements for petroleum products were approximately 600,000 metric tons. 7/ About 75 percent of these requirements are met by imports of either crude oil or refined products. Civilian requirements accounted for 320,000 tons, estimated as follows 8/:

Civilian Requirements for Petroleum Products
1950

Thousand Metric Tons

Consumer	Gasoline	Kerosene	Gas, Oil, etc.	Lubricants	Other	Total
Air Transport	2	0	0	0	0	0
Agriculture	9	25	29	4	1	68
Official Institutions	89	2	13	7	3	114
Industry	27	2	12	13	9	63
Railroads	2	3	1	7	0	13
Cooperatives	10	21	3	1	1	36
Other	18	2	3	1	..	24
Total	157	55	61	33	14	320

Total requirements, civilian and military, are estimated as follows:

Total Requirements for Petroleum Products
1950

Thousand Metric Tons

Product	Civil	Military	Total
Aviation Gasoline	2	15	17
Motor Gasoline	155	128	283
Kerosene	55	0	55
Gas, Oil, etc.	61	115	176
Lubricants	33	22	55
Other	14	0	14
Total	320	280	600

Civilian consumption is not likely to increase in the next few years, but military requirements will keep pace with mobilization progress.

3. Stockpiles.

There is no direct information on the extent of stockpiles in 1950. Since Poland is a petroleum deficit country and imports in 1950 were only large enough to cover the deficit, it is doubtful that any stockpiles were built up. However, increased imports, the institution of gasoline rationing in early 1951, 9/ and the expansion of storage facilities indicate that a stockpiling program may be under way. Present storage capacity is concentrated at the refineries and in the Baltic port areas.

4. Surplus or Deficit.

Poland produces enough crude oil to supply only one-fourth of its requirements. Both crude oil and petroleum products are imported. An estimated 175,000 metric tons of crude petroleum came from Albania, Austria, and the Middle East in 1950. 10/ Approximately 200,000 tons will be imported in 1951 and in 1952 from Albania and Austria. 11/ Nearly 300,000 tons of products were received in 1950 from the USSR, East Germany, Hungary, and Rumania. All of Poland's requirements for aviation gasoline and aviation lubricants are met by the USSR. Current information indicates that the amount of petroleum products imported in 1951 will show a sizable increase over 1950 imports. 12/

5. Internal Limitations.

The basic internal limitation of the Polish petroleum industry is the lack of oil deposits. Although the shortage of drilling and exploration equipment has been a handicap, this has not prevented an extensive search for new oilfields. The refining capacity is more than enough to handle the domestic crude oil available but is of prewar design. In addition, the cracking capacity is small, and, as a result, Poland is unable to produce aviation gasoline and special lubricants.

6. Trends—Including Indications of Mobilization for War.

Poland is making increasing efforts to expand the synthetic fuel industry in order to compensate for petroleum deficiencies, but much time will be required to build up an efficient synthetic industry. Increased imports, institution of gasoline rationing, and construction of storage facilities are indications of plans to stockpile petroleum.

E. Electric Power.

Summary

The electric power industry of Poland makes a significant contribution to the economic potential of the Soviet Bloc. Electric power is a basic element in large-scale production in the coal, electrolytic chemical, and metallurgical industries. These industries not only are of vital importance to the internal economy of Poland but they also provide exportable surpluses which are becoming increasingly important to the USSR and the Satellites.

The electric power industry was well developed before World War II and has made a good recovery from heavy war damage. In addition, the industry was strengthened by postwar territorial changes, since electric facilities were more highly developed in the Recovered Territories than in the lost areas. The net gain in capacity is not known, but unconfirmed statements indicate that it was equivalent to not less than 20 percent of present capacity.

Plant capacity and production will continue to increase through 1952. It is estimated that production will increase at a cumulative annual rate of 12.5 percent, whereas capacity will increase at a slightly lesser rate. This discrepancy will be compensated for by more intensive use of generating facilities. If these production estimates are attained, the essential needs of the economy will be met even though the Six Year Plan goal is not reached in 1955.

The greatest weakness of the industry is its heavy dependence upon outside sources for new equipment, but it does not appear that this now constitutes a drain on the USSR or the Satellites. It can be expected that the USSR will make strenuous efforts to meet any equipment deficiencies, either by direct help or by pressure on other suppliers.

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1. Economic Importance of the Industry.

The electric power industry is of vital importance in Poland if for no other reason than for the essential role that it plays in the production of coal. The coal industry is mechanized to a relatively high degree, and it would be impossible to maintain present coal production levels without large amounts of electric power. The metallurgical and electrolytic chemical industries also are heavily dependent upon electric power. For example, the production of calcium carbide, an important chemical product of Poland, requires about 5 percent of Poland's total electric power production.

In addition to its industrial uses, electric power is an important factor in the commercial activities of urban centers, of which there are 21 having populations of more than 40,000.

2. Prewar and Present Trends and Developments.

The prewar status of the industry is not of great importance in this study, because of the radical territorial changes resulting from World War II. The net result of these changes was a considerable strengthening of the electric power industry, since the Recovered Territories had electric plants, transmission lines, and solid fuel resources much larger than those in the territory lost. The capital equipment of the industry suffered heavy war damage, but restoration has been substantial. Output has continually increased since the war and in 1951 was about double that of 1945.

The Six Year Plan envisages the construction of 11 new thermal and 7 new hydroelectric plants, in addition to further rehabilitation of existing facilities. At the present rate of construction it is doubtful that all of these plants will be completed on schedule. The best prospect for increased production of electric power appears to be in improving the condition of plant equipment and providing sufficient boiler capacity in existing plants to allow capacity operations. Even if the new construction program is not completed, it is nevertheless believed that available capacity can be increased at a rate of 10 percent a year in 1951 and in 1952. It is expected also that great effort will be exerted to strengthen and consolidate the transmission networks, particularly the one connecting central Poland with the Silesian areas.

3. Internal Limitations.

a. Energy Resources.

Poland is well-supplied with the prime sources of energy for the generation of electric power. Solid fuels range from peat through brown coal to good bituminous coals, and reserves are ample for all present and foreseeable needs. Although the mining of coal is largely confined to the extreme southern portion of the country, adequate transportation facilities make it available to all of the principal power plants. The quality of the bituminous coal is such that the smaller sizes, less desirable for export, can be economically used for steam purposes, and coal will continue indefinitely to be the prime source of electric energy in Poland.

Petroleum as a source of electric energy is not important and is not likely to become so, particularly in view of the radical reduction in Polish oil reserves as a result of territorial changes. Potential water power resources, of which more than half are in the Vistula Basin 1/, are estimated at from 2 million to 2.5 million kilowatts. Only a little over 5 percent of the total potential has been developed, and there is no evidence of a strong effort materially to increase hydroelectric capacity in the near future.

b. Electricity Generating Plants.

It is estimated that the total installed capacity of all electric plants in Poland is between 2.8 million and 3.2 million kilowatts.* This figure must be modified by possibly as much as 30 percent in order to reflect the actual capability of the plants. This reduction from installed rated capacity is a result of the poor condition of some of the equipment and the lack of sufficient boilers and auxiliary equipment to operate the machinery at full rated capacity. One source 3/ indicates that immediately following the war the actual capability was slightly less than 50 percent of installed capacity. Present output figures show that this condition has been considerably improved. This plant capacity includes not only the public utility central stations but also the electric plants of individual industrial and mining establishments, all under government control. The electricity units of individual industrial plants still form an important part of Poland's total generating capacity, although the trend is toward the establishment of large central stations and the elimination of the smaller and less efficient individual plants.

The bulk of the electricity generating capacity is located along the southern border of the country, particularly in the Silesian coal regions. In 1946, about 70 percent of the total capacity was in the Katowice-Krakow-Lower Silesia area. 4/ It is probable that this high degree of concentration is being reduced, since the Six Year Plan contemplated the partial dispersal of industry, but the predominance of this region in the electric power industry will be maintained because of the continuing exploitation of the rich bituminous coal fields and the presence there of important deposits of iron ore, zinc, and lead. Following the southern area in electric power capacity are the Lodz, Warsaw, and seacoast areas in that order.

There is reason to believe that the present condition of the equipment in power plants can be considered only fair. Almost all of the large items are of foreign manufacture, and many of them, particularly those in the individual industrial plants, are old. A Polish engineer has stated in reference to the nation's electric power plants that "80 percent of the boilers producing 60 percent of the steam have passed the age of 20 years." 5/ In addition, war damage to the facilities is reported to have been extremely heavy.

25X1

The procurement of replacements from foreign sources in the face of general postwar scarcity of electric equipment has presented a serious problem to Poland. This difficulty, coupled with a constantly increasing demand for electric power, has obliged the industry to operate since the war with little reserve capacity and consequently a greater strain on equipment. It can be expected, however, that this situation will continue to improve with the receipt of heavy equipment ordered shortly after the war.

c. Transmission Systems.

Knowledge of the present status of transmission networks is incomplete, but it appears that there is no fully integrated national network. The larger plants in the Silesian area are interconnected to a considerable degree, but whether they have been consolidated into a single network is not known.

It is reported that Warsaw and Lodz are to be connected to the Silesian system by a 220,000-volt line, the construction of which was started in 1947. 6/ There is no evidence that this line has been completed, nor is there convincing evidence of any interchange of power between the Warsaw and Lodz areas, although such a connection would seem likely. Transmission lines radiate eastward out of Bydgoszcz in north central Poland and also along the seacoast in the Gdynia-Gdansk-Olsztyn area, but the operational status of these lines is not known. The more important high-tension lines are designed for 110,000-volt operation, whereas branch lines are generally designed for operation at 35,000 volts and 60,000 volts.

4. Production.

The production of electric power in Poland in 1949 is estimated at 8.15 billion kilowatt-hours. Estimates for 1950-55 are based on the assumption of a 12.5 percent annual rate of increase. This rate exceeds the rate of growth of capacity but can be achieved through fuller utilization of present facilities. Production from 1946 to 1955 is estimated as follows:

Estimated Production of Electric Power a/
1946-52 and 1955

Billion Kilowatt Hours

Year	Production
1946	5.71 b/
1947	6.61 b/
1948	7.51 b/
1949	8.15 b/
1950	9.24 c/
1951	10.30 d/
1952	11.50 d/
1955	16.30 d/

a/ The above figures do not include production from an unknown number of very small plants, estimated to equal about 3 percent of the above total.
b/ Official figures.
c/ Estimate based on 8 months' official figures.
d/ Estimate based on cumulative annual increase of 12.5 percent, equivalent to rate in 1946-50. The Six Year Plan goal is 19.3 billion kilowatt-hours.

In July 1950, Hilary Minc, Vice President of the Council of Ministers, announced that the original Six Year Plan goal for electric power production of 18 billion kilowatt-hours had been increased to 19.3 billion kilowatt-hours. 7/ It is doubted that this total will be reached, but the possibility cannot be entirely discounted, since a slight increase in the rate of installing new capacity would make it possible.

Nationalization of the industry and the greater efficiency of large central stations, among other factors, have caused a change from the prewar pattern of electric power production. In 1938 the public utility central stations produced 44 percent of the total output, but in 1947 they produced 60 percent. 8/ This trend should continue, although possibly at a slightly lower rate.

The proportion of electricity produced by water power is relatively small and in 1946 amounted to only 6 percent of the total. 9/ Hydroelectric development since 1946 would not indicate any substantial change in the pattern.

The export and import of electric power is insignificant as compared with total Polish production. There is some interchange with East Germany and Czechoslovakia at various border localities, the most important shipments being the supply from Walbrzych to the Prague area in Czechoslovakia

and the projected supply from the joint Polish-Czech plant at Dwory. These interchanges, although mutually advantageous, are by no means vital to the electric power supply of either nation.

5. Consumption.

Although information on Poland's consumption of electric power is meager, computations from such figures as are available, supported by a recent press release, indicate that industry, including mining, consumes two-thirds of all the power produced. Household use appears to be the second largest category, since the use of electricity for agriculture is not highly developed, and there is no electrified transportation except urban trolleys. The amount of electricity consumed by industry will continue to increase, but the proportion may decrease somewhat if the plans materialize for increased agricultural and urban use.

Within the industrial category, it is possible to get an indication of the relative use of electricity by specific industries in 1946 from the following table. It is not likely that there has been a marked change since that time.

