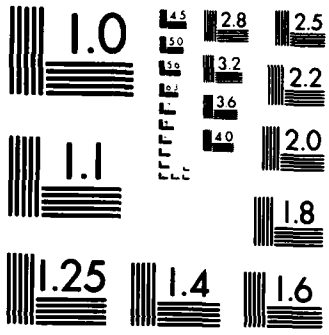

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RAND NOTE

INDUSTRIAL DEVELOPMENT OF SIBERIA AND THE SOVIET FAR EAST

Donne E. Pinsky

September 1984

N-2165-AF

Prepared for The United States Air Force

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During the 1980s the Soviet leadership will be forced to cope with a growing energy shortage in the western industrialized core of the USSR by accelerating the extraction of fuel and raw materials east of the Urals. The major issue of Soviet policy is and has been the debate over the appropriate nature and pace of economic development for the eastern regions, whether to maintain concentration on the fuel energy complex or to attempt balanced development across industries and between eastern and western regions. Although official declaratory policy continues to call for balanced "comprehensive" development, the energy-fuel focus has, if anything, increased. Given the general investment constraint the Soviet leadership is now facing, combined with the Soviet leadership's resistance to reform and change, it is unlikely that there will take place the major shift and restructuring of investment for regions east of the Urals that a balanced economic development would require.

A RAND NOTE

INDUSTRIAL DEVELOPMENT OF SIBERIA AND THE SOVIET FAR EAST

Donne E. Pinsky

September 1984

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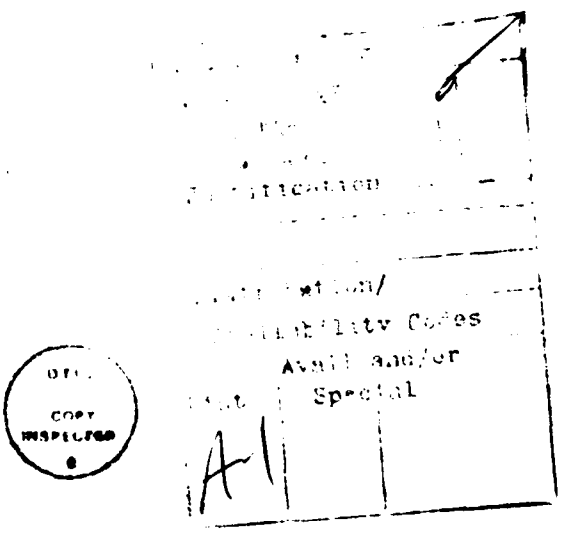
PREFACE

In a period of sharply reduced growth rates, the Soviet leadership looks increasingly to the eastern regions of the USSR--Siberia and the Soviet Far East--for the sources of economic revitalization. Moscow hopes that the rich natural endowment of these regions will be the means of halting the downturn and returning the economy to a higher growth path. This Note reviews and appraises the record of Soviet approaches to the development of the eastern regions in the context of the overall national economic problems.

An earlier Rand report, Thane Gustafson's *The Soviet Gas Campaign: Politics and Policy in Soviet Decisionmaking* (R-3036-AF, June 1983), explored major policy issues relating to West Siberia. The present Note focuses on East Siberia and the Soviet Far East. Both documents were prepared as part of a study on "Economic Decisionmaking and Soviet Power in the 1980s" under the sponsorship of Project AIR FORCE and in association with the Office of the Assistant Chief of Staff/Intelligence, Headquarters United States Air Force. The study aims to enhance understanding of the possible directions of Soviet economic policy choice by examining the interaction between central economic policy formation and decisionmaking, on the one hand, and major sectorial resource allocation problems, on the other. This Note was written with the assistance and under the direction of the project leader, Abraham S. Becker.



SUMMARY

Since the formation of the USSR, the Soviet leadership has been captivated by the promise of Siberia's tremendous raw material and energy potential. As exploitation of natural resources of the European region of the USSR has begun to show diminishing returns to additional investment, Soviet policymakers' attention has turned increasingly toward the eastern regions of the USSR: West Siberia, East Siberia, and the Soviet Far East.

During the 1980s, the Soviet leadership will be forced to cope with a growing energy shortage in the western industrialized core of the USSR by accelerating the extraction of fuel and raw materials east of the Urals. Soviet and East European economic growth for the rest of this decade, and most likely until the end of this century, will depend increasingly on the fuel and natural resources from the eastern regions. Siberian production will account for almost the entire national increase in oil and gas and over 90 percent of the increase in the nation's coal output in this period.

Siberia's share in national investment has risen to an all-time high. However, investment growth in Siberian nonfuel industries is considerably less than that earmarked for the development of the region's energy, and these nonfuel industries in the eastern regions are developing more slowly than in other regions of the country. Despite earlier predictions of rapid economic growth of the eastern regions, Siberia produced only some ten percent of aggregate Soviet output in 1980, and the eastern regions as a whole account for only about one-eighth of the total.

The major issue of Soviet policy for the eastern regions is and has been: what kind and what rate of development should take place? Military considerations undoubtedly play a role in forming development strategy, particularly in connection with construction of the BAM (Baikal-Amur Mainline), but the driving force has been the need for Siberia's energy. Since the early 1930s, there has been an intermittent debate on whether to maintain concentration on the fuel-energy complex

or to attempt balanced development across industries and between the eastern and western regions. Official declaratory policy continues to call for balanced, "comprehensive" development, but the energy-fuel focus has, if anything, increased. Planners apparently believe that construction of new facilities in Siberia and the Far East would be less cost effective than expansion of existing capacity in western regions of the USSR. Many economists and local Siberian officials argue that this conclusion is derived from improper measurements using distorted prices to determine Siberia's contribution to the national economy, but planners and policymakers seem unconvinced.

Among the important actors in the debate are key research institutes, particularly Gosplan's Council for the Study of Productive Forces (SOPS), the Institute of Economics, the Organization of Industrial Production in the Siberian branch of the USSR Academy of Sciences, and the special research organization within the Siberian Department of the USSR Academy of Sciences known as "Project Siberia." Some of the strongest support for balanced development in the eastern regions comes from the regional Communist Party secretaries, who levy their attacks chiefly on the ministerial bureaucracies for "narrow departmentalism."

A fairly new instrument in the effort to bridge the gap between ministerial fiefdoms and to achieve integrated regional development is the territorial production complex (TPK). TPKs are major development projects designed to unite in one area all the related industry and infrastructure needed to produce natural resources. They are intended to serve as "oases of industrial development" in the eastern regions. Not surprisingly, the Soviets appear to be having difficulties promoting these horizontally organized economic structures within a firmly entrenched vertical economic decisionmaking bureaucracy.

In addition to these policy and management problems, the Soviets face other obstacles in developing the eastern regions: lack of a stable, well-trained labor force; inadequate infrastructure base (including housing, transportation, social facilities, and processing plants); a growing energy shortage, due in part to poor planning in electric power investment; the ecological costs of rapid development; and the difficulties of enlisting foreign help (from Japan and the United States) in developing the regions' natural resources.

Future directions of Siberian and Far Eastern industrial growth will depend on the pace chosen to develop these regions and the success of the planners in overcoming the enormous obstacles inherent in such an ambitious undertaking. However, despite the desire to foster a more balanced and permanent growth in Siberia and the Far East, there is strong evidence to suggest that a classic "colonial" relationship between the European USSR and the regions east of the Urals has become the basis of Soviet plans for future economic development of its eastern regions. With the general investment constraint the Soviet leadership is now facing, combined with the Soviet leadership's resistance to reform and change, it is unlikely that there will take place the major shift and restructuring of investment for regions east of the Urals that a balanced economic development would require.