Consumption of Electric Power by Industries 10/
1946

Industry	Percent of Total
Coal	41.5
Chemical	13.7
Metallurgical	14.4
Textile	7.2
Paper	5.7
Construction	4.5
Metal	2.5
Power	5.9
Other	4.6
	100.0

6. Input Requirements.

Sufficient manpower, including technical personnel, is available for the operation and maintenance of the existing electric power facilities. In view of Poland's past and continuing dependence on foreign sources for equipment and its installation, it is not likely that sufficient technical and engineering personnel have been trained to handle the design and construction of large power plants and transmission systems. The supply of fuel and operating supplies, such as lubricants and small tools, presents no serious problem.

The quantitative needs of the industry for new and replacement equipment are not known, but Polish manufacturing facilities can supply only a minor part of them. The industrial equipment industry is expanding but will not be able to cope with the needs of the electric power industry for a long time.

7. Vulnerability.

The economic vulnerability of the industry hinges on its ability to obtain new equipment and spare parts. There is evidence that the equipment in Poland's electric plants and transmission lines has come, not only from Czechoslovakia and USSR, but also in large quantity from most of the countries of Western Europe. The disruption of supply from these sources by Western export controls would seriously handicap the industry.

[redacted]

F. Chemicals.

Summary

Polish production of synthetic ammonia is in excess of prewar output, and nearly all ammonia is converted to nitrogen fertilizers. Current consumption of nitrogen fertilizers is slightly greater than domestic output, and additional amounts of calcium ammonium nitrate are imported from Austria. Some ammonium nitrate is produced in a grade suitable for the manufacture of industrial and military explosives, but no estimate can be made at this time on the production of ammonium nitrate for explosives. The production of nitrate fertilizers can be eliminated or reduced immediately to make nitric acid and ammonium nitrate available for use in explosives. There is no indication that ammonium nitrate is being stockpiled.

About four-fifths of Poland's sulphur requirements and half of its pyrites requirements are furnished by domestic production. In addition, substantial quantities of sulphur dioxide are recovered as a by-product in smelting zinc ores. Sulphur is imported from East Germany, and pyrites from Norway, Sweden, and Finland. The Six Year Plan calls for increased use of pyrites in the manufacture of sulphuric acid and for the construction of a sulphuric acid plant using gypsum (anhydrite).

Poland is not likely to secure its import requirements of Norwegian and Swedish pyrites in full in 1951 and 1952, because of the impending world shortage and political pressures which may divert these supplies to Western Europe. In this event, nearly every segment of the Polish economy, including the munitions industry, would suffer unless the increased output of pyrites in Albania, Bulgaria, and Rumania could fill expanding Polish requirements.

Poland depends heavily upon imports of natural rubber for its rubber supply, although some synthetic rubber is reportedly produced. The production of thiokol may be in excess of the needs for this inferior, rubber-like material.

Poland imports most types of rubber goods, and requirements may be expected to increase as industrialization proceeds. Three plants are believed to produce automobile tires, and seven plants produce other types of tires, but shortages have been experienced because of excessive Soviet demands for these products.

The Six Year Plan calls for considerable expansion of the rubber manufacturing industry. In 1955, footwear production is to reach 10 million pairs a year, and tire production is to quadruple during the Plan period. If such production goals are to be met, Poland must be assured of adequate rubber supplies and must overcome shortages of both machinery and equipment, most of which is imported, and of skilled workers and technicians.

[redacted]

1. Synthetic Ammonia.

a. Production.

Polish production of synthetic ammonia is estimated as follows:

Estimated Production of Synthetic Ammonia
1948-50

	Metric Tons (Nitrogen Content)
Year	Production
1948	40,600
1949	49,000
1950	60,000

Three Polish chemical plants produce synthetic ammonia. The largest plant is the State Nitrogen Works at Chorzow, which has an annual capacity of 50,000 metric tons (N). The second largest is the State Nitrogen Works at Moscice, with a capacity of 33,000 metric tons (N) a year, whereas the plant at Kmurow has an annual capacity of only 9,000 metric tons (N). Nearly all of the synthetic ammonia is converted to nitrogen fertilizers. Probably less than 5,000 metric tons (N) will be used in 1951 as liquid ammonia and processed to concentrated (90 to 98 percent strength) nitric acid. The nitrogen fertilizer produced in the greatest quantity is calcium cyanamide (21 percent N), with the calcium ammonium nitrate fertilizer "Saletrza," which has a 15.5 percent nitrogen content, second. This fertilizer is derived from synthetic ammonia and technical-strength nitric acid to produce ammonium nitrate, which is then mixed with dolomite (limestone).

b. Estimated Possible Production and Capacity.

Continued production increases are expected, as shown in the following table:

Estimated Production and Capacity of Synthetic Ammonia
1951-52

	Metric Tons (Nitrogen Content)	
Year	Production	Capacity
1951	70,000	92,000
1952	80,000	92,000

c. Domestic Requirements.

Domestic requirements are estimated as follows:

Estimated Requirements for Synthetic Ammonia
1950-52

Year	Metric Tons (Nitrogen Content) Requirements
1950	70,000
1951	75,000
1952	80,000

Consumption of nitrogen fertilizers has been slightly greater than domestic output, and additional quantities of calcium ammonium nitrate, amounting to nearly 10,000 metric tons (N) a year, have been imported from Austria.

Although the quantity is unknown, some ammonium nitrate is produced for the manufacture of industrial and military explosives.

d. Stockpiles.

There is no known stockpiling of synthetic ammonia in Poland, since this commodity requires pressure-type containers, which are believed to be totally lacking. An end-product such as ammonium nitrate could be stockpiled, but there has been no information that this has been done.

e. Surplus or Deficit.

In 1950 a deficit of about 10,000 metric tons (N) of synthetic ammonia was almost eliminated by imports of calcium ammonium nitrate from Austria. It is considered possible that the production of synthetic ammonia in 1952 will be sufficient to cover immediate requirements, if not to provide long term self-sufficiency.

f. Internal Limitations.

There are no raw material shortages in the synthetic ammonia industry. Difficulties may be experienced in the procurement of spare parts and in maintaining continuous operation. Much of the special equipment involved is not produced in Poland and may not be available in the Satellites. Production also will suffer if replacement catalysts (platinum-rhodium wire gauzes) are not available.

g. Trends--Including Indications of Mobilization for War.

No evidence has been found to indicate a mobilization for war. Poland plans, under its Six Year Plan (1950-55), to construct two large nitrogen fertilizer plants. Increases of "Saletrzak" fertilizer production by 220 percent and calcium nitrate by 1,000 percent over 1949 production are anticipated by 1955. The plan appears too optimistic, and it is doubtful whether the increase of fertilizer production can be attained. Reduced production of "Saletrzak" would make additional nitric acid and ammonium nitrate readily available for the manufacture of explosives.

2. Sulphur and Pyrites.

a. Production.

(1) Sulphur.

Total Polish production of elemental sulphur is reported as follows:

Sulphur Production
1946, 1948-49

Year	Metric Tons Production
1946	6,535
1948	10,000
1949	12,000

The largest part of the output of elemental sulphur comes from the zinc smelters, which in 1947 produced 6,000 metric tons in by-product operations. Sulphur deposits in the Carpathian Mountains are estimated to have produced from 2,000 to 3,000 tons in 1947. Very small amounts of sulphur are recovered from the city gas works.

(2) Pyrites.

Total Polish production of pyrites and their sulphur content (40 percent) are shown below:

Pyrites Production
1946-47, 1949

Year	Pyrites	Metric Tons Sulphur Content
1946	25,763	10,300
1947	39,639	15,900
1949	70,000	28,000

Pyrites occurs with zinc-lead ores in the Bytom area, near Krakow, and in Polish Upper Silesia and also is obtained separately in four different localities near Slupia, Nowa, and Kielce Wojewodztwo.

(3) Sulphur Dioxide.

The sulphur dioxide obtained as a by-product from the zinc smelters is an important indigenous source of sulphur. Most of the sulphur dioxide is used in the manufacture of sulphuric acid. The sulphur content of the sulphur

dioxide consumed in manufacture of sulphuric acid is estimated at 30,600 metric tons in 1946 and 35,100 tons in 1947, whereas the 1949 plan called for 45,800 tons.

b. Estimated Possible Production and Capacity.

The total production of elemental sulphur in 1952 is estimated at 16,000 metric tons. Production of pyrites in 1952 is estimated at about 90,000 tons (sulphur content, 36,000 tons). Production of sulphur in the form of sulphur dioxide from the zinc smelters in 1952 is estimated at about 50,000 tons.

c. Domestic Requirements.

(1) Sulphur.

The rayon industry, largest consumer of elemental sulphur in Poland, required 17,400 metric tons in 1949 when operating at only 65 percent of capacity, but some carbon bisulphide was imported. Rubber manufacturers, agriculture, and miscellaneous industries required additional but unknown quantities of elemental sulphur, possibly from 3,000 to 4,000 metric tons a year, which would have made total sulphur requirements about 20,000 or 21,000 tons in 1949. Assuming that the rayon industry operates at 85 percent of capacity in 1952, Poland's elemental sulphur requirements in that year will be about 26,000 metric tons.

(2) Pyrites.

Requirements of pyrites for sulphuric acid and for industry in 1949 were 264,000 metric tons. The Six Year Plan target for sulphuric acid production calls for an output from pyrites nearly 70 percent greater than that from zinc blend in 1955. Assuming that the Six Year Plan will be half completed in 1952, the pyrites requirements for sulphuric acid in that year will be about 188,000 tons. Additional requirements for pulp and paper and for miscellaneous industries would bring the total to an estimated 360,000 metric tons.

(3) Sulphur Dioxide.

Requirements for sulphur dioxide in 1952 are not expected to be much larger than in 1949 because of the greater emphasis to be placed on production of sulphuric acid from pyrites. Total requirements of sulphur dioxide (sulphur content) from zinc smelters in 1952 are estimated to be about 50,000 metric tons, equal to production.

d. Stockpiles.

The world sulphur shortage and difficulties in importing pyrites render it extremely improbable that any stockpiles of these commodities beyond normal operating needs have been or will be accumulated by Poland.

e. Surplus or Deficit.

Poland imports both sulphur and pyrites, and some of its sulphur dioxide is a by-product from the smelting of imported zinc concentrates. Incomplete import statistics show that 54,041 metric tons of pyrites were received in 1948 and 24,763 tons in 1949, and that 719 tons of sulphur were imported in 1949.* Sweden was the principal source of imports in 1948, followed by Norway, while Finland supplied about 4,000 metric tons in each year, and small amounts came from Albania. Poland also imports small quantities of sulphuric acid and carbon bisulphide, which help slightly to alleviate its raw materials shortages.

Because of the large expansion planned in the production of sulphuric acid from pyrites and because of the limited domestic resources of sulphur, it is believed that the Polish deficits in sulphur and pyrites will be substantially greater in 1952 than in 1949. Deficits are estimated as follows:

Estimated Deficits of Sulphur and Pyrites
1949 and 1952

	Metric Tons	
Commodity	1949	1952
Sulphur	8,000 to 9,000	10,000
Pyrites	194,000	270,000

f. Internal Limitations.

(1) Availability of Raw Materials.

The sulphur deposits in Poland are not believed to be large. Furthermore, the sulphur does not occur in formations suited to the low-cost extraction method used in the US.

The lead-zinc deposits in the Bytom area are reported to contain 25 million metric tons of a rich ore which would yield a substantial quantity of pyrites. Information is not available on the extent of the pyrites reserves except in one of the four localities where they occur separately. This deposit is estimated to contain 3 million metric tons of high-grade pyrites.

(2) Shortages of Raw Materials, Technical Personnel, Equipment and Containers, and Other Limiting Factors.

Increases in production of sulphur, pyrites, and sulphur dioxide from smelters are limited by the ability to obtain the necessary mining and ore processing equipment. The world sulphur shortage and the threatened shortage of pyrites will be an additional factor determining the extent of future shortages. The difficulty in obtaining pyrites, most imports of which come from non-Bloc countries, will increase as the shortage becomes more acute.

* From statistics of exporting countries.

g. Trends.

Two distinct trends in obtaining raw materials for the production of sulphuric acid are revealed in the Six Year Plan: (1) an increase in the proportion of use of pyrites and (2) a decrease in the proportion of use of sulphur dioxide. Another significant part of the Plan provides that nearly half of the proposed increase in sulphuric acid output shall be obtained from a new plant using gypsum or anhydrite. This plant probably will not be completed until after 1952.