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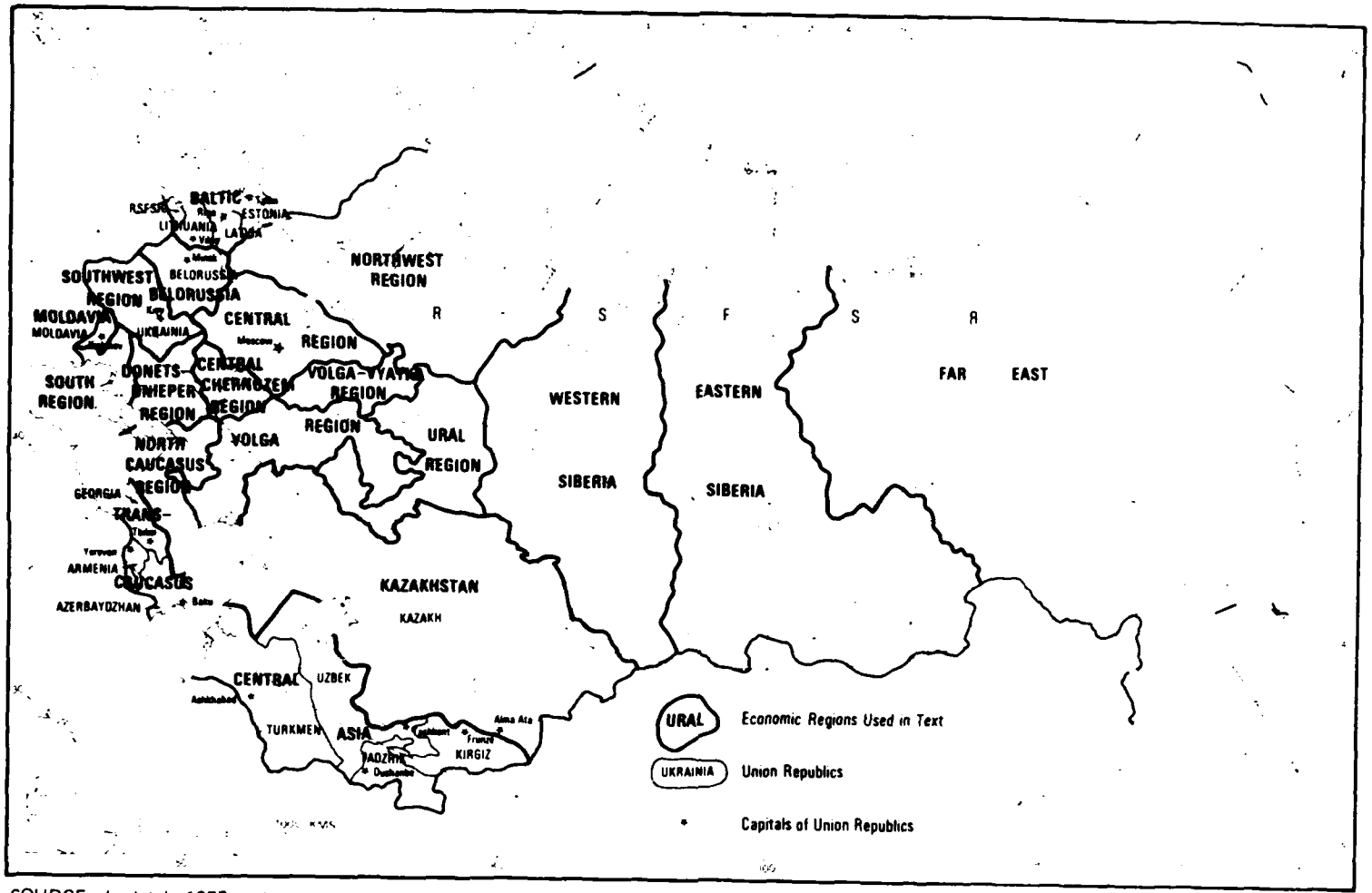
I. INTRODUCTION

Since the formation of the USSR, the Soviet leadership has been captivated by the promise of Siberia's tremendous raw material and energy potential. In *The Immediate Tasks of the Soviet Government*, Lenin said of Siberia's wealth, "The development of these natural resources by methods of modern technology will provide the basis for the unprecedented progress of our productive forces."[1] There is little doubt that the USSR's eastern regions do contain enormous reserves of minerals, timber, water, metallic and nonmetallic ores, and other raw materials. Soviet writers often claim that over 80 percent of the country's natural resource and fuel reserves are located in the eastern regions. Five-eights of the explored hydropower reserves, 70-75 percent of the explored coal and gas reserves (Table 7), as well as substantial resources of iron ore, copper, tungsten, platinum, gold, and diamonds are to be found there. Figure 1 shows the economic regions.

As exploitation of the energy and raw material endowment of the European region of the USSR has begun to show sharply diminishing returns to additional investment, the policymakers' attention has turned increasingly to the East. At the inception of the Brezhnev regime, Siberia accounted for only 11 percent of the total national output of fuel and energy (in conventional fuel equivalent); by 1980 that proportion had jumped to 43 percent (Table 1). The Soviet leadership will indeed face a major economic problem during the 1980s: they must cope with a growing energy shortage in the western industrialized core of the USSR by accelerating the development of fuel and raw material resources in the East. The Eleventh Five-Year Plan (1981-1985) clearly indicates the heavy emphasis the Soviet leadership continues to attach to further development of the nation's fuel and energy resources. In a period of resource stringency, investment in the entire fuel and power complex, including electric power generation, coal, oil, gas production, and pipeline construction, was set to increase by 50 percent compared to

[1] V.I. Lenin, *Collected Works*, Vol. 27, Progress Publishers, Moscow, 1965, p. 257.



SOURCE: Lydolph, 1977 p. vi.

Fig. 1 – Map of Soviet economic regions

Table 1

FUEL AND ENERGY PRODUCTION IN THE USSR, SELECTED YEARS, 1965-1980

(Millions of tons of conventional fuel)

	1965	1970	1975	1980
Siberia	99	168	392	801
Gas	0.01	11	42	202
Petroleum, including condensate	1	45	212	447
Coal	98	112	138	152
Total USSR	881	1182	1509	1853
Siberian contribution to total USSR fuel and energy output, %	11	14	26	43

SOURCE: I.I. Maksimov, "The Fuel and Energy Complex of Siberia," *Ekonomika i organizatsiia promyshlennogo proizvodstva,* No. 10, October 1982; translated in JPRS 82943, *USSR Report Economic Affairs,* No. 1041, February 24, 1983, p. 72.

1976-1980 (Table 2); total investment in the whole economy was scheduled to increase by only 10.4 percent during that same period. More than half the national increase in the total production of energy during this five-year plan is slated to come from Siberia. In 1981-1985, Siberia will provide 60 percent of the USSR's output of petroleum, 51 percent of its natural gas, more than one third of its coal, and about 40 percent of its hydroelectricity.[2] During the 1980s, Siberian production will account for almost the entire national increase in oil and gas and over 90 percent of the increase in the nation's coal output.

Until the mid-seventies, investment in the eastern regions remained fairly constant--around 14 to 17 percent of total USSR investment.[3] But thereafter the relative investment focus on the East increased sharply. One of the main architects of Soviet investment policy revealed that Siberia's share in national investment had increased to 20 percent in

[2] A. Aganbegyan, "Toplivo Sibiri," *Pravda,* August 1, 1983, p. 1.

[3] *Narodnoe khoziaistvo RSFSR v 1975 g.,* "Statistika," Moscow, 1976, pp. 328-329.

Table 2

ENERGY INVESTMENT IN THE USSR, 1976-1980 AND 1981-1985 PLAN

Energy Sector	Billion Rubles, 1973 Prices		% Increase 1981-1985 Plan over 1976-1981
	1976-1980	1981-1985 (plan)	
Fuel and power complex	88	132	50
Nonpipeline investment	66	100	52
Electric power	19	23	20
Coal	10	12	20
Oil	26	43	63
Gas	10	22	120
Pipeline construction	22	32	45

SOURCE: Robert Legett, "Soviet Investment Policy in the 11th Five-Year Plan," *Soviet Economy in the 1980s: Problems and Prospects,* Joint Economic Committee, Congress of the United States, December 31, 1982, p. 137.

1978--a jump of 3 percent in just three years.[4] Data on the regional distribution of capital investment have not been published in Soviet statistical sources since 1975 (see Table 3 for most recent data), but the 11th Five Year Plan's priority for energy investment and data on Siberia's expected role indicate that investment in the eastern regions is expected to increase to an all-time high.

The apparent preferential status of Siberia in Soviet investment allocation suggests that Siberian industrial growth is taking place more rapidly than in other areas of the country. However, available information reveals that the opposite is often true; Siberian fuel resources are being developed chiefly for use in the European USSR, and the investment growth in Siberian nonfuel industries is considerably less than that earmarked for developing the region's energy. Consequently, the nonfuel industries are developing far more slowly than

[4] Cited in Boris Rumer, "Soviet Investment Policy: Unresolved Problems," *Problems of Communism,* Vol. XXXI, No. 5, September-October 1982, p. 62.

Table 3

SOVIET CAPITAL INVESTMENT BY ECONOMIC REGION

(Millions of rubles)

	1965	8th Five Yr. Plan 1966-70	1970	9th Five Yr. Plan 1971-75	1975
USSR	48,722	353,800	82,000	501,600	114,900
RSFSR	25,899	208,816	48,759	302,675	70,469
West Siberia	2,697	21,868	5,145	33,509	8,465
East Siberia	2,242	16,614	3,811	22,679	5,337
Far East	1,883	15,297	3,673	22,443	5,445
Total of Eastern Regions	6,852	53,779	12,629	78,631	19,247
% of total USSR	14.0	15.2	15.4	15.6	16.7

SOURCES: *Narodnoe khoziaistvo RSFSR v 1965 g.*, p. 374; *Narodnoe khoziaistvo RSFSR v 1970 g.*, p. 320; *Narodnoe khoziaistvo RSFSR v 1975 g.*, p. 320; *Narodnoe khoziaistvo SSSR v 1965 g.*, p. 529; *Narodnoe khoziaistvo SSSR v 1970 g.*, p. 484; *Narodnoe khoziaistvo SSSR v 1975 g.*, p. 514.

in other parts of the country. Siberian industry is plagued with problems of operating in a harsh physical climate, as well as by institutional difficulties characteristic of much of Soviet industry. The lack of balance in Siberia's economic development between fuel and energy resources on the one hand and other industries (raw materials processing, machine building, construction, and so forth) on the other is becoming more and more costly to Soviet planners. In many cases, it has impeded greater and more efficient growth of the high priority energy sectors. Additional evidence of the imbalance in Siberia's development is provided by increasing complaints from local officials that Siberia itself is suffering from a growing energy shortage.

This Note attempts to clarify the reasons for the disequilibrium in the economic and industrial development of the Soviet east, citing the geographical and institutional factors that have prevented a greater degree of balanced economic growth in this region. To understand how this came about, it is necessary to consider two major sets of issues--the debate over the appropriate character and pace of development in the eastern regions of the USSR, and the barriers that have interfered with development. The former topic is examined in Section III, the latter in Section IV. Section V briefly appraises the prospects for future development. First, however, it is useful to outline the geographical setting of East Siberia and the Soviet Far East.

II. THE GEOGRAPHICAL SETTING

It is important to understand that the eastern portion of the USSR is made up of three distinct economic regions within the RSFSR:[1] West Siberia, East Siberia, and the Soviet Far East (Fig. 1).[2] Each of these regions is characterized by different geographical and geological features and as such is considered separately when Soviet planners make investment decisions. West Siberia's development is distinct from that of the other two eastern regions because its principal natural resources, first oil and now natural gas, have been developed specifically for the energy needs of the European regions of the country (hereafter referred to as the European USSR) and for export to Western Europe. Since these developments have been discussed elsewhere,[3] this Note will focus on the industrial development of the two easternmost regions of the Soviet Union, East Siberia and the Soviet Far East, whose development has not been accorded anything like the same degree of priority as Western Siberia; indeed, more than half the 44 billion ruble investment in total energy investment scheduled for the 11th Five-Year Plan is earmarked for West Siberia.

EAST SIBERIA

The East Siberian region is second in size only to the Far Eastern region in the Soviet Union, covering 4,123,000 sq km (Table 4). It is made up of five different administrative units, the largest of which is the Krasnoyarsk Krai, which alone covers 2,402,000 sq km. As of 1982, the total population of this region was under 10 million. However, the

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[1] The USSR consists of 15 republics, the largest of which is the Russian Soviet Federative Socialist Republic (RSFSR). The RSFSR is subdivided into *oblasts* (regions), *krais,* (territories), autonomous *oblasts,* and autonomous *okrugs* (districts).

[2] For a detailed geographical description of these regions, see Paul E. Lydolph, *Geography of the USSR,* John Wiley and Sons, New York, 1977, Chapters 18 and 19.

[3] Thane Gustafson, *The Soviet Gas Campaign,* The Rand Corporation, R-3036-AF, June 1983.

region is fairly urbanized; 65 percent of its inhabitants are considered urban, which is slightly above the national average. Despite a number of different nationality groups in the region, Russians make up the majority of the population in every region except Tuva, where the Russian population is at 38.3 percent.

Although it has not gotten the same attention as West Siberia because of its remoteness from the European USSR, East Siberia contains many important mineral resources, such as copper, nickel, and rare metallic ores, in addition to large coal deposits and the nation's largest water power potential. Until now, the Soviets have pushed the development of coal mining and hydroelectric power as the basis of economic development in the region. The largest coal deposit in the region is the Tungus Basin in the Central Siberian upland, but it is so remote from any potential market that production there is still extremely small. By far the biggest coal mining expansion currently under way is at the Kansk-Achinsk basin, which spans a distance of 700 kilometers on either side of the Transsiberian Railroad. It contains

Table 4

THE EAST SIBERIAN REGION

	Area (1000 sq km)	Persons/ sq km 1982	% Urban 1982
Krasnoyarsk Krai	2,402	1.4	71
Khakass Autonomous Oblast	62	8.3	71
Taymyr National Okrug	862	0.1	65
Evenki National Okrug	768	0.02	33
Irkutsk Oblast	768	3.4	79
Ust-Orda Buryat National Okrug	22	5.7	19
Chita Oblast	432	3.0	63
Aga Buryat National Okrug	19	3.8	27
Buryat ASSR	351	2.7	59
Tuva ASSR	171	1.6	44

SOURCE: *Narodnoe khoziaistvo SSSR 1922-1982,* pp. 15-17.

good quality brown coal that can be strip-mined. Since the major coal mines in the European USSR are rapidly being depleted, the Soviets are putting great importance on the coal fields east of the Urals, which are expected to provide practically all of the growth in the nation's coal output in the 1980s.[4] About two-thirds of the total estimated increase in raw coal production through 1985 is planned to come from the open-pit mining at the Kuznetsk basin in West Siberia, whose level of output is expected to reach 160 million metric tons by 1985, and at the Ekibastuz basin in the Urals, which is slated to increase its production to 100 million metric tons by 1985. Major increases from the Kansk-Achinsk basin are not expected until 1990, but production there is supposed to increase to about 50 million tons by 1985, about 15 million tons more than in 1979.[5] However, most of the coal from Kansk-Achinsk will be used at local power plants to produce electric power or to be processed into synthetic motor fuel. This is due to the fact that in its raw form, Kansk-Achinsk coal has a very high moisture content and is subject to spontaneous combustion, making shipment over long distances impossible.

There has also been some interest in prospecting for oil and gas in East Siberia, but the region's hydroelectricity potential has received the most attention, since 62.5 percent of the nation's hydropower is located in Siberia. According to a recent estimate by a Moscow University specialist in the geography of energy, East Siberia currently ranks fourth nationwide in the production of electric power and is likely to move into third place in the near future.[6] Many hydroelectric plants are planned for the Angara-Yenisei river area (see Table 5); already in operation is the Krasnoyarsk plant in Divnogorsk with a capacity of six million kilowatts--almost 50 percent more than the

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[4] B.F. Bratchenko, (Minister of Coal Production), "Gorizonti intensifikatsii," *Ekonomicheskaia gazeta,* No. 15, April 1984, p. 2.

[5] Central Intelligence Agency, National Foreign Assessment Center, *USSR: Coal Industry Problems and Prospects,* ER 80-10154, Washington, D. C., March 1980, pp. 7, 14.