Because of the world sulphur-pyrites situation, it may be expected that Poland will depend less upon imports of pyrites from the West and more upon imports from other Satellite countries such as Albania, Bulgaria, and Rumania, each of which appears to be increasing its output.

3. Rubber.

a. Production.

No reliable estimate can be made of the synthetic rubber production in Poland, but it is small. There have been various reports of anticipated production and the importation of equipment but no definite information that any production has actually been undertaken. The only known plant, which was constructed by the Germans at Oswiecim (Auschwitz) for the production of synthetic gasoline and rubber, was dismantled by the Soviets in 1945. 1/

A plant for the production of thiokol exists at Zarow in Silesia. Thiokol is an inferior type of synthetic rubber used mainly by the Polish Aviation Works in the electrotechnical industry for hose linings, gaskets, resistant beltings, and protective clothing and for sealing oil and gas storage tanks. The production of the Zarow plant has been reported as 12,000 metric tons a year, but this appears most excessive because of the limited uses for thiokol and because the rate of production exceeds the total of both natural and synthetic rubber supplies reported for 1950. 2/

Some reclaimed rubber is produced. Two rubber manufacturing plants, at Krakow and Poznan, are believed to have facilities for reclaiming rubber, 3/ and the reclaimed rubber factory reported at Bolechowo as the first plant of this type built in Poland may be the one planned in the Three Year Plan (1947-49) with a capacity of 1,500 metric tons a year. 4/ Poland reportedly is extending cultivation of the rubber plant kok-saghyz which was begun before the war years. 5/ No recent data are available on this work.

There are believed to be three factories producing automobile tires in Poland and seven producing other types of tires. Known factories are located at Poznan and Stomil. 6/ Total production of tires, reported at about 3,000 metric tons in 1938, has increased as follows:

[redacted]

Estimated Production of Tires
1948-50

Product	1948	1949	1950
			Metric Tons
Tires and Tubes	5,383	6,374	N.A.
Total Tires	4,572	5,519	6,945
Automobile Tires	2,503 7/	3,128 8/	4,343 9/

The production of automobile tires is estimated at 120,000 units in 1948, 10/ 150,000 units in 1949, 11/ and 200,000 units in 1950. 12/ The total prewar production of rubber goods, including tires, was 14,000 metric tons. 13/

b. Estimated Possible Production and Capacity.

The Six Year Plan (1950-55) anticipates a considerable increase in the production of rubber goods. Total production of footwear is to be 10,000 pairs annually, 14/ and an increase in the output of other rubber goods amounting to 13,000 metric tons is planned by 1955. 15/ The Plan calls for a production center, using organic synthesis methods, to be located along the southwest edge of the coal basin, which will consist of from 11 to 19 plants, including a plant for the production of synthetic rubber. 16/ Recent reports state that such a factory is now under construction at Radosc near Warsaw and will start production by the end of 1951. The Stomil and Poznan tire factories are to be expanded, and the construction of two large tire and tube factories is planned. 17/ A plant for reclaiming rubber, with an annual capacity of 6,000 metric tons, is to be built, as well as a factory for the manufacture of industrial rubber goods. 18/

To carry out this plan, a large quantity of equipment, unavailable in Poland, will be required, chiefly to modernize existing factories.

c. Domestic Requirements.

Poland's moter park, estimated at about 60,000 vehicles in 1950, would require from 240,000 to 300,000 tires a year. Domestic production of tires is probably inadequate, and some tires have been imported in postwar years from Czechoslovakia, France, and the UK. 19/

Postwar import statistics on rubber and rubber products are reported as follows:

Estimated Imports of Rubber and Rubber Products
1948-50

Year	Rubber and Rubber Products 20/	Rubber	
		Natural 21/	Synthetic 22/
	Metric Tons		
1948	12,876	3,600	4,500
1949	19,920	12,000	2,000
1950	17,017 a/	5,500	1,717

a/ Ten months.

[redacted]

In view of the anticipated expansion of production in the rubber goods industry, domestic requirements for both natural and synthetic rubber may be expected to increase, although increased production of synthetic rubber will lessen the dependence on natural rubber imports. However, some natural rubber must be added to the synthetic mixture in order to obtain products of lasting quality, especially in tire production.

d. Stockpiles.

There is no evidence of a stockpiling program for rubber or rubber goods in Poland.

e. Surplus or Deficit.

Poland will continue to require imports of natural and synthetic rubber, particularly to achieve the planned expansion of production of rubber goods. If the reported production of 12,000 metric tons of thiokol is available, there would probably be a surplus of this type of rubber because of its limited uses.

After the war the output of rubber goods was severely restricted, and distribution was made in accordance with lists prepared by the Central Planning Board or by the Planning Department of the Ministry of Industry and Domestic Trade. 23/ Supplies of tires and tubes probably are still inadequate, since much of the domestic production goes to the USSR. 24/ Special types of tires and tubes and belting make up the major portion of rubber goods imported. Expanded facilities planned for the rubber industry, however, should go far toward providing adequate capacity for domestic needs, provided the necessary equipment and raw materials are available.

Poland exported only 156 metric tons of rubber goods in 1949, whereas 320 tons were exported in the first 10 months of 1950. 25/

f. Internal Limitations.

(1) Availability of Raw Materials.

Natural rubber is imported chiefly from Southeast Asia but also from such transshipping nations as the UK, the Netherlands, and Belgium. Synthetic rubber has been imported from East Germany. Some reclaimed rubber is produced in Poland, and the Six Year Plan provides for the construction of a new reclaiming factory to raise the proportion of reclaim to 25 percent of the raw material used. 26/

Alcohol, used in the production of synthetic rubber, is cheap and plentiful in Poland, and production in 1950 is reported at about 20 million gallons. Using the Soviet method, butadiene can be obtained by synthesis from alcohol, and another method reportedly has been developed by the Polish Institute of Chemical Studies by which, with a different catalyst and other factors, 33 kilograms of butadiene, 5.5 kilograms of butylene, and 6 kilograms of ethylene can be obtained from 100 kilograms of alcohol. 27/ The production of thiokol requires ethylene polysulphide, which in turn is made from sulphur, salt, and ethylene.

Several of the rubber chemicals, which have been reported to be scarce in the Soviet Bloc, are produced in Poland, but no actual production statistics are available. Poland has a surplus of zinc oxide, some of which is normally used in the rubber manufacturing industries of Eastern European countries, and exports considerable quantities, mainly to Western European countries and to the USSR. 28/ There also may be a surplus of certain types of carbon black, since the Polish-Czech trade agreement of 1949 provided for Poland to export 500 metric tons of channel black. 29/

No information has been received on the availability of tire cord, but Poland may produce some, and East Germany and Czechoslovakia probably could supply viscose cord.

(2) Shortages of Raw Materials, Technical Personnel, and Equipment and Other Limiting Factors.

If its sources of natural rubber imports were cut off, Poland would be forced to depend upon the USSR or East Germany for natural (stockpiled) and synthetic rubber or to begin large-scale production of synthetic rubber. Although many of the basic raw materials for the production of synthetic rubber are available in Poland, probably the greatest handicap is the inadequacy of domestic production of manufacturing equipment for making synthetic rubber and rubber goods.

Much of the existing facilities and equipment of the rubber industry was seriously damaged during the war, and some was lost by dismantling. In addition, much of the equipment in the rubber manufacturing plants is obsolete or worn-out. Tires are reportedly produced in only 8 sizes, instead of the prewar 80, because of difficulties in obtaining canvas and molds. 30/

Another major handicap is the lack of skilled workers and technicians. The size of the technical staff was reported to be dangerously low in 1947, amounting to only 4.4 percent of total employment in the rubber industry. 31/ To overcome this shortage of trained workers, numerous technical schools are being built, and many have already been opened in the vicinities of the big factories. 32/ The Polish press announced early in 1950 that the first school for the study of the economics of the rubber industry had been set up at Lodz by the Central Administration of the Rubber Industry and Synthetic Products. The course was to last 6 months and include theoretical and practical study of economic and technical problems of the industry, with students drawn from workers in the industry who had adequate practical experience. 33/

g. Trends—Including Indications of Mobilization for War.

Polish plans for substantial increases in the production of rubber goods have been announced, with the major emphasis shifted from production of footwear to increased output of tires of all kinds. 34/ New tire plants are being constructed, and rehabilitation and reequipment of old plants continue. Workers are being trained in special technical schools. The current emphasis on efforts to make the country and the Soviet Bloc more self-sufficient in rubber production is important for both civilian and

military requirements.

4. Calcium Carbide.

Calcium carbide is of major importance to Poland in that it is the base for the large production of calcium cyanamide, which is of major importance as a fertiliser. Estimated production capacity is 165,000 metric tons, with approximately 115,000 tons going to cyanamids. Production is in excess of carbide requirements, and shipments are being made of carbide and some carbide-based chemicals to the USSR and the Satellites.

5. Sulphuric Acid.

Poland is the major producer of sulphuric acid, with estimated production of 300,000 metric tons in 1950 and a probable production of 450,000 tons in 1952. Because of the shortage of sulphuric acid in Czechoslovakia and East Germany, the Polish plants probably are running almost to capacity. Pyrites is found in several sections of Poland, with deficits made up by imports principally from Sweden and Norway. In view of the available large portion of raw materials necessary, Poland is in a better position with respect to the production of sulphuric acid than are the other Satellites.

6. Coke Chemicals.

Poland, with excellent supplies of coking coal and a large recovery of chemicals from gas plants and by-product ovens, is the major producer of coke chemicals among the Satellites. Production of benzol from Polish coals is sufficient to allow the export of substantial quantities to the other Satellites and the Western countries.

G. Engineering Industry.

Summary

Poland's engineering industry is undeveloped and cannot produce enough equipment for domestic requirements or contribute to the economic war potential of the Soviet Bloc before 1952. The production of broad-gauge locomotives is the single exception to this generalization, for Polish locomotive exports significantly strengthen the war-making capabilities of the Bloc. Polish output of agricultural equipment is very small and will remain inadequate for domestic needs in 1952. If favorable circumstances prevail, Polish exports of machine tools will begin in 1952, but shipments will be small until 1955, when output is scheduled to have increased 20 times over the prewar level to a rate of 12,000 units a year.

Shipbuilding, a rapidly expanding industry which is capable of making small exports, is a strategic asset to the Bloc because of its convertibility to naval construction. There is no evidence of stockpiling of ships, shortages of component materials restricting production. The aircraft industry does not occupy a significant place in the Polish economy.

1. Production.

a. Machine Tools.

Since 1948, approximately 12 Polish plants have been producing machine tools, but because of shortages of component parts such as bearings and alloy steels and the inadequacy of technical skills, planned production goals have not been met. Before 1948, imports, primarily from the US, had supplied the principal Polish requirements. Domestic production is estimated as follows:

Estimated Production of Machine Tools
1948-50

Units

Year	Planned Production	Production
1948	6,100	4,408
1949	6,550	4,716
1950	N.A.	5,000

b. Mining Machinery.

The 1948 plans called for the production of 24,300 metric tons of mining equipment, including 8,000 mining cars, 600 pumps, 210 cutting machines, 2,400 rock drills, and 2,300 hammer-hewers. Because of lack of materials, machine tools, and trained personnel, it is extremely doubtful whether these goals were more than partly realized. There are no figures available for 1949 production of mining machinery.

c. Transportation Machinery.

The only plants in Poland known to produce locomotives are the J. Stalin Works, better known as the Cegielski Plant, at Posen, and the Fablok Plant at Chrzanow. Beginning in November 1949, the entire production of locomotives from the Cegielski Plant was scheduled for shipment to the USSR, and production is estimated at 215 units in 1948, 112 units in 1949, and 86 units in 1950. The Fablok Plant is considerably smaller and produced from three to four standard-gauge units a month and several narrow-gauge units during 1948-50.

The Wroclaw factory manufactured 600 railroad cars in 1949. The Cegielski Plant in 1950 manufactured 500 railroad hospital cars for the USSR and spring bumper units (for locomotives and railroad coaches) at the rate of 3,000 units a month.

d. Agricultural Machinery.

In August and September 1949 the production of agricultural machinery was reported as being 51,689 units.

e. Shipbuilding.

An intensive reconstruction program was initiated in Polish shipyards in 1947 as part of the Three Year Plan (1947-49). Goals included the reconditioning of 615 barges and the production of 14 cargo ships totaling 27,000 deadweight tons. Reports on actual completions of ships are scarce, but there are satisfactory indications that the Three Year Plan was fulfilled. As a result of increased employment in the shipyards, where the labor force reached 12,000, and the standardization of types of ships built, production in 1950 was 16,000 tons of cargo vessels and fishing craft.

f. Aircraft Industry.

The Polish aircraft industry is producing only a limited quantity of light aircraft of glider, sport, and training types.

2. Estimated Possible Production and Capacity.

a. Machine Tools.

The Six Year Plan calls for machine tool production to increase 20 times over prewar levels. Machine tool production is expected to reach 12,200 units in 1955.

b. Mining Machinery.

The Six Year Plan calls for the production of 26 extractive machines, 34 derricks, 16 cage hoists, 25 skip hoists, 45 turbocompressors, and 44 boilers.

c. Transportation Machinery.

The 1950 production of locomotives was 14 percent below the target of the Six Year Plan. The Plan for the Cegielski Plant calls for production of 16 locomotives a month, but actual production will probably average from 7 to 8 a month. Anticipated 1955 production of all normal-gauge locomotives is 315 units.

d. Agricultural Machinery.

The Six Year Plan calls for the production of 50,000 farm tractors from 1950 to 1955. The agricultural machinery industry is to increase its production 183 percent over 1949, and in 1955 the industry will be producing 12,000 tractors a year.

e. Shipbuilding.

The revised Six Year Plan calls for the production of 322,000 gross registered tons of shipping by the end of 1955. The number of shipyard workers is expected to be doubled by 1952. It is estimated that production in 1951 and 1952 will rise sharply to 25,000 tons annually and possibly much higher. Total capacity is approximately 90,000 tons annually. Although the yards in Danzig, Gdynia, and Stettin have facilities for building vessels of 40,000 tons displacement, the largest to be constructed will not exceed 7,500 deadweight tons.

f. Aircraft Industry.

Poland produces only light training aircraft and gliders for flying clubs. The aircraft industry does not and could not at this time supply the Polish Air Force or the commercial airline, both of which import their equipment from the USSR. It is quite possible that some types of small aircraft and aircraft engines and instruments are exported to the USSR. So far there have been no imports of jet types.

3. Domestic Requirements.

a. Machine Tools.

Judging from Poland's efforts to import machine tools, which met with fair success through July 1950,* there is an apparent shortage of these items. Production is scheduled to be adequate by 1952 to meet requirements.

* According to the 5-year trade agreement between Poland and Czechoslovakia signed on 26 April 1951, Czechoslovakia will supply Poland with lathes, smelting machinery, industrial machinery, industrial and communications equipment, cars, tractors, and other items. The turnover is expected to be three times greater than under previous 5-year agreements.

b. Mining Machinery.

Domestic requirements of mining machinery are difficult to determine, but present production is probably inadequate.

c. Transportation Machinery.

With the USSR demanding from Poland almost twice as many locomotives as are being produced by the Cegielski Plant, it is unlikely that Poland produces a sufficient number of units for its requirements.

d. Agricultural Machinery.

Poland imported spare parts and certain types of agricultural machinery in 1950, and it is believed that production is not sufficient to meet domestic requirements.

e. Shipbuilding.

The planned expansion expansion of the Polish merchant marine could easily absorb the total output of the shipbuilding industry. Although before 1950 almost the entire production of Polish shipyards was delivered to the USSR, under present plans only 15 percent is allocated for export. On the other hand, there is substantial evidence that Poland is energetically purchasing ships abroad, which indicates that a great portion of Polish production is in fact going to the Soviet Union. Therefore, it is believed that Polish domestic requirements are at least equal to if not greater than present capacity.

4. Stockpiles.

It is highly unlikely that Poland stockpiled any type of machinery or machine tools in 1950, because domestic requirements are so pressing. The demands of the Soviet Union for certain types of machinery and the restriction of exports by the West further reduce the likelihood of stockpiles.

All newly completed ships have been placed in immediate service in the Polish and Soviet merchant marines. The demand for ships has been far greater than production, and shortages of component materials are limiting output. There is no stockpiling of aircraft, aircraft engines, replacement parts, or gliders.

5. Surplus or Deficit.

There could have been no surplus in the Polish machinery industry in 1950. If production under the Six Year Plan proceeds on schedule, there may be a surplus in certain items by 1952. There is and will be a continuing general deficit in the Polish engineering industry.

[redacted]

6. Internal Limitations.

a. Machinery.

Machinery production in Poland is limited by availability of iron ore, pig iron, steel, and ferroalloys. Although Poland has large reserves of low-grade ore, these must be enriched by high-grade ores imported from Sweden and the USSR. Scrap steel and scrap iron also are in short supply in Poland, and ferroalloys must be furnished by the USSR and the other Satellites, although some are imported from Norway and the UK. It is likely that a shortage of various technical skills also exists in the machinery industry.

b. Shipbuilding.

Notwithstanding the development of the Elblag marine engine factories, Poland still imports propulsion units from Denmark, Italy, and Germany. Steel plate is obtained from Czechoslovakia. Disruption of these imports, unless offset by supplementary supplies from the USSR, would probably cut Polish shipbuilding capacity in half. Another serious limitation, a shortage of skilled labor and technical experts, is being offset by a systematic program of schooling for apprentices in each shipyard.

7. Trends—Including Indications of Mobilization for War.

Production of armaments and munitions in Poland is limited to components and to light equipment such as machine guns, hand weapons, antitank weapons, light antiaircraft guns, and tracer ammunition. Parts for tanks, armor plate and gun barrels and other components are produced and delivered to the USSR.

The large Cegielski locomotive works was scheduled to increase production of submachine guns to 3,000 a month beginning in 1950. Raw materials and machines were supplied by the USSR. Another Cegielski plant produced sea mine casings. A munitions works received several 200-ton punch pressers from the USSR for munitions production. A former automobile plant employing 1,900 workers in 1947 was producing ammunition for carbines, pistols, and submachine guns, small parts for the magazines of automatic weapons, detonators, and fuzes. Cartridge cases were manufactured in this plant, whereas powder came from another Polish plant. Some armaments parts, produced in East Germany from steel received from Czechoslovakia, are sent to Warsaw for assembly. A Huta-Gigant plant near Krakow, under construction in 1950, presumably will produce tanks. Many existing plants doubtless are readily convertible, either partially or completely, to war production.

The expansion of the shipbuilding industry probably will continue at an accelerated pace, but no conversion to war production is indicated. It is probable that, under Soviet direction, the aircraft industry will be maintained at its present small size to train Polish youth in elementary aircraft production and operation.

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H. Uranium.

1. Production.

Production of uranium in Poland by the USSR began shortly after the end of World War II. The output increased slowly in the 1946-50 period, and by the end of 1950 Polish uranium ore and concentrates accounted for 3 percent of the total uranium available to the USSR.

2. Estimated Possible Production and Capacity.

The 1946-50 rate of output is expected to continue through 1952.

3. Domestic Requirements.

As there are no atomic energy plants in Poland, there were no domestic requirements for fissionable materials in 1949 and 1950, and none is expected in 1952.

4. Stockpiles.

All uranium production is shipped to the USSR, and no stockpiles are maintained in Poland.

5. Surplus or Deficit.

The total Polish output of uranium is surplus.

6. Internal Limitations.

Although the deposits of uranium now being worked are not extensive, Soviet requirements for uranium are such that all available sources are being exploited. Manpower supplies are satisfactory, but mechanical equipment and replacement parts are in short supply. Working conditions and safety precautions in the mines are bad.

7. Trends--Including Indications of Mobilization for War.

Continued demands by the Soviet directors of the Polish uranium industry for increased output and recovery of all available fissionable material is an indication that the Soviet uranium program is geared to a war economy.

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[redacted]

VII. Transportation.

Summary

The Polish transportation system makes a contribution of sizable proportions to the Soviet economic potential for war. The principal contribution is made by the Polish railroads, which not only carry virtually all of Poland's internal traffic but also haul the largest part of Polish trade with the USSR, using nine change-of-gauge transloading stations on the Soviet border. The bulk of Polish coal exports to the Soviet Union, which are of great importance to the Soviet war potential, is moved by rail, although the Polish inland waterways and the merchant marine also participate in this traffic to some extent. Other strategic materials carried by rail to the USSR include machinery, heavy industrial products, and synthetic petroleum. These shipments originate not only in Poland but also in East Germany. Of almost equal importance is the shipment by rail of Soviet ores and metals to East Germany and Poland for processing, the finished products then being returned to the USSR.

In addition to its role in direct trade with the USSR, the Polish merchant marine serves Soviet interests throughout a large part of the world and constitutes a major factor in Soviet ocean transport capabilities. Polish-flag tonnage considerably augments the USSR's own moderate capacity for transportation from Europe to the Communist Far East. Shipments by sea are particularly important for supply movements to China because of the limited capacity available on the Trans-Siberian railroad for such traffic. In the Baltic, Polish shipping is employed to compensate for the present inability of the USSR's own Baltic fleet to meet Soviet water transport requirements.

The strategic significance of Polish transportation is great because Poland lies on the major Soviet supply route for any large-scale military operation in Western Europe. The east-west rail network is of primary importance in this connection. The highway and airfield networks, which are of negligible economic importance, would assume increased significance in military operations.

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A. Railroads.

1. Direct Contributions of Railroads to the Economic Potential for War of the USSR.

The Polish State Railways (PKP) make a significant and continuing contribution to the Soviet economic and military potential for war, as coal, machinery, heavy industrial products, petroleum products, and some foodstuffs are delivered by rail to the USSR. These shipments originate not only in the industrial regions of Poland but also in East Germany. Of almost equal importance are the incoming shipments of ores and metals from the USSR, which are transported to Germany and Poland for processing. The railroad facilities are adequate to haul the traffic in important strategic materials from Poland and in transit across Poland from East Germany to the USSR. The Polish rail system is also currently important to the USSR for the support of Soviet occupation forces in Germany and would be of great strategic value in a prolonged Soviet military campaign or occupation in Western Europe.

a. General Description of the Network.

The PKP network amounts to 27,358 kilometers, 28 percent longer than in 1939, because of the dense network acquired in the Recovered Territories. 1/ The network is well-developed in the west and fairly well developed in the south but is thinly distributed in the east. A web of seven principal lines radiating from Warsaw ties the network together. Five major routes cross the country latitudinally, while two major lines are north-south routes.

The difference in gauge between Soviet and Polish lines is not a serious barrier to traffic, because there are nine transloading stations on the Soviet-Polish frontier.

b. Traffic.

Railroad traffic in 1950 was approximately 35.8 billion metric ton-kilometers, 2/ about 60 percent above the 1938 level, and comprised about 98 percent of total traffic carried by inland surface transportation. The chief items of rail traffic are coal, metals and minerals, heavy industrial products, agricultural products, and lumber. On a ton-kilometer basis, coal accounts for 49.7 percent of this commercial traffic. 3/

c. Equipment.

War damage to fixed facilities has been fully repaired with the exception of a few temporary bridges awaiting permanent replacement and two bridges on tertiary lines which probably will not be rebuilt, but the over-all condition of rail lines is not yet good. Although maintenance has been increased greatly in the past 18 months, many lines have not yet overcome deficiencies caused by the abuse and neglect which prevailed between

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1939 and 1949. A high percentage of rails and ties is overdue for replacement. Although considerable main line trackage has been reconstituted, average train speeds and over-all capacity cannot be increased significantly until fixed facilities throughout the system are improved. Centralized traffic control equipment has not been adopted, but block signal equipment facilitates the control of trains on most major routes. The modernization of signal equipment on lines and of loading installations at terminals is called for in the Six Year Plan, but it is not certain that new equipment will be available before 1955 for more than a few of the major lines.

d. Capacity.

The postwar increases in domestic economic activity and the heavy burden of Soviet-German rail traffic across Poland keep transport requirements close to maximum usage of facilities, and it is estimated that traffic varies not more than 5 percent from existing capacity levels. However, an increase in capacity of between 8 and 10 percent is foreseen by the Polish planning commission through acceleration of loading and unloading procedures, increases in average operating speeds, modernization of signal equipment, and increased lengths of hauls. The planned reduction in turnround time from 5.5 to 4.8 days should amount to the equivalent of a 12.7-percent increase in freight car capacity.