[6] V.N. Gorlov, "The Fuels and Electric Power Complex of the USSR in the 10th and 11th Five-Year Plans", *Soviet Geography: Review and Translation,* Vol. XXII, No. 9, November 1982, pp. 626-627.

Table 5

MAJOR HYDROELECTRIC STATIONS OF SIBERIA

Name	Location	River	Designed Capacity (megawatt)	Number of Generating Units (megawatt)	Construction Dates		
					Start	First Unit	Last Unit
Novosibirsk	Novosibirsk	Ob'	400.4	7x57.2	1950	1957	1959
Irkutsk	Irkutsk	Angara	662.4	8x82.8	1950	1956	1958
Bratsk	Bratsk	Angara	4050	16x225(a) 2x250	1954	1961	1966
Krasnoyarsk	Krasnoyarsk	Yenisey	6000	12x500	1956	1967	1971
Ust'-Ilim	Ust'-Ilimsk	Angara	4320	18x240	1962	1974	(1978)
Sayan	Sayanogorsk	Yenisey	6400	10x640	1963	(1978)	
Boguchany	Koda	Angara	4000	12x340	1976	(1983)	
Vilyuy	Chernyshevskiy	Vilyuy	308	4x77	1960	1967	1969
Vilyuy	(second stage)		340	4x85	1972	1975	
Zeya	Zeya	Zeya	1290	6x215	1964	1975	
Bureya	Talakan	Bureya	2000	7x285	1976	(1983)	
Kolyma	Sinegor'ye	Kolyma	750		1970	(1980)	
Khantayka	Snezhnogorsk	Khantayka	441	7x63	1963	1970	1972
Kureyka	Svetlogorsk	Kureyka	500		1975	(1981)	

SOURCE: Theodore Shabad and Victor Mote, Gateway to Siberian Resources (The BAM), Scripta Publishing Company, John Wiley and Sons, New York, 1977, p. 55.

NOTE: (a) The 225-megawatt units at Bratsk were being upgraded to 250 megawatts during the Five-Year Plan 1976-80, raising the installed capacity to 4,500 megawatts.

Bratsk plant which began operation in 1961 and was for many years the world's largest with a capacity of 4.1 million kilowatts. An even larger plant is under construction in Sayan; its capacity is set for 6.4 million kilowatts.[7]

In an attempt to put all this hydropower to efficient use, the Soviets have built a number of aluminum plants; the plant at Bratsk is the world's largest. Siberia does occupy an important position in aluminum reduction, having produced more than one half of all Soviet aluminum in the mid-seventies, but most of the alumina used in the Siberian aluminum industry is imported from the Urals or from abroad.[8] East Siberia also contains about 35 percent of the Soviet Union's forest reserves, and large wood cellulose plants are being further developed. The Bratsk wood-chemical complex accounts for one-sixth of the national cellulose production. Currently under construction is the Udokan copper mine in Chita province and planning is under way for the Ozorny polimetallic deposit in Buryatia.

SOVIET FAR EAST

The Soviet Far East is by far the largest territory within the Soviet Union, with an area of 6,216,000 sq km (Table 6). It contains almost 28 percent of the total territory of the USSR but has less than 2.5 percent of the total population. Here too, despite several scattered ethnic groups in the region, Russians make up the majority of the region's population. The Soviet Far East is highly urbanized, given its general unsuitability for agriculture. However, the degree of urbanization varies from oblast to oblast within the region. Owing to the huge distances separating the Soviet Far East from the European USSR, the industrial resources of the region have not been developed to a great extent, with the exception of rare products found only in the Soviet Far East and which can be transported easily, such as diamonds,

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[7] "Razvitie gidroenergetiki," *Ekonomicheskaia gazeta,* No. 49, 1983, p. 2.

[8] Theodore Shabad and Victor Mote, *Gateway to Siberian Resources (The BAM),* Scripta Publishing Company, John Wiley and Sons, New York, 1977, p. 55.

Table 6

THE FAR EASTERN REGION

	Area (1000 sq km)	Persons/ sq km, 1982	% Urban 1982
Maritime Krai	166	12.3	77
Khabarovsk Krai	825	2.0	80
Jewish Autonomous Oblast	36	5.5	69
Amur Oblast	364	2.7	66
Kamchatka Oblast	472	0.9	83
Koryak National Okrug	302	0.1	40
Magadan Oblast	1,199	0.4	80
Chukchi National Okrug	738	0.2	71
Sakhalin Oblast	87	7.8	83
Yakutsk Oblast	3,103	0.3	65

SOURCE: *Narodnoe khoziaistvo SSSR, 1922-1982,* pp. 15-17.

gold, and furs. In the production of such goods, the Soviet Far East leads the nation.

Like East Siberia, the Soviet Far East abounds in coal resources; however, many are located too far north to be exploited economically. Typically, coal mining has developed on a very local scale where settlements have sprung up to exploit other natural resources. The largest potential development of coal is in the South Yakut fields around Chulman and Neryungri where a new open pit is being constructed. The Neryungri mine's annual capacity is to be expanded to approximately 13 million tons of coal per year after 1985, but most of its output will be exported to Japan under an existing trade agreement and thus will not contribute significantly to the domestic supply.[9] A branch railroad, dubbed the "little BAM," was constructed in 1971 to facilitate the opening up of these fields, but the BAM itself (see below) is expected

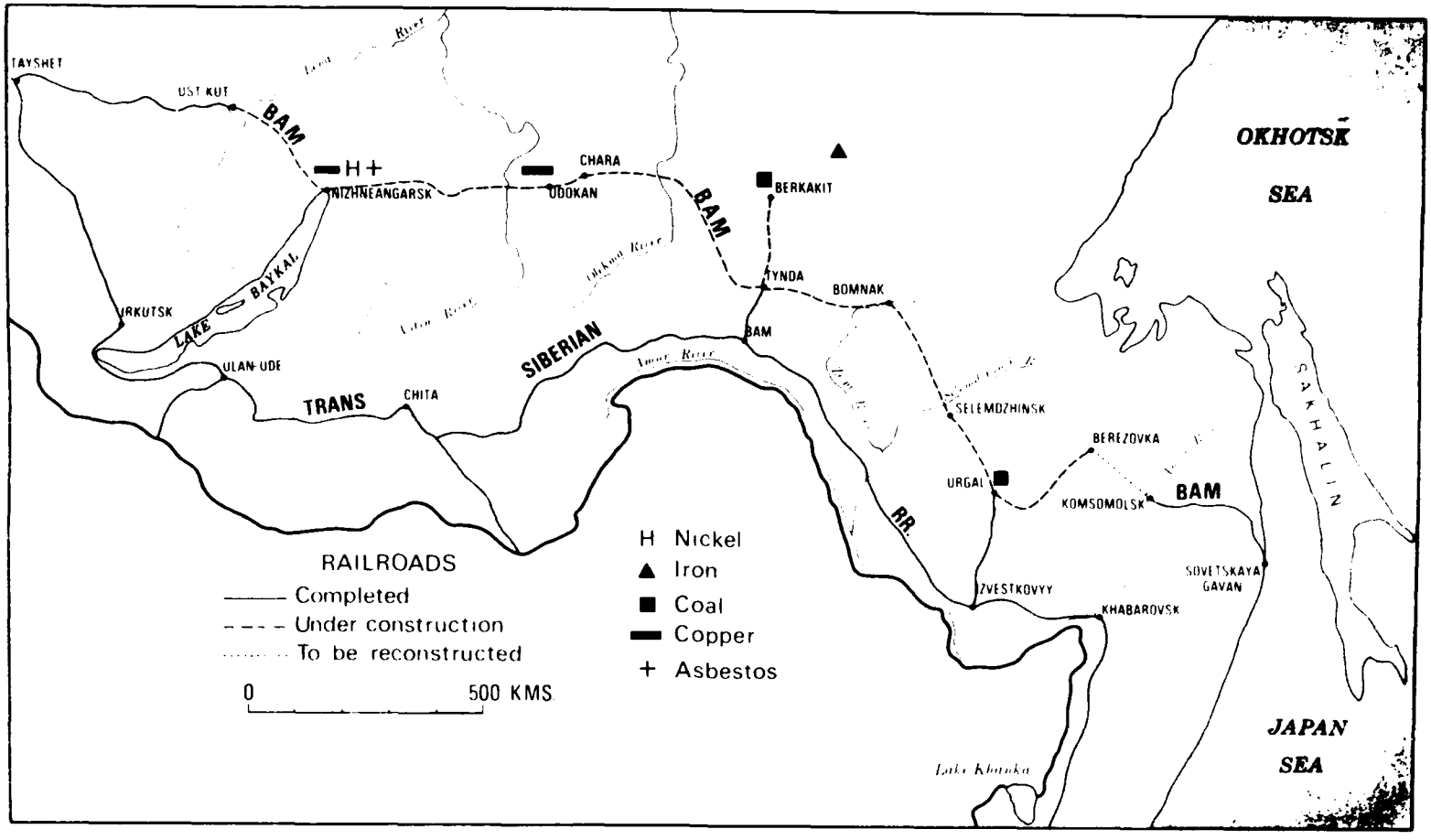
[9] Central Intelligence Agency, *USSR: Coal Industry Problems and Prospects*, 1980, p. 15.

to have an even greater impact on the further development of these resources.

The central regions of the Yakut Autonomous province also contain reserves of natural gas. The first field, discovered in 1965, was the Tas-Tumus field about 400 km northwest of Yakutsk and the Middle Vilyuy field. Pipeline construction has begun and the Soviets claim reserves in Yakutia of as much as 12.8 trillion cubic meters. They have persistently sought help from Japanese and American companies to develop these fields and proposals have been made to exchange capital investment for liquified natural gas, but as yet there have been no major takers.

By far the biggest and most important undertaking in the development of the Soviet Far East has been the construction of the BAM, the Baikal-Amur Mainline, a project conceived and begun in the 1930s but not seriously undertaken until 1974. The railroad will run east from Ust-Kut through Nizhneangarsk on the northern side of Lake Baikal, to Komsomol'sk na Amure, where it will hook up with the Komsomol'sk-Sovetskaya-Gavan railroad. The total length of the BAM will be 3150 kilometers (more than 4200 kilometers counting the already completed lines at either end of the BAM; see Fig. 2).

The construction of the BAM has assumed a position of supreme national importance and undoubtedly accounts for much of the increase in investment slated for Siberia. The Soviet press reports constantly on construction progress and highly praises the workers (most of whom are in their late teens and early twenties, recruited by the Komsomol organization) for working under the extremely harsh conditions of the Siberian environment. The construction of the BAM is expected to have a major impact on both the local economy and the Soviet economy as a whole. It is also expected to have an equally important impact on foreign trade in the Pacific. At a time when the European USSR's resources are drying up and Soviet demand for hard currency from trade with the West is high, the opening up of Siberia's natural resources is of very great importance; once completed, the Soviets hope that the BAM will significantly improve the accessibility of these resources.



SOURCE: Lydolph, p. 457, Adapted from *Soviet Geography: Review & Translation,* October 1975, p. 504.

Fig. 2 – Map of Baikal-Amur Mainline (BAM)

III. THE DEBATE OVER EASTERN DEVELOPMENT

THE ENERGY WAREHOUSE

There has never been a question under Soviet rule whether Siberia and the Far East should be developed; the extraordinary richness of the natural resource potential of these regions made that obvious. The issue has been, what kind of development and at what pace relative to programs for the rest of the country?

Despite rhetoric about moving industry to the East, the area was only slowly affected by the stormy industrialization drive of the pre-World War II period. Priority was attached to investment in the extractive industries in Siberia to supply industry in the European USSR with fuel and raw materials. Scarcity of material and labor resources impeded more balanced development in the region. All essential machinery, equipment, and consumer goods were imported from the western regions of the country. Early industrial facilities in Siberia were located in a narrow zone on either side of the Transsiberian Railroad and included the Kuznets Basin, the Noril'sk mining and metallurgical combine, and the Kolyma gold mining basin. During this period, industrial investment was mainly limited to those enterprises producing machines and equipment used in the extraction industries, with almost no attention paid to developing industry for needs of the local population.

During World War II, many manufacturing plants were dismantled from the European USSR and moved to Siberia to protect them from the German advance. West Siberia was the main beneficiary of this evacuation: of the 1523 manufacturing plants moved from west to east in the second half of 1941, 244 were moved to West Siberia, 78 to East Siberia, and none to the Soviet Far East. The principal destinations of these plants were Novosibirsk and Omsk, which became virtual boom towns, experiencing very rapid increases in population and industrial output. Krasnoyarsk in East Siberia also benefitted from the evacuation, with the gross output of the Krasnoyarsk krai increasing by 75 percent from 1940 to 1945.[1] However, Siberia's industrial growth in the immediate postwar years

[1] Shabad and Mote, pp. 13, 16.

dropped drastically, showing only a 27 percent increase between 1946-1950 compared to the total increase of Soviet industrial production of 89 percent during that same period. This reflects the overriding priority of postwar reconstruction of the European regions of the country.

In 1950, the Angara-Yenisey project was started up in East Siberia to harness the important hydropower resources in the region. By heavily investing in hydroelectric generation, the Soviet leadership hoped to build a veritable "motor" to spur overall economic development of the region. Today, West Siberian oil and gas, Angara-Yenisey hydroelectric power, the Baikal-Amur Mainline (the BAM), and most recently, Kansk-Achinsk coal are expected to provide the basis for rapid growth, particularly in fuel and power industries, mineral extraction, power-consuming iron, steel, and nonferrous metallurgy, chemicals, forest-based industries, woodworking, and pulp and paper industries.

Military considerations undoubtedly play a role in the Soviet decision to proceed with Siberian development, particularly with the construction of the BAM to supplement the Soviet military buildup in the Far East.[2] But whether further Siberian development will enhance the Soviet position in the area or increase its vulnerability is in dispute. "Both the Trans-Siberian and the Baikal-Amur Mainline railroads are quite vulnerable to interdiction, as are gas and oil pipelines and high tension power lines--the three most important elements in Siberian development plans. It is difficult to strike a balance between augmented defense forces and increased vulnerability."[3] Most analyses of the Soviet military posture in Asia express the view that Siberian development is unlikely to greatly increase Soviet military capabilities in Asia; some feel that ultimately it may even be a liability by imposing such high costs on the Soviet economy as a whole.[4] This opinion, however, is not shared by all observers of the Soviet presence in East Asia; Dibb feels that

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[2] Harry Gelman, *The Soviet Far East Buildup and Soviet Risk-Taking Against China,* The Rand Corporation, R-2943-AF, August 1982, p. 66.

[3] Thomas W. Robinson, National War College, "Thoughts on Siberian Development and Its Implications for the Possible Roles Therein of Japan and the United States," paper prepared for the Joint U.S.-Japanese Conference on Soviet Siberia, June 13-14, 1978, Airlie House, Airlie, PA, p. 6.

[4] *Ibid.,* pp. 6-7. Also see Allen S. Whiting, *Siberian Development*

> The growing importance of Siberia to Soviet economic strength will increase Moscow's interest in building up its military presence in the region. Siberia's economic potential will thus be an important dynamic factor shaping Soviet strategy in the region...In stark contrast to her weak political and economic position in the region, the USSR has impressive military forces...Siberia offers strategic depth for the dispersed location of major ICBM complexes, which are generally located conveniently along, and within access to, the Trans-Siberian railway.[5]

However, it is widely accepted that domestic economic considerations play the major role in the push to develop Siberia.[6]

The driving force of eastern development has been and remains the need for energy. If over 80 percent or more of the nation's energy resources are located east of the Urals (see Table 7), 80 percent of the nation's energy is consumed west of the Urals, where energy reserves are rapidly being depleted and growing increasingly expensive to exploit. Although the Soviets' concern for energy conservation is relatively recent,[7] it has become an increasingly frequent topic in the last decade and has clearly contributed to the sense of urgency felt by the Soviet leadership to open up the eastern regions' natural resources. In a recent interview, Georgii F. Ivanovsky, deputy chairman of USSR Gossnab (State Committee for Material and Technical Supply), stated that in the last twenty years, consumption of fuel in the USSR has almost tripled and fuel costs are also rising steadily:

> In the last ten years, the average cost of extracting coal in the USSR has increased by 1.6 times while that of natural gas has doubled. The average distance over which oil and gas must be transported has increased by 2.1 and 1.6 times

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and East Asia, Stanford University Press, Stanford, California, 1981, Chapter 4.