Although PKP has little surplus capacity at any given time, this is not regarded as a limiting factor to the Soviet war potential. The surplus capacity of approximately 5 percent represents roughly 1.8 billion additional metric ton-kilometers of traffic which could be handled in an emergency, enough to deliver up to 6,000 tons daily across Poland between Brest and Frankfurt-an-der-Oder. In military terms, this additional traffic would be adequate to supply 500 tons per day to 12 active divisions. This traffic could be carried with only occasional reductions of current non-military traffic and without curtailing the already heavy traffic on behalf of both the Soviet and Polish armed forces.

The transloading stations on the Soviet frontier probably already have sufficient capacity to accommodate a 5-percent increase in traffic, although this increment might occasion temporary delays. In any case, the facilities could be rapidly expanded to meet substantially increased traffic requirements. 4/

e. Vulnerability.

The Polish network is vulnerable to sabotage and to air attack at several key bridges where main east-west lines cross the Oder, Vistula, and Bug rivers and their tributaries. The economic effects of attacks on rail bridges would be multiplied if the river channels also were blocked, as is usually the case, thus necessitating diversion of both rail and water traffic.

The transloading system offers vulnerable targets, but only to large-scale, sustained air attacks which probably would require effective control of the air. The series of transloading complexes on the Polish-Soviet border affords considerable flexibility, and extensive damage would be required to disrupt traffic seriously through a given complex. The repair of damaged stations and the construction of new, alternative stations could be done rapidly and easily. Disruption of operations at the Brest, Insterburg, and Przemysl stations would sharply reduce rail traffic, but extensive, sustained attacks would be necessary to close traffic at all frontier crossing points and to maintain the closure.

The Soviet economic potential for war would be hampered to the extent that essential traffic between the USSR and Poland, particularly in coal and iron, could be disrupted. The Soviet war potential would also be affected by the interruption of Polish imports of Swedish iron ore, ball bearings, and machinery which are normally cleared from Polish ports by PKP and which are required to maintain Polish industrial activity for Soviet account.

2. Direct Contributions of Railroad Equipment to the Economic Potential for War of the USSR.

a. Inventories.

Poland has about 6,000 locomotives and 150,000 freight cars. 5/ The Six Year Plan calls for a 21-percent increase in freight cars over the 1949 inventory of 147,815 cars in order to accommodate an 86-percent traffic increase in the same period. The planned inventory will require the addition (excluding replacements) of 31,050 new cars by 1955, or 6,210 cars annually, about one-third of Poland's productive capacity.

It is believed that all new Polish cars can be adjusted for service on Soviet broad-gauge tracks. Between 15 and 20 percent of the current inventory, perhaps 25,000 cars, is estimated to be adaptable for service in the USSR.

b. Effect of Transfers to the USSR.

It is unlikely that the USSR will remove rolling stock from Poland. Poland's railroad establishment is vitally important to the USSR, and the entire Polish inventory would add only about 13 percent to the current Soviet freight car park. A large part of Poland's supply of adjustable-gauge freight cars is customarily employed in Soviet-Polish commerce and represents, in effect, a continuous rolling stock contribution to the Soviet Union.

If circumstances require the USSR to remove Polish equipment, the adjustable cars will undoubtedly be among the first to be requisitioned. Temporary withdrawals of up to 14,000 freight cars could be made without critically disrupting the normal flow of traffic, but permanent withdrawals of more than 7,500 cars would impose restrictions on traffic which would increase in severity with time.

Nevertheless, if the Soviet Union requires additional locomotives or other rolling stock, these probably will be manufactured at plants in Poland, Czechoslovakia, and the USSR, all of which have surplus manufacturing capacity. The Polish and East German economies are too important to the USSR to risk handicapping them by withdrawals of rail equipment which would seriously limit movements of essential materials.

3. Indirect Contributions.

a. Role of Railroads in Soviet Trade.

(1) Extent and Nature of Traffic with the USSR and the Satellites.

Poland's railroads carry not only extensive Soviet-Polish traffic but also a great deal of Soviet-German trade. Coal exports amount to 83 percent of Poland's rail-borne foreign trade. The main route is the South Magistral Railroad between Katowice and Przemysl, which hauls the bulk of the 8 million metric tons of coal annually shipped to the USSR. Lines to the west carry about 3 million tons a year to East Germany. Sweden also imports about 3 million tons annually, but a considerable volume of this traffic reaches Baltic ports by inland waterways. Machinery and heavy industrial products also move by rail between Poland and the USSR in large volume. Ores, metals, and semifinished products move to Poland from the USSR for processing under Soviet direction.

In addition to this Polish-Soviet commerce, German-Soviet traffic across Poland amounts to about 25 trains a day in each direction, or approximately 10 billion metric ton-kilometers a year. This traffic consists chiefly of Soviet-owned goods and German industrial production in the form of reparations and includes chemicals, machine tools, railroad equipment, and other products of considerable importance to the USSR.

(2) Importance of Traffic to the Soviet Economy.

There is no rail traffic on the Soviet perimeter as important to the economy of the USSR as the traffic carried by the Polish railroad network.

b. Role of Railroads in Trade with the West.

(1) Extent and Nature of Traffic.

Polish trade with the West is not inconsequential, but most of it is carried by sea. A small amount of trade with Western Europe, particularly Switzerland, crosses East Germany, but this traffic is not

believed to be of economic significance.

(2) Clandestine Traffic.

The volume of clandestine traffic with the West is not known. More rigid export controls by Western European nations may reduce this traffic somewhat but are not likely to eliminate it. In any case, the volume of clandestine traffic which moves over Polish railroads is not a particularly important factor in the economy of either the USSR or Poland.

(3) Importance of Traffic to the Orbit Economy.

So much of Poland's traffic with the West, both clandestine and overt, is transported by sea that rail-borne Polish commerce with the West is of little importance.

4. Inverse Contributions.

a. Equipment.

No locomotives and other rolling stock are obtained from the USSR. On the contrary, Poland delivers considerable railroad equipment to the USSR each year. The Soviet Union sends Poland some semi-finished components and materials for the construction of this equipment, but these supplies are only a fraction of the total required in the construction program.

b. Materials.

Poland receives no finished railroad materials from the USSR. Poland now meets all internal requirements with domestic production and is able to roll some surplus rails for export. Details on the procurement of other items such as signal equipment, automatic couplers, air-brake components, and bearings are insufficient, but it is believed that Czechoslovakia and Sweden supply all critical items required.

c. Manpower.

Poland has an adequate supply of skilled and unskilled personnel to maintain PKP operations at present and foreseeable traffic levels.

d. Soviet Control.

The USSR maintains rigid control over all aspects of PKP operations through four methods: (1) occupation of key positions in the Transportation Ministry and in the General Directorate of State Railways by loyal Communists; (2) assignment of Soviet officials to certain key

positions in the operational chain of command; (3) establishment of a military transport office in every railroad station and bureau; and (4) use of Polish and Soviet railroad police, now totaling more than 50,000 men.

5. Probable Developments.

Railroad developments through 1952 will strengthen the Polish network by slightly increasing the capacities of several key lines, but these minor improvements will have no noticeable effect on the Soviet economic potential for war. It is likely that the Guben-Leszno, Goerlitz-Jelenia Gora, Stargard-Rebusz, and possibly Ilawa-Olsztyn sectors will be converted to double track by the end of 1952. Much progress is expected in the strengthening and reconstruction of fixed line facilities on main east-west lines. It is unlikely that Soviet broad-gauge lines will be extended farther into Poland, but alternative transloading stations probably will be established at Narewka, Bialowieza, Krubieszow, and/or Sokal.

B. Highways.

1. Direct Contributions of Highways to the Economic Potential for War of the USSR.

The Polish road system, despite its generally good condition, contributes little to the Soviet economic potential for war. In the event of war, however, assuming completion of the major bridges, it is believed that the Polish road net would prove to be a distinct asset to the USSR. Between 25 and 30 percent of the network is made up of all-weather, hard-surfaced highways capable of supporting heavy military traffic over extended periods of time with only normal maintenance. This fact, together with Poland's location in the path of a major Soviet line of advance to the West, indicates that the Polish highways could contribute substantially to the support of Soviet military operations in Europe.

a. General Description of the Network.

Poland's road network at the end of 1947 totaled about 234,100 kilometers, 30 percent less than the 1938 total of 334,700 kilometers. This over-all decrease was brought about by Poland's postwar territorial losses, which reduced the total length of unimproved dirt roads from 272,600 to 148,900 kilometers. As a result of Poland's acquisition of a portion of eastern Germany, however, the total length of all-weather roads doubled, and the length of hard-surfaced roads increased from 62,200 to 94,200 kilometers. 1/

The major roads radiate from Warsaw to Gdynia, Poznan, Katowice, Krakow, Brest, Bialystok, and Kaliningrad. In addition, Poland has acquired portions of two German-built superhighways in the Recovered Territories, one running from the present German frontier south of Forst through Legnica and Wroclaw to Katowice and the other leading east a short distance from Szczecin and projected to Kaliningrad. A second stretch of the latter is completed in the vicinity of Elblag. There are road connections across the country both from east to west and from north to south, but as yet there is nothing which can be called, for through-traffic purposes, an international highway. A lack of bridges across the major waterways is the chief limiting factor. The major route between Kaliningrad and Berlin, for example, is the highway through Tczew, Starogard, Gorzow, Wielkopolski, and Kustrzyn. This is a three-lane (two macadam, one gravel) road which was reconstructed in 1949. It is in good condition, but major bridges at Malbork, Tczew, and Kustrzyn must be completed before it can be used for through traffic. 2/ The network in the former German areas is the best constructed and densest, whereas the roads in the east are the poorest.

Until quite recently the road system as a whole was poorly integrated. Between the two world wars, Poland made some progress in unifying the road system. Connecting routes were built, and sectors formerly separated

were tied together by highways radiating from Warsaw to the other principal cities. Motor vehicles were too scarce, however, to warrant any real development of highways by Western standards, and the roads remained a patchwork of short stretches of various widths, surfaces, and crowns.

After World War II, highway restoration received high priority in order to supplement and relieve the war-crippled railroad system. Continued postwar restoration and improvement, although not significantly extending the network, have made the roads serviceable for the most part, and the main routes have recently been described by Western observers as "good roads." 3/ Construction and repair since 1945 are summarized in the following table:

Road Construction and Repair 4/
1949-55

Period	Rebuilt and Improved (Kilometers)	Newly Constructed (Kilometers)
1945-48 a/	5,964	
1947-49 a/	8,217	1,107
1949 (Planned)	1,300	1,800
1950-55 (Planned)	4,970	372

a/ Presumably there is some duplication in the 1945-48 and 1947-49 figures.

Current construction plans are part of a 30-year program aimed at the hard-surfacing of 60,000 kilometers of dirt roads and the construction of 3,000 kilometers of new roads. 5/ The implementation of this program is the responsibility of the PPRK, the State Enterprise for Communications Works. To date, construction has been started in the Warsaw area on the projected Moscow-Berlin superhighway. Another east-west through highway is planned to link Lvov and Wroclaw across south Poland, and work has begun on the Krakow-Tarnow sector of this project. Completion of these projects is expected to require from 5 to 10 years. 6/ The long-term strategic implications of these plans are apparent, but the fact that progress has been neither rapid nor forced suggests that road construction to date has not been dictated by any compelling or immediate military objectives.

b. Traffic.

Before World War II, traffic was so inconsequential that statistics were not kept. It is estimated that in 1951 motor vehicle traffic does not much exceed 4 percent of total inland freight traffic in terms of tons carried. The following postwar figures have been reported, although

their reliability has not been established:

Estimated Motor Vehicle Freight Traffic 7/
1947-49

	Thousand Metric Tons		
	1947	1948	1949 (Planned)
State Enterprise	153	800	3,300
Other	664	2,500	3,750
Total	817	3,300	7,050

Another source states that 70 million metric tons are to be carried by motor transport in 1955, a twelvefold increase over the 5.8 million tons reportedly carried in 1949. 8/ This report implies that the 1949 plan was not fulfilled, and it is doubtful that future plans will be realized unless present fuel shortages are eliminated and the number of motor vehicles increased much more rapidly than is now indicated.

Although the tonnage hauled by motor transport accounted for 2.7 percent of all inland freight traffic in 1948 and about 4 percent in 1949, in terms of ton-kilometers the percentage of total freight moved by motor vehicle was undoubtedly much smaller because of the short average length of highway haul as compared with other forms of transport. If horse-drawn traffic, which is mainly agricultural, were also considered, tonnage moved over the highways would be substantially increased. This traffic, however, like motor vehicle traffic, is essentially short-haul and local in nature, and therefore has little effect on the ton-kilometer ratio between highway traffic and total traffic.

c. Equipment.