[5] Paul Dibb, "Soviet Capabilities, Interests and Strategies in East Asia in the 1980s," *Survival,* Vol. 24, No. 4, July/August 1982, p. 158.

[6] Leslie Dienes, "The Development of Siberian Regions: Economic Profiles, Income Flows and Strategies for Growth," *Soviet Geography: Review and Translation,* Vol. XXXIII, No. 4, April 1982; Alan Smith, "Soviet Dependance on Siberian Resource Development," *Soviet Economy in a New Perspective,* Joint Economic Committee, Congress of the United States, October 14, 1976.

[7] Gustafson, pp. 27-31.

Table 7

DISTRIBUTION OF USSR RAW MATERIAL, FUEL AND ENERGY POTENTIAL FOR MACROREGIONS (ESTIMATE)

(USSR = 100%)

	European USSR and Urals	Siberia and the Far East
Raw material resources		
Iron ore	77	6
Phosphorites	65	5
Wood	24	40
Fuel-energy resources, excluding oil[a]	8.7/17	88.1/74.5
Coal	6.4/19.3	90.7/72.5
Gas	10/13.5	78.9/75.5
Peat	26/72.2	74/27.8
Hydropower	19.2/17.2	61.8/62.2

SOURCE: V.A. Kerov, *Problemy khoziaistvennogo osvoeniia novykh raionov,* 1982, p. 16.

[a] In numerator--potential reserves; in denominator--explored. Note apparent contradiction in some cases where explored reserves exceed potential reserves. No additional information is available to explain this.

> respectively, which has considerably increased expenditure on fuel transportation. The increase in expenditure on the fuel and energy complex and on the annually increasing requirements for the national economy for fuel and energy have thus made the problems of economizing on fuel and energy resources a very important all-state task.[8]

In addition, the Soviets are relying heavily on exports of fuel and raw materials for hard currency to finance increasing food and technology imports, because of their lack of success in producing manufactured goods for export.

Use of the eastern regions as the national energy warehouse has been not only the driving force but also the dominant consideration of national policy. Public rhetoric, as we shall see, stresses balanced growth, but the requirements for Siberia's local industrial development and considerations of equality in level of development between eastern and western regions have been subordinated to the priority goals of energy development.[9] With the exception of the fishing industry in the Far East, which accounts for over one third of the total Soviet fish catch, the pace of development for light and food industries in Siberia is also well below the Soviet average. Despite many optimistic forecasts predicting rapid economic growth of Siberia, the region plays only a very modest role in national industrial production--some 10 percent of Soviet output in 1980 (Table 8). The eastern regions as a whole only account for about one-eighth of national income[10] (Table 9).

Rapid development of the extractive industries in the eastern regions has meant relatively slower growth of Siberia's share in the nation's industrial output, apart from energy. Indeed, in the 9th Five-Year Plan period, the relative importance of Siberian production in

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[8] *FBIS Daily Report Soviet Union,* February 16, 1983, p. R15. Also see "Energeticheskii potentsial strani," *Sotsialististicheskaia industriia,* May 11, 1983, p. 1.

[9] Robert G. Jensen, "Soviet Regional Development Policy and the Tenth Five Year Plan," *Soviet Geography--Review and Translation,* Vol. 19, No. 3, March 1978.

[10] Tables 10 and 11 differ somewhat with respect to the Siberian shares of national revenue. The reasons are not explained in the sources.

Table 8

CHANGES IN SIBERIA'S SHARE IN THE USSR ECONOMY

(Percent)

	1965	1970	1975	1980 (estimate)
Gross social product	8.1	8.5	9.1	9.5
Produced national income[a]	7.5	9.1	10.0	10.5
Gross industrial output[b]	8.1	8.4	8.9	9.5
Electrical energy	13.6	15.5	16.2	
Fuel production	14.6	17.0	22.1	
Chemical	12.0	9.5	9.7	
Machine-building	7.5	8.1	7.5	
Wood production	14.9	14.9	15.4	
Construction materials production	9.0	9.1	8.6	
Light industry	4.2	5.0	5.8	
Food	6.9	6.7	6.6	
Gross agricultural output (Average annual share in Five-Year Plan period)	8.2	8.1	8.0	8
Capital investment[c]	11.2	10.9	11.6	13-14
Industrial fixed capital	10.5	11.0	11.5	12
Construction-assembly work	12.2	12.2	13.2	13.5-14.5
Freight hauled, all types of transportation	13.7	14.2	15.7	17-18

SOURCES: *Sibir' v edinom narodnokhoziaistvennom komplekse*, pp. 19, 33; T. Baranova, "Osnovnye pokazateli razvitiia promyshlennosti Sibiri v desiatoi piatletke," *Izvestiia sibirskogo otdeleniia Akademii nauk SSSR, seriia obshchestvennykh nauk*, No. 11, 1982, p. 73.

[a] These figures do not include the share of the Soviet Far East (see Table 9).

[b] For the Siberian share in the physical output of particular industrial products, see Appendix Table A.1.

[c] Five-Year Plan figures for the terminal year of the Plan period.

Table 9

SIBERIA'S AND THE FAR EAST'S SHARE OF NATIONAL INCOME

(Percent)

Region	1970	1975	1980 (estimate)
West Siberian	5.2	5.6	6.0
East Siberian	3.2	3.4	3.7
Far East	2.7	2.8	2.8
Total for East	11.1	12.8	12.5

SOURCE: *Ekonomicheskoe razvitie Sibiri i Dal'nego vostoka,* p. 78.

machine building, construction materials, and food actually declined (Table 8). The shares of machine building, chemicals, petrochemicals, building matierials, and food in industrial investment are considerably smaller in Siberia than for the USSR as a whole.[11] Interregional trade provides Siberia with most of its supply of the output of these branches of industry. Siberia imported about 3 billion rubles worth of goods more than it exported in 1975 and the ratio of Siberian imports to exports is expected to rise.[12]

BASIC ISSUES IN THE DEBATE

Whether or not the eastern regions can continue to function almost solely as energy producers is evidently still being hotly debated by Soviet planners, ministers, economists, and local Party officials. The heart of the debate is concerned with the pattern and structure of development. To what degree should the eastern regions be industrialized? Should Siberia be allowed to develop in a more

[11] T.B. Baranova, "Dinamika zaniatosti, proizvoditel'nosti truda i osnovnykh proizvodstvennykh fondov v promyshlennosti Sibiri", *Izvestiia sibirskogo otdeleniia Akademii nauk SSSR--seriia obshchestvennikh nauk,* No. 6, May 1980, pp. 105-112.

[12] *FBIS Daily Report Soviet Union,* February 16, 1983, p. R15.

autonomous way, allowing it to produce goods for its own consumption, or should Siberian development be highly specialized as the energy exporting region of the USSR and satisfy regional needs through trade with other Soviet regions and Pacific basin countries? How much processing of the raw materials extracted should take place within the region? How much should Siberia produce for its own consumption?

The main issue of the debate is the question of priority focus on the fuel-energy complex versus balanced development across industries and between eastern and western regions. It is evident that the roots of the controversy go back to the 1920s, as a prominent Siberian economist explains:

> When territorial planning was first started in our country, during the elaboration of the first long-term plan for Siberian industrial development (1926-1941), the main objective of Siberian long-term development was a subject of bitter dispute. The choice of development goals for Siberia's productive forces was preceded by a discussion in which two views confronted each other: one advocating the exclusive development of raw materials production (to meet the needs of the country's old industrial centers), and the other, recommending 'autonomization,' i.e., the transformation of Siberia into an independent industrial center to be isolated from the socio-economic life of the country as a whole...these ideas were repudiated and the Leninist principle of integrated development of the eastern regional economies as a subsystem of the entire national economy gained the upper hand.[13]

As early as 1930, economists in Novosibirsk were proposing the following guidelines for Siberian development, which differ very little from the most recent Soviet statements on goals of Siberian development:

> Siberia can give up neither the utilization of its potential for creating its own industry nor cooperation with western regions of the USSR in the sense of supplying raw materials for existing industries in these regions, nor would Siberia have the right to give up either. From this path, a superficially alluring program of 'superindustrialization' can in no way divert us. Siberia's future economic image will be created by a harmonious combination of the region's specific

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[13] R.I. Shniper, "Fundamental Aspects of the Formation of an Integrated Regional Economic Development Concept" in A. G. Aganbegyan, ed., *Regional Studies for Planning and Projecting: The Siberian Experience,* Mouton Publishers, The Hague, 1981, p. 77.