Road construction and repair in Poland are for the most part slow because the work is accomplished with manual labor. Local farmers are required to assist the regularly assigned crews in road maintenance. A member of the US Army Attache's staff, over the period of a year in the course of various field trips throughout Poland, observed only 5 or 10 antiquated steam rollers, about 5 jack hammers, and approximately 10 makeshift tar spreaders. 9/

d. Capacity.

The over-all capacity of the Polish road system considerably exceeds the country's economic requirements for highway transport. The road network in Poland, moreover, is sufficiently extensive to support military operations in any direction. There are sufficient two-lane, all-weather roads to carry moterized forces, including tanks and infantry columns, but the present condition of bridges imposes some limitation on possible operations. Generally speaking, bridges on the principal routes will support up to 40 metric tons and can be reinforced without special equipment. On second- and

third-class roads, most bridges will support only 10 tons. Much bridge construction work is now under way, but it is estimated that not until 1954 will the number, width, and capacity of bridges be restored to prewar status. By that time, provided the current construction rate is maintained, all bridges on the hard-surfaced, multiple-lane highways may be expected to support 60-ton loads. 10/

Weather still limits the use of all but the primary roads and restricts to some extent the long-term capacity of the highway network. All-weather roads exist between major cities only, and even on these roads removal of snow is largely dependent upon the individual efforts of local farmers. The unsurfaced roads are usually impassable in both spring and fall. 11/

e. Vulnerability.

Since highway transport accounts for such a small proportion of total traffic, the economic vulnerability of the highway network is judged to be slight. The fact that the principal highways are usually supplemented by rail lines would reduce the economic effectiveness of attacks on highway targets unless rail connections were disrupted at the same time.

The physical vulnerability of the highway system, with the exception of bridges, is generally low. The Polish terrain is such that road cuts can be repaired with little difficulty, and short detours can be easily constructed. On the other hand, the flat terrain and accompanying lack of cover increase the vulnerability of vehicles to air attack. Bridges across the major waterways, such as the Vistula, Oder, Bug, and Narew, are the most vulnerable targets of the highway network.

2. Direct Contributions of Highway Transport Equipment to the Economic Potential for War of the USSR.

a. Inventories.

Latest official figures on the Polish motor vehicle inventory refer to 1948 and are reported as follows:

Motor Vehicle Inventory 12/
1948

End of Year	Trucks	Passenger Cars	Units Total
1938	12,182	29,766	41,948
1946	36,914	23,036	59,950
1948	33,719	24,800	58,519
1955 (Planned)	76,000	36,000	112,000

It is noteworthy that the postwar truck inventory is nearly three times that of 1938, whereas the number of passenger cars has declined from the prewar level. Furthermore, over 80 percent of the planned expansion between 1948 and 1955 consists of trucks.

The reduction in the total motor vehicle inventory between 1946 and 1948 was probably caused chiefly by the retirement of worn-out vehicles, many of which were former military trucks received through UNRRA. The motor vehicle park as a whole is probably still deteriorating and in poor condition, and it seems likely that the total operable park has not increased since 1948. Obsolete models, short supplies of spare parts, and inadequate maintenance and repair facilities have resulted in an excessively high retirement rate which, as far as is known, is only partially offset by imports and domestic production. The automotive industry in Poland has only recently entered its initial phase and contributes very little to the modernization or expansion of the motor vehicle inventory. Despite ambitious plans for development of this industry, it is probable that planned production for 1955 will fall short of realization.

Apparently not all of the total motor vehicle inventory is available to the Polish civilian economy. In 1948 it was estimated that about 5,000 trucks and from 2,000 to 3,000 cars and jeeps were assigned to the military. 13/ The armed forces and police probably still hold from 15 to 20 percent of all motor vehicles.

Although no data are available on the number of horse-drawn vehicles, it is quite certain that the number of horses suitable for transport purposes has not yet reached the prewar level. In 1948 there were 2.2 million horses, far less than the 4 million in Poland in 1938. Although horse-drawn vehicles are used largely to meet local agricultural needs, they are nevertheless an important part of highway transportation as a whole.

b. Effect of Transfers to the USSR.

So far as is known, there have been no transfers of motor vehicles from Poland to the USSR. The relatively undeveloped state of Polish highway transport and the small percentage of total traffic carried

on the highways suggest that such transfers would not have a serious effect on the Polish economy unless they included large numbers of carts, wagons, and horses, as well as motor vehicles.

3. Indirect Contributions.

a. Role of Highway Transport in Soviet Trade.

Although there presumably is some highway traffic between Poland and the USSR, little specific information is available.

b. Role of Highway Transport in Trade with the West.

There is no regular highway traffic between Poland and the West. Possibly some clandestine motor vehicle traffic has occurred through Czechoslovakia or East Germany, but little is known of this traffic.

Automotive equipment has been received by Poland from the West in amounts which are significant to Polish motor transportation. "Motozbyt," the central commercial organization of the motor industry, was established in the spring of 1948 with responsibility for the export, import, and foreign and domestic sale of automobiles, trucks, motorcycles, tractors, engines, spare parts, and tires. In 1949 the Polish press reported that 60 percent of the equipment handled by Motozbyt was of foreign origin. Although the Czech contribution has been significant, it is likely that much of this material, particularly cars and trucks, originated in the West. Incomplete reports of vehicle imports indicate that at least 900 motor vehicles were received in 1947, a minimum of 5,000 in 1948, and over 2,500 in 1949. 14/ Most of the motor vehicles received from the West are believed to have been surplus military types.

4. Inverse Contributions.

a. Equipment.

The USSR could facilitate and accelerate Polish highway construction by supplying road-building machinery, but there is no evidence that this has been done. Receipts of motor vehicles from the USSR have been widely publicized, but actual numbers, though unstated, are believed to have been small. The 5-year Polish-Soviet trade agreement signed in 1949 specified that Poland will receive 760 GAZ-51 and ZIS-150 type trucks, 450 dump truck chassis, and 325 "cross-country" cars (possibly jeeps) from the USSR during the period of the agreement. 15/ In the light of total anticipated Soviet production during the 5-year period, the contribution to Poland is extremely modest. Presumably, however, the Poles will receive larger quantities of vehicles from both Czechoslovakia and Hungary.

b. Materials.

Poland must import substantial quantities of gasoline and asphalt, and, so far as is known, these supplies come from Albania, Rumania, and Hungary. Although steel is produced domestically, Poland does require some additional steel from the USSR for bridges and for motor vehicle production. The quantities required to date, particularly for motor vehicle production, have not been great.

c. Manpower.

Foreign engineers and technicians will be required as the Polish motor vehicle industry develops, but there are no indications that this personnel will come from the USSR rather than from Czechoslovakia, Hungary, or Austria. The supply of skilled and manual labor for highway construction is ample.

d. Soviet Control.

It has been definitely established that Soviet authorities are directing the development of the highway system, 16/ and it is likely that the growth of the motor vehicle industry will also be controlled by Soviet interests. Plans for the production in Poland of Italian-designed Fiat trucks were abandoned presumably because of Soviet insistence that a Soviet-designed vehicle be produced. Little is known about control of highway transport operations except that some supervision is exercised through a department of the Ministry of Communications. The State Motorcar Transport Enterprise (PKS) operates directly under the Ministry, but this agency engages principally in passenger transport, whereas motor freight transport for the most part remains in the hands of private concerns and industrial establishments. The Ministry of Communications undoubtedly employs Soviet advisory personnel, but apparently direct governmental control of highway transport operations is not great.

5. Probable Developments.

There appears to be little likelihood that Polish highway transport will measurably increase in economic importance in the next few years. Although the highway network will be improved through the construction of major bridges, this improvement will increase the potential military value of the system more than its economic value. Two factors, the shortage of motor vehicles and the inadequate supply of gasoline, will continue to hamper the growth of motor transport and will probably prevent achievement of planned traffic levels, unless the USSR chooses to eliminate these shortages from its own or other Orbit sources. Even if this were done, which is unlikely, there is some doubt as to how much traffic would actually move by highway in preference to railroad. Transportation in Poland is traditionally a

railroad monopoly, and, possibly excluding passenger traffic, it appears likely to remain so. Thus the contribution of Polish highway transport to the Soviet economic potential for war will remain slight, if not negligible.

C. Water Transport.

1. Direct Contributions of Water Transport to the Economic Potential for War of the USSR.

Poland's water transport facilities derive their importance to the Soviet potential from their role in the movement of certain strategic commodities. This traffic includes large-scale exports of coal which are essential to the Soviet economy. It also includes coal exports to Western countries, in return for which Poland receives goods essential to its economy and to its production for Soviet account. The capacity of the Polish water transport system is adequate to permit substantially increased movements. The Polish merchant marine, which is the largest in the Satellite area, is a major factor in the Soviet ocean-going transport potential. In addition, Poland's maritime ports might be of considerable importance in Soviet military operations requiring logistic support via the Baltic Sea.

a. General Description of the Network.

Poland's principal navigable waterways are the Oder, the Vistula, the Warta, and the Notec rivers. Of these, only the Oder and the Vistula are of primary importance. The Warta is of value only to local traffic, and the Notec, with the Bydgoszcz (Bromberg) Canal, serves to join the Oder and the Vistula.

The Oder is the leading waterway of Poland and one of the most important routes in Central Europe. It is navigable for about 475 miles; barges of 800 gross tons can travel virtually its entire length within Poland; and units up to 1,000 tons can navigate its lower reaches. The route has deteriorated greatly since the end of World War II because of lack of maintenance. Constant dredging is required in some sections, and low water and floods necessitate a number of navigation aids, such as locks and dams. These aids appear to be in fairly good condition, war damage having been largely repaired, but the lack of dredging has greatly impaired navigation on some stretches of the river. The Oder also is subject to freezing, which impedes navigation for varying lengths of time, generally from late December until late February. Low water in the summer is another important obstacle to navigation on the Oder. 1/

There are a number of important ports on the Oder River, all in fairly good condition despite considerable war damage. The major Oder ports are Szczecin (Stettin), Glogau, Maltsch, Nousals, Wroclaw, Oppeln, Kozle, and Slubice. Szczecin is the chief port, but Wroclaw and Kozle also are important.

The Vistula, rising in the Carpathian Mountains and flowing into the Baltic Sea near Gdansk, is navigable for 687 miles. Despite its greater length, the Vistula is of much less economic importance than the Oder.

Extreme variations in the water level (as much as 26 feet in 24 hours), the lack of navigation aids, and the presence of ice for long periods (up to 110 days a year) make the Vistula a poor route for commercial purposes. Ports on the Vistula include Warsaw, Modlin, Plock, Torun, Tzew, Dirschau, Wloclawek, Leslau, Sandomierz, and Krakow. Warsaw is the most important port on the Vistula, the others being poorly equipped with obsolete facilities.

The Notec River-Bydgoszcz (Bromberg) Canal system links the Oder and the Vistula over a route 184 miles in length. The canal itself is 16 miles long, ranging from 66 to 99 feet in width and from 5.9 feet to 6.6 feet in depth. Its use is limited to barges of 400 gross tons and under, which restriction prevents the movement of large craft between the Oder and the Vistula. The main port on the route is Bydgoszcz at the east end of the canal, and others are Karlsdorf and Bzahemuende. 2/

Poland has several ports for maritime traffic, principal among which is the Gdynia-Gdansk complex, now administered as a joint port. Szczecin is next in importance, and Kolberg, Stolpmunde, Rugenwalde, and Swinoujscie are secondary ports of chiefly local importance. Gdynia-Gdansk is by far the leading seaport area of Poland, accounting in 1949 for about 72 percent of all Polish seaport traffic. 3/ In this complex, Gdynia is the more important for foreign traffic, whereas Gdansk serves principally domestic traffic. Gdynia in January 1951 was reported to have "commercial relations" with 62 foreign ports. 3/ The port of Szczecin is a major port for ocean cargoes which require transshipment to the Oder system for movement upstream to the interior.

b. Traffic.

The volume of traffic on the Polish inland waterway system is estimated to account for not more than 1 percent of the total traffic carried by the Polish domestic transportation system. The small part which inland waterways play in Polish transport is indicated by the fact that rail traffic is expected to total 245 million metric tons in 1955 under the Six Year Plan (1950-55), whereas traffic on the Oder and the Vistula is scheduled at only 2 million tons, or less than 1 percent of rail tonnage. 4/ Waterway traffic in Poland has nevertheless increased rapidly since the end of the war. In 1947, traffic on the Oder and the Vistula totaled only 186,200 metric tons. In the first 8 months of 1948 the total rose to 288,500 tons, 5/ and it was predicted that traffic in 1949 would reach 817,000 metric tons, a tonnage which may have been exceeded in 1950, 6/ since the Polish press reported that the anticipated level of traffic in 1950 was 1.2 million tons. 7/ It is doubtful that the Six Year Plan goal of 2 million metric tons will be reached in 1955.

[redacted]

Polish waterways are used primarily to transport coal and coke, but the carriage of other bulk exports, such as lumber, cement, and fertilizer, is of some importance. Coal and coke from Upper Silesia are transported by rail to the port of Kozle and loaded on Polish and Czechoslovak barges for shipment via the Oder to Szczecin and overseas. Other cargoes move from Oder ports westward via connecting East German waterways to Berlin. On the upstream voyage these barges are loaded with Swedish iron ore for the smelters of Poland and Czechoslovakia. 8/ Various raw materials and finished goods for the industrial centers in the interior are also carried. This traffic is important to the USSR because the industries of both countries are producing for Soviet account.

Polish maritime traffic consists primarily of operations among the countries of the Soviet Bloc. Although relatively little ocean trade is carried on with the West, a major exception is the coal trade with Scandinavia and Western Europe, which is carried largely by vessels of the coal-importing nations. About two-thirds of all traffic is carried by tramp ships, liner operations playing a secondary role. In the first half of 1949, Polish tramp ships carried 566,000 metric tons, and liners carried only 278,000 tons. 9/ Analysis of Polish ship movements shows regular operations to the UK, the Adriatic, the Near East, and India, and recently a newly established service to the Far East, especially to Communist China. 10/ Operations to South America are carried on almost entirely by Polish-chartered ships. Chartered tonnage is also used to supplement Polish operations elsewhere, notably in the Near East.

c. Equipment.

The waterways of Poland, as well as its maritime ports, suffered severe damage in World War II, and effects are still evident in some areas. Many ports were virtually destroyed or crippled by the removal of equipment at German direction. Some stretches of the inland waterways are still obstructed by hulks, and operations in some harbors are impeded by the presence of sunken ships and other war damage. Since the end of the war the removal of these obstructions has been a primary target of Polish water transport rehabilitation. Piers have been repaired and rebuilt, navigation aids restored, and cargo-handling equipment completely or partially returned to prewar operating efficiency. In the harbor of Gdynia all entrances are now usable, the breakwater is being repaired, emergency wooden piers have been erected, and cargo cranes are back in operation. 11/ At the port of Szczecin, warehouses are under construction; new cranes have been installed; and facilities are being expanded. That the port is well along toward restoration is indicated by Polish newspaper claims that the annual turnover of harbor traffic has risen from 480,000 metric tons in 1946 to 4.5 million tons in 1949. 12/ It is believed that remaining war damage to ports and waterways is only a minor hindrance to current operations, either inland or maritime.

[redacted]

[redacted]

d. Capacity.

The annual cargo-carrying capacity of the inland water fleet of Poland may be as much as 2 million metric tons, although present traffic is believed to be only about 1 million tons. Nevertheless, this surplus capacity cannot be fully exploited, because numerous shallow stretches in the Polish rivers restrict the use of deep-draft vessels in many areas. These vessels are limited to relatively short stretches of river and often carry less than capacity loads. It has become a general practice to operate smaller craft which can navigate long distances without the necessity of transloading cargoes to vessels of shallower draft. The addition of larger vessels of shallow draft would greatly increase the effective capacity of the system. There are reported to be 1,200 Polish barges on the Oder, none of which is larger than 900 gross tons. 13/ In contrast, barges of 3,000 tons and larger are commonplace on the Rhine.

Dependence upon weather conditions is a further weakness of the Polish water transport system. For 60 days annually the Oder is closed to traffic because of ice, low water, or floods. The Vistula is blocked by ice for 110 days each year and is not navigable at various other times, because of either high or low water.

Poland has several maritime and inland ports whose capacities place them in the category of major ports. Among the maritime ports, Gdynia and Gdansk have estimated cargo-handling capacities of 26,000 and 30,000 metric tons a day, respectively, and Szczecin can handle 66,000 tons daily. 14/ Several inland ports, including Wroclaw, Kozle, Warsaw, and Gleiwitz, handle relatively large amounts of cargo. Gleiwitz is reported to have a cargo-handling capacity of at least 8,000 metric tons a day, and if present plans are carried out, future daily capacity will be 20,000 tons. 15/

Comparisons of estimates of capacity with actual traffic through the ports demonstrate that a tremendous surplus capacity exists. The estimated annual capacity of the port of Szczecin is about 65 percent greater than the total amount of cargo (14,389,000 metric tons) handled in all Polish maritime ports in the 12 months ending June 1948. 16/ Surplus capacities of the other maritime ports, although considerably lower, are nevertheless substantial, and inland port capacities are not considered a limiting factor in present waterway traffic.

There also appears to be a considerable surplus capacity in the Polish ocean-going merchant fleet, which was scheduled to carry about 2.1 million metric tons of cargo in 1950. 17/ The present lift capacity of the fleet is estimated at about 240,000 tons. On the basis of 200 days of operation at an average speed of 10 knots, it is estimated that the present traffic potential of the fleet is about 21.5 billion ton-kilometers a year. This estimated capacity is believed to be far above the actual performance of the Polish merchant fleet.

[redacted]

e. Vulnerability.

Polish water transport is highly vulnerable to military action, including air attack and sabotage. The results of attacks during World War II are still evident. The most vulnerable section of the Oder probably would be in the area between Szczecin and Furstenberg, where the peak traffic occurs and where the canals leading to Berlin and the West join the Oder. The Vistula is most vulnerable in the area where the Bydgoszcz (Bromberg) Canal connects the Vistula with the Oder. Port areas and rail and highway bridges provide excellent targets. Destruction of these bridges probably would effectively block the waterways, as well as disrupt land transport.

Merchant shipping out of maritime ports could be severely hampered if the West established air superiority in the area. Any Polish attempts to move west of the Baltic could probably be halted, since traffic must move through either the Kiel Canal or the narrow Skagerrak-Kattegat area.

Operation of the Polish water transport system is dependent to a high degree upon supplies from the West. Polish coal is used to bargain for ships, parts, engines, loading equipment, and other items from Scandinavia and the Western European countries. Effective Western export controls could deny these essential goods to Poland.

2. Direct Contributions of Shipping to the Economic Potential for War of the USSR.

a. Inventories.

At the present time, Poland has the largest inventory of merchant craft, both inland and ocean-going, in the Satellite area. The ocean-going fleet totals 61 vessels with a tonnage of 232,708 gross tons (vessels over 1,000 gross tons). This total is over 100,000 tons more than Poland's prewar fleet. In addition, there is a large but undetermined number of ships under 1,000 tons which make an important contribution to the maritime capabilities of the country. The fishing fleet alone is reported to comprise about 250 cutters of various sizes, totaling 18,000 gross tons. 18/

The inland fleet inventory is not known with certainty, but one study states that in 1947 the combined Oder-Vistula fleets totaled at least 97 tugs, 21 passenger vessels, and 518 dumb barges of 141,177 metric tons cargo capacity.19/ The foregoing figures may be considerable in error, however, since another report stated that the Polish Oder fleet alone totaled 1,200 barges and 62 tugs. 20/

b. Effect of Transfers to the USSR.

Despite the fact that Polish inland waterways account for only a small portion of total Polish traffic, the removal of any considerable

part of the inland fleet would probably disrupt the movement of certain bulk commodities, notably coal exports, and seriously handicap the import of iron ore from Sweden and cement from Germany. An appreciable reduction of the barge and tug inventory would particularly affect the exchange of Polish coal for Swedish ores. In the event of war, however, this particular traffic might be interdicted in any case by military action in the Baltic Sea.

Although a number of Polish-flag ocean-going ships have been transferred to Soviet registry, the most significant units have been passenger rather than cargo vessels. It seems unlikely that the USSR will requisition significant quantities of Polish shipping, because (1) the Polish merchant fleet is already under effective Soviet control, (2) perhaps as much as 50 percent of the fleet is now engaged in traffic for the Soviet Union or other Satellites, and (3) Poland can operate the fleet more efficiently than can the USSR.

3. Indirect Contributions.

a. Role of Water Transport in Soviet Trade.

Both the Polish inland and ocean-going fleets participate in Soviet-Polish trade. Poland exports large quantities of coal, particularly coking coal, to the Soviet Union. Although the volume of this traffic transported by water is much less than that moved by rail, the water-borne portion is nevertheless of considerable economic significance. Other Polish exports moved by water to the USSR include chemicals and heavy machinery. Imports by water consist largely of ores and cotton. Polish waterways also carry some transit traffic in cement and other bulk cargoes from Germany to the USSR. The Polish merchant marine participates to a substantial degree in Soviet trading activities throughout a large part of the world. In some areas, such as North and South America, Soviet trade is carried almost entirely by Polish vessels.

From the point of view of the Soviet Union, the two most important areas served by Polish ships are the Baltic and Far East, where the USSR is apparently unable to provide suitable tonnage. The Soviet Baltic fleet is at present in an extremely poor state. In the Far East, where Polish vessels have never before operated, six fairly modern vessels of the Polish Ocean Lines are in regular operation from Gdynia. These are large (from 4,000 to 8,000 gross tons), fast (from 15 to 17 knots) ships which greatly supplement present Soviet transport capabilities. The combined capacity of these six ships is at least 38,000 cargo tons. They are believed to be operating at capacity, and, assuming that each ship makes 4 round trips annually, the 24 voyages could account for 812,000 tons of cargo. The capacity of this route assumes even greater significance in view of reports that the Trans-Siberian Railroad is often loaded to capacity with eastbound traffic. Most of the cargoes carried by Polish vessels to the Far East are

destined for China (including Manchuria). Although the volume of this traffic is only a fraction of the over-all capacity of the Trans-Siberian Railroad, it may equal as much as one-quarter of the railroad's through traffic to China.

b. Role of Water Transport in Trade with the West.

Polish inland water traffic with the West is of negligible importance. Polish ocean-borne traffic with the West, however, is significant despite its relatively small total volume. The major item of traffic is Polish coal, but foodstuffs and chemical products such as fertilizer also are important. Water-borne traffic in Swedish ores is of considerable importance.

Polish merchant shipping engages in considerable clandestine traffic. These operations are carried on from Western European ports, such as Antwerp and Genoa; from the Middle East, particularly India; and from the major east coast ports of South America. Cargoes carried in this widespread network include virtually all of the products in which the Soviet Bloc is deficient. The Polish fleet, moreover, has been suspected of carrying out extensive espionage and sabotage for its Communist masters. 21/

4. Inverse Contributions.

Poland receives little or no help from the Soviet Union in meeting its water transport requirements. Although there is a substantial need for floating equipment (ships, tugs, dredges) and port equipment (cranes and cargo-handling equipment), Soviet contributions to these requirements are negligible. Some steel is procured from the USSR but probably not in important quantities. Poland requires little or no manpower from the Soviet Union for its water transport program. In fact, Poland is believed to have lost some German technical personnel to the USSR for the latter's naval ship construction program. The Soviet Union controls all aspects of Polish water transport.

5. Probable Developments.

Polish water transportation facilities probably will continue to improve in 1951 and 1952, and an increasing volume of goods will be carried. Ports will be improved, and continued emphasis upon rehabilitation can be expected. Some additions of small ships and barges will be made to the inland fleet, but inland waterway traffic will continue to account for only a small part of the over-all transport load. The ocean-going fleet will receive little from domestic construction except small cargo and passenger ships under 1,000 gross tons and fishing craft. The Polish merchant marine may receive some tonnage, principally small ships and tugs, from foreign shipyards. Acquisitions of large tankers and cargo vessels will be severely limited by restrictions imposed by the West upon such construction.

Efforts to acquire tonnage by the purchase of "ready" ships from various sources outside the Orbit will continue, and it is possible that the ocean-going fleet will be increased considerably in this way by the end of 1952.