> interests with those of the USSR as a whole. We are deeply convinced that there is no contradiction between the first and the second goals, that in the long term, there can be no economic conflict between different regions, because common interests call for a coordinated solution.[14]

Soviet regional development policy and industrial location theory are composed of a mix of ideological principles, economic theory, and practical considerations, taking into account specific needs of particular areas, and thus are often contradictory.[15] Hamilton (1973) and Pallot and Shaw (1981) give detailed descriptions of the main principles underlying Soviet locational policy; briefly summarized, they are:

- production should be developed close to the sources of necessary raw materials and energy;
- production should be "complex," i.e., it should be well planned and fully integrated in order to minimize unnecessary transportation of material inputs, to attain internal and external economies of scale, and to ensure the development of the energy rich regions of the Soviet Union;
- production should be located near the markets, again, to eliminate unnecessary transportation of the finished products;
- the division of labor among economic regions of the USSR should be developed to ensure some planned degree of both specialization and self-sufficiency within each region;
- production should be distributed throughout the USSR to ensure maximal utilization of infrastructural, natural, and labor resources in all its regions and republics (this is frequently stated as "the principle of rational distribution of productive forces");

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[14] *Materialy k general'nomu planu razvitiia narodnogo khoziaistvo sibirskogo kraia,* Novosibirsk, Siberian Territory's Publishing House, 1930, p. 36; quoted from Shniper, p. 77.

[15] F.E. Ian Hamilton, "Spatial Dimensions of Soviet Economic Decision Making," in Bandera and Melnyk, eds., *The Soviet Economy in Regional Perspective,* Praeger Publishers, New York, 1973, p. 237.

- production and services should be spatially distributed among the economic regions with the intent of equalizing the levels of economic development and standards of living among regions and republics and between urban and rural areas;
- transportation costs should be kept down by economically rational and efficient links between suppliers and consumers of materials, components, and final goods;
- attention should be paid to the advantages of international specialization of production and spatial orientation of trade links among the members of COMECON;
- choices for industrial location must be consistent with the need to strengthen the USSR's defensive capabilities.

It is evident that there is great potential for inconsistency and conflict in this set of principles. What the Soviets mean by regional equalization of economic development and the priority they attach to achieving it has varied over time and has been a major source of controversy. The issue of Siberian development is in many ways characteristic of this controversy and demonstrates the degree to which the centrally established national economic objectives take precedence over regional development goals.

The interest in regional development in the early Soviet years was reflected in the pronouncements of the Party Congresses in the 1920s which called for economic development and equalization of living standards between the western regions and the "backward," non-Russian regions. During Stalin's reign, those regional policy goals which were contrary to the all-out drive to increase national economic growth were generally ignored. After Stalin's death, official interest in regional economic development was rekindled and it remains an important topic of discussion to this day. In all the Five-Year Plans of the past twenty-five years, there has been a section entitled "the economic developments of the Union Republics and the distribution of productive resources," which attests to the fact that some official attention is being paid to regional problems.[16] However, regional interests clearly remain subordinate to national interests:

[16] Judith Pallot and Denis B. Shaw, *Planning in the Soviet Union*, The University of Georgia Press, Athens, Georgia, 1981, pp. 72-73.

> Regional plans are drawn up only after the first round of national planning where control figures for each sector of the economy have already been prepared. The national control figures are disaggregated at the centre by republic and it is these, together with the figures arrived at by the republican Gosplan for the enterprises within their jurisdiction, that are used to compile the territorial plan.[17]

Balancing the goals of regional and sectoral planning "remains an elusive objective, and regional development proceeds by a combination of regularized and ad hoc planning."[18]

Since 1965, animated discussions have taken place in the Soviet press which seem to identify two contrary viewpoints on the question of Siberian economic development. On the one hand, those in favor of pursuing a more balanced growth in Siberia criticize the tendency of Soviet economic decisionmakers to favor overspecialization of Siberian industry on energy extraction. In the early 1970s, many scholars in the Siberian research institutes argued that

> to this very day, the dominant view among the nation's economists, planners, and economic geographers is that the development of the central zone of Siberia and the Far East should be of an oasislike *[ochavnyi]* nature, in which the industrial centers and hubs are localized, situated at great distances from one another, and have a narrow range of production in the various branches of specialization. It seems to us that such an approach to the intensive development of the natural resources of the investigated territory is already obsolete and should be revised. This method of development in a zone that is so rich in resources impedes their comprehensive utilization, does not resolve the problem of the development of transport and of inducing population to settle there, hinders the broad industrial development and intensification of social production, and in practical terms, assigns to the developing regions the function of merely serving as a source of raw materials for other regions.[19]

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[17] *Ibid.*, p. 73.

[18] Gertrude E. Schroeder, "Soviet Regional Development Policies in Perspective," in NATO Directorate of Economic Affairs, *The USSR in the 1980s: Economic Growth and the Role of Foreign Trade,* Brussels, January 17-19, 1978, pp. 125-126.

Others in favor of a more balanced growth for Siberia criticize the continued investment in energy-consuming industries in the increasingly energy-deficient regions of the European SSSR. This argument is directed specifically at the branch ministries whose well-known preference has been to continue to invest in the already established industrial centers in the western regions, despite local and national political directives to do otherwise.

Nevertheless, official declaratory policy has given verbal support to the goal of balanced development and has advanced utopian goals of economic growth in the eastern regions.[20] In a 1971 interview, M. G. Pervukhin, member of the collegium of the USSR State Planning Committee, optimistically predicted that the share of the eastern regions in the total gross volume of output would reach 20 percent in the Ninth Five-Year Plan (the 1970 level was about half as high--see Tables 8 and 9), due to the rapid exploitation of the region's natural resources. When asked if such a strategy risked the creation of a lopsided economic structure in the eastern regions, he responded that "the draft Directives envisage the development of manufacturing and other branches of the economy in the East, so that a one-sided fuel and raw materials orientation will not arise."[21] In actuality, the increase in the share of the eastern regions in aggregate output was only minimal, despite the booming growth of the Siberian share of energy output (Table 1).

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[19] V.I. Botvinnikov, "Concerning the Concept of the Economic Development of the Central Zone of Siberia and the Far East," *Problems of Economics,* August 1974, p. 68.

[20] In fact, Gosplan and Gosstroi have officially sanctioned a lower standard rate of return for use in evaluating investment projects in West Siberia; see "Kompleksnoe razvitie proizvoditel'nikh sil zapadnoi Sibiri v tsentre vnimaniia uchenykh i prakticheskikh rabotnikov," *Planovoe khoziaistvo,* No. 9, 1978, p. 102. Campbell suggests that this may also apply to areas in East Siberia and the Far East; see Robert Campbell, "Prospects for Siberian Industrial Development," in Donald Zagoria, ed., *Soviet Policy in East Asia,* Council on Foreign Relations, Yale University Press, 1981, pp. 233-234.

[21] Interview with Perevedentsev in *Literaturnaia gazeta,* February 17, 1971, p. 2; translated in *Current Digest of the Soviet Press,* Vol. XXIII, No. 9, March 30, 1972, p. 8.