Clandestine operations by Polish vessels will continue to be important to the Soviet Orbit and may be considerably increased in sensitive areas such as Albania. Traffic to the Far East will continue to be important, and if the Communist build-up in this area continues, it is probable that operations will be augmented through the use of chartered tonnage or at the expense of other routes deemed to be less important.

D. Air Transport.

1. Direct Contributions of Air Transport to the Economic Potential for War of the USSR.

The large number of Polish airfields could be used to make a direct contribution to the Soviet economic potential for war. Polish airlift capabilities are negligible, but a Soviet-sponsored operation, using Soviet transport aircraft, crews, ground personnel, and equipment, could utilize the Polish airfields in connection with the high-priority movement of personnel or the stockpiling of strategic supplies.

a. General Description of the Network.

There are 82 airfields and 6 seaplane stations in Poland. 1/ Of the 82 airfields, 40 have hard-surfaced runways, but only 4 have runways of 6,000 feet or more in length. These are Warsaw/Bernerowo (under construction), Warsaw/Okecie (jointly used by civil and military aircraft), Praust (under construction), and Gdynia (a military auxiliary airfield). In general, runways and landing areas, as well as base facilities, have deteriorated from lack of maintenance. A limited program of rehabilitation, 2/ initiated at the end of the war, is now being accelerated. West German sources report that certain airfields in former East Prussia are being prepared by the USSR as "transportation and evacuation bases." 3/

b. Traffic.

The air carrier Polskie Linje Lotnicze (LOT), an autonomous state enterprise, conducts scheduled domestic and international air transport operations of a limited nature. The civil air transport fleet could slightly augment Poland's military air transport capabilities, since a majority of the LOT aircraft are identical with those used by the single transport squadron of the Polish Air Force.

In addition to the international civil airfield Warsaw/Okecie, the civil airline controls and uses the Breslau/Gandau, Danzig, Katowice, and Stettin airfields. It also has access to the military airfields of Bydgoszcz, Posnan/Lawica, Krakow, and Lodz.

The routes flown by LOT are as follows:

[redacted]

LOT Air Routes and Frequency
1951

Routes 4/	Frequency
Domestic	
Krakow-Warsaw-Gdansk/Gdynia	Twice Daily except Sunday
Warsaw-Bydgoszcz	Daily except Sunday
Warsaw-Lodz-Wroclaw	Daily except Sunday
Warsaw-Poznan-Szczecin	Daily except Sunday
Poznan-Lodz-Krakow	Daily except Sunday
Szczecin-Gdansk/Gdynia	Daily except Sunday
Warsaw/Katowice	Twice Daily except Sunday
Gdansk-Lodz-Katowice	Daily except Sunday
International	
Warsaw-Berlin-Brussels-Paris	Twice Weekly
Warsaw-Berlin-Paris	Weekly
Warsaw-Budapest	Weekly
Warsaw-Oradea Mare a/-Bucharest	Weekly
Warsaw-Prague-Zurich	Twice Weekly
Warsaw-Copenhagen-Stockholm	Three Times Weekly

a/ Technical landing.

Foreign commercial air traffic into Poland is limited to the Soviet Aeroflot and the Czechoslovak Airline (CSA). Routes are as follows:

Foreign Air Routes in Poland

Airline	Route	Frequency
Aeroflot	Moscow-Minsk-Warsaw (thence to Prague)	Daily except Sunday
	Moscow-Minsk-Warsaw-Berlin	Daily except Sunday
CSA	Prague-Warsaw	Twice Weekly

The British Royal Air Force courier service connects London with Warsaw via Berlin and is the only Western air contact with Poland. 5/ The Scandinavian carrier SAS and Swissair both have reciprocal landing rights at Warsaw, but these airlines discontinued services to Poland in 1950 because of lack of traffic. 6/

[redacted]

[redacted]

c. Equipment.

Eight airfields in Poland are equipped with radio aids to navigation, including airfield traffic control, beacons, direction finders, and either standard beam approach or range equipment. Other fields have minimum facilities or none at all. Night flying in Poland is still extremely limited, but runway, boundary, and obstruction lighting was installed at Warsaw/Okecie in 1950, 7/ and some lighting facilities are available at seven other airfields. 8/ Repair shops are located at 11 airfields, and 24 others have some maintenance facilities.

d. Capacity.

The potential capacity of the postwar Polish airfield network is far in excess of peacetime requirements for air transportation. Poland, with the largest number of airfields of any country among the European Satellites, is well-situated as a staging area for mass movements of personnel and freight by air. Transport operations of this nature, however, would only be possible after advance preparations had been made. The principal factors limiting capacity use of the Polish airfields at this time are insufficient mobile ground handling equipment and inadequate navigational aids for all-weather operations and control of high-density traffic.

e. Vulnerability.

Polish air transport facilities are vulnerable to sabotage. Their destruction would hinder possible large-scale movements of air freight in this area and thus somewhat reduce the Soviet economic potential for war.

2. Direct Contributions of Air Transport Equipment to the Economic Potential for War of the USSR.

a. Inventories.

Poland is unable to make any direct contributions of air transport equipment to the Soviet economic potential for war. The Polish commercial air transport fleet consists of 58 aircraft, only 20 of which are operational. With the exception of five Soviet-made IL-12s and five French-made Languedocs(now unserviceable), transports were obtained from war surplus stocks and are in poor condition. Since spare parts for DC-3 and C-47 aircraft are unobtainable from the West except through clandestine channels, Polish aircraft of these types are maintained in flying condition only through cannibalization. 9/

Poland's civil air transport equipment includes 10 DC-3s (4 nonoperational, used for spare parts), 21 LI-2s (10 nonoperational, used for spare parts), 5 LI-12s (1 nonoperational, damaged by fire on ground), 5 Languedocs (all slated for scrap depot), and 18 Cessnas (all

[redacted]

nonoperational, 15 slated for scrap depot). The military air inventory consists of 15 C-47s and 12 LI-12s. 10/

b. Effect of Transfers to the USSR.

The transfer of Poland's limited number of air transports to the USSR would have little effect on the Polish economy. Air freight between Poland and the West is negligible, air traffic being almost entirely limited to passengers.

3. Indirect Contributions.

a. Role of Air Transport in Soviet Trade.

Air traffic between Poland and the USSR is of no importance to the Soviet economy. Polish air transports are not permitted by the USSR to engage in scheduled operations into Soviet territory. Although an occasional shipment of high-priority merchandise may be brought into Poland from the West by LOT for transshipment to the USSR, the extent of such traffic is negligible.

b. Role of Air Transport in Trade with the West.

(1) Extent and Nature of Traffic.

Polish air traffic with Western Europe is unimportant to the Orbit economy. The Polish airline LOT operates into Stockholm via Copenhagen, to Paris direct, to Paris via Brussels, and to Zurich, but no more than nine flights a week are flown into Western Europe. These flights carry passengers and a small quantity of freight, the exact nature of which is not known. In providing rapid transportation for representatives of business interests, however, Polish flights to Western Europe may serve to stimulate East-West trade.

(2) Clandestine Traffic.

Polish commercial transports have in the past engaged in some clandestine traffic with the West, but no recent reports have been received to suggest continuance of such traffic at present.

4. Inverse Contributions.

a. Air Transport Requirements from the USSR.

Polish air transport is now wholly dependent upon the USSR for aircraft, spare parts, and engine replacements and largely dependent for aviation gas and lubricating oils despite some domestic production in the vicinity of Krakow. Skilled manpower is not required from the USSR

for use in civil aviation.

b. Soviet Control.

The airline LOT, wholly owned by the Polish government, is not directly controlled by the USSR. The Soviet Union, however, can indirectly regulate air operations because of Polish dependence upon Soviet-made aircraft and aviation fuels.

5. Probable Developments.

It is unlikely that Polish civil air operations will be expanded through 1952. If rumored plans for a pooling of Satellite air transport resources should materialize, it is certain that LOT would participate in such a consortium. It is improbable, however, that this arrangement would result in any expansion of air services to the West or that it would increase the contribution of Polish air transport to the Soviet economic potential for war.

VIII. Current Allocations of Economic Resources.

1. Investment and Production in Industry.

The current Six Year Plan undertakes to transform Poland from an agricultural into an industrial nation, a feat which, if accomplished on the scale projected, would be unprecedented in Eastern Europe. Poland's postwar industrial development, as observed in changes effected in the distribution of national income, is impressive. In 1949, industry accounted for 49 percent of the national income as compared with 35 percent in 1938 and is scheduled to reach almost 60 percent in 1955. The rate of development of industry as contemplated by the Six Year Plan is indicated by the 1955 goal for industrial production of 158 percent over 1949 production. The emphasis in industrial development is placed on producer goods, with the heaviest increases in the extractive, ferrous metals, chemicals, construction, and some phases of the engineering industry.

2. Agricultural Development.

In contrast to the rapid rate of increase in the industrial sector of the economy, agricultural production in 1955 is to be only 50 percent over 1949 levels, a modest goal. Agriculture at present employs a little more than 45 percent of the working population. The main emphasis in agriculture is on the production of grain and such industrial crops as sugar beets.

3. Civilian Consumption.

In line with the emphasis on producer goods, supplies of consumer goods are given relatively little weight in Polish economic planning. Living standards are still below prewar levels, and housing conditions are poor and will remain so at least through 1952. Food supplies are adequate, but prices are inflated, and consequently the diet of most people is not balanced, containing a disproportionate amount of grain and potatoes. Health services are inadequate, working conditions are severe, and many controls are exercised over workers.

4. Contribution of the Economy to the War Capabilities of the USSR.

The large measure of Soviet assistance to Poland contemplated in the long-range industrialization program is evidence that the USSR attaches great importance to the Polish economy.

Poland supplies approximately 5 percent of total Soviet uranium availabilities and, to the extent that the industrialization program is successfully carried out, will supply the USSR with manufactured goods, minerals, and foodstuffs. Polish industrial exports consist chiefly of coal, textiles, railroad equipment (principally rolling stock), cement, and mechanical equipment. Furthermore, Poland makes an important indirect contribution to the war potential of the Bloc by shipping foodstuffs, coal, zinc, lead, some chemicals, and textiles to other Satellites. If these items were not supplied by Poland, they would have to be allocated from Soviet availabilities, placing a strain on the resources of the USSR.

IX. Estimated Degree of Vulnerability to Western Economic Warfare.

1. Major Imports.

If Poland is to achieve the industrial objectives of the Six Year Plan, it must continue to receive nearly 50 percent of its total imports from the West. Poland has thus far succeeded in obtaining at least the minimum essential imports from the West and on strictly economic grounds could be expected to continue to do so because of its favorable bargaining position, the result largely of increasing Western fuel requirements for the rearmament program. In 1950, nearly every Western European country required some portion of the 10 million metric tons of coal exported by Poland to that area. It was by virtue of this strong bargaining position that Poland obtained mining equipment, machinery, chemical raw materials, cotton, wool, nonferrous metals, and badly needed high-grade Swedish iron ores. Without Swedish iron ore, production in Poland's iron and steel industry would be seriously reduced unless this loss were compensated at considerable cost by the USSR. Poland also is dependent upon overseas trade for rubber and tin.

2. Degree of Vulnerability of Major Sectors of the Economy.

The Polish extractive and ferrous metals industries are dependent upon imports from the West of mining machinery and high-grade iron ore. The chemicals industry likewise is dependent upon Western sources for special chemicals and pyrites. Poland's inventory of machine tools is below minimum requirements, particularly in the case of precision, special-purpose, and automatic machinery. An embargo of all categories of machine tools would reduce current levels of production and retard industrial expansion. Polish dependence upon the West for support of light industry and for transportation and agricultural equipment is not significant.

3. Compensating Measures to Offset Western Economic Warfare.

To compensate for Western economic warfare measures, Poland would try to expand intra-Bloc trade (presumably allocations to Poland would receive relatively high priority), revise production schedules downward, and further restrict the distribution of consumer goods (probably not including food). Substitution in order to offset Western economic warfare measures would be largely in the form of utilization of lower grades of raw materials, such as the Krivoi Rog iron ores from the USSR.

X. Indications of Preparations for War.

Although Polish plans for industrialization may be aimed primarily at economic goals, their accomplishment will significantly enhance Poland's contribution to the war capabilities of the Soviet Bloc. The increasing conversion of the engineering industry to munitions production in 1950 is a clearer indication of preparation for war. A further clue to war intentions will be provided if anticipated meat and grain surpluses are stockpiled in 1952.

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