In a recent article, V. Mozhin, chairman of the Council for the Study of Productive Forces (SOPS) of USSR Gosplan made it clear that

> ...it is a priority task to implement more purposefully the proposition set forth by the 26th CPSU Congress concerning sharp restriction of construction of energy-intensive production operations in the European part of the country and expansion of production of new energy-intensive enterprises in the regions of Siberia, combined with simultaneous augmentation of all energy capacities and creation of conditions for attracting and holding labor resources.[22]

Although there is really nothing that could be called an "anti-Siberian development lobby" as such, local Siberian and Far Eastern party officials, heads of local enterprises, and Siberian economists refer frequently to opposition in the upper echelons of Soviet economic planning. It is alleged that inadequate attention to Siberian problems reveals the planners' opinion that because of higher investment and operating costs, nonfuel industry in Siberia and the Far East is often no more productive or efficient than in the European USSR.[23] (This argument is perhaps unintentionally fed by the central leadership's emphasis on investing in renovation and technical reequipment of existing industrial enterprises rather than in new enterprises. Since most of the existing industrial enterprises are located in the European USSR, this has possibly contributed to many ministries' unwillingness to invest in Siberia's nonfuel industries).[24] It is argued that the high cost of construction and of maintaining a labor force in Siberia is a restraining factor in locating labor and capital intensive industries there.[25] This reasoning is contested by the "Siberianists" who argue

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[22] V. Mozhin, "Optimum Location of the Productive Forces and Improvement of Regional Proportions," *Planovoe khoziaistvo,* No. 4, April 1983, pp. 3-12; translated in JPRS 83594, *USSR Report Economic Affairs,* No. 1055, June 2, 1983, p. 175.

[23] A.G. Granberg, "Sibir' v narodnokhoziaisvennom komplekse," *Ekonomika i organisatsiia promyshlennogo proizvodstva,* No. 4, 1980.

[24] See Boris Rumer, "Soviet Investment Policy: Unresolved Problems," p. 55, and Jensen, p. 199.

[25] A. Beschinsky and R. Vitebsky, "Power Engineering and the Siting of Industrial Production", *Voprosy ekonomiki,* No. 5, May 1977; abstracted in *Current Digest of the Soviet Press,* Vol. XXIX, No. 28, August 10, 1977, pp. 10-11.

that the reason for the lower output/input ratio in Siberia is due to the dominance of extractive industries there which all have a very high ratio of investment to output. Moreover, they claim that the regional indices used for this comparison discriminate against investment in the eastern regions, and that the planning techniques and designs for Siberian industry are based on norms devised in and for the European USSR which are often totally unsuitable for Siberian and Far Eastern conditions.[26] They argue that although the start-up costs for nonfuel energy-intensive industries might initially seem excessive or uneconomical, in the long run, energy-intensive industries located closer to the energy source would allow for more efficient development of manufacturing and processing industries in Siberia and the Far East and hence, a greater gain to the Soviet economy as a whole.[27] Nevertheless, they are well aware of the fact that Siberian development has already proven to be a very expensive undertaking; during the 1976 to 1980 period, investment in Siberia equalled about 35 billion rubles--3.5 fold more per capita than the USSR average.[28] They acknowledge that unless capital and labor costs are kept down, Siberian industry will become less and less competitive and will endanger future prospects for more balanced development of Siberia and the Far East, especially at a time in Soviet history when labor and investment funds are extremely tight nationwide.

A number of Soviet economists and local Siberian officials feel that Siberia's contribution to the national economy is inaccurately measured and gives the impression that Siberian development unduly strains the Soviet economy as a whole. Probably the most vocal advocate of a serious reevaluation of the measure of Siberia's contribution to the national Soviet economy is A. G. Granberg, deputy director of Aganbegyan's Institute on Economics and Organization of Industrial Production:

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[26] Robert Campbell, p. 233, and Leslie Dienes, "Issues in Soviet Energy Policy and Conflicts over Fuel Costs in Regional Development," *Soviet Studies,* Vol. 23, No. 1, July 1971, pp. 26-58.

[27] Aganbegyan, "Toplivo Sibiri," p. 2.

[28] Kerov, p. 41.

> When analyzing the indicators of the comparative production efficiency in Siberia, it is necessary to bear in mind that the estimates made on the basis of current prices do not always yield a sufficiently objective picture. The main advantages of developing many works in Siberia, which are connected with the use of natural resources, are not reflected in the calculations of the expenditures and wholesale prices...The study of the system of current wholesale prices using mathematical models and the comparison of intra-union prices with the prices of the world market make it possible to conclude that the prices established in the USSR for the products of the extractive sectors...are substantially understated while for a number of sectors of the processing industry, on the contrary, they are relatively overstated. As a result, the proportion of Siberia in the production of the national income and the gross national product of the country is artificially understated; the synthetic indicators of the efficiency of the regional complex also get worse.[29]

Granberg argues that according to the more thorough study of the mechanism of the interaction of Siberia's economy with the national economy done at his institute, the efficiency of the national economy with the inclusion of Siberia increases by a minimum of 25 percent. Using world prices for fuel and energy resources, the proportion of Siberia's contribution to the gross product and the national income increases by a minimum of 10 to 13 percent and labor productivity by 20 to 30 percent.[30] Also distorted by the use of national prices is the imbalance between Siberia's imports and exports. Is the Soviet economy investing more in Siberia than it is receiving and thus slowing the rate of national economic development? The measurement of Siberia's export-import balance, again using "improved value measurements," considerably enhances Siberia's contribution to the national economy.[31]

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[29] A. G. Granberg, "The Economy of Siberia in he Unified National Economic Complex," *Ekonomika i matematicheskie metody,* No. 5, September-October 1979; translated in JPRS 74515, *USSR Report Economic Affairs,* No. 897, November 5, 1979, pp. 24-25.

[30] Granberg, "Sibir' v narodnokhoziaisvennom komplekse," p. 98.

[31] Granberg, "The Economy of Siberia in the Unified National Complex," p. 26.

There has been no real resolution of the theoretical debate on Siberian development strategy; there are arguments favoring a highly specialized path for Siberia and others advocating a more balanced approach. Actual development has been a mix of the two with a strong bias in favor of specialization in exporting energy.[32] Both sides agree on the desirability of improving planning and implementation of Siberian projects to maximize returns on investment and minimize unnecessary loss of funds and waste of materials. Despite this ostensible agreement, Soviet planners are not willing to make the necessary investment.

SOME IMPORTANT ACTORS IN THE DEBATE

Soviet sources are extremely reticent in discussing how policy is actually formed and in revealing details of high-level controversy. It is not surprising, therefore, that little is known of whatever debate on development of the eastern regions has taken place at the apex of the Soviet hierarchy. The highest levels of policymaking have continually supported rapid and balanced development in Siberia and the Soviet Far East. These goals were also stressed in the public documents of the Ninth, Tenth, and Eleventh Five-Year Plans. Occasionally, high officials criticize the economic hierarchy in terms that suggest elements of the controversy. For example, at the 26th Party Congress, M. S. Solomentsev, chairman of the Russian Republic Council of Ministers, complained that

> one still encounters instances in which certain ministries and departments and even planning agencies do not pay proper attention to comprehensive development. This leads to disproportions in production and a lag in the construction of housing and social, cultural and consumer-service facilities...A consistent and comprehensive approach to economic development will be conducive to the fuller utilization of production capacities and material and labor

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[32] For a very frank discussion of Siberian development and investment policy, see B.P. Orlov (Deputy Director of the Institute of Economics and the Organization of Industrial Production in the Siberian branch of the Academy of Sciences), "Razvitie ekonomiki Sibiri na otdel'nikh etapakh sotsialisticheskogo proizvodstva," *Izvestiia sibirskogo otdeleniia Akademii nauk SSSR, seriia obshchestvennikh nauk*, No. 11, 1982, pp. 60-70.

> resources and the retention of personnel...It is extremely necessary to devote unremitting attention to the development of the services sphere and to all production units connected with the creation of favorable working and living conditions for people in these [eastern] regions, which today is just as important as paying higher wages.[33]

Are such exhortations to correct the Siberian and Far Eastern imbalance mere lip service? Do they represent genuine frustrations of policymakers dealing with a recalcitrant bureaucracy? Is it possible that planners and policymakers have reduced their expectations about the development possibilities in the eastern regions as a result of the frustrations encountered in pursuing development in such a difficult geographical environment? Or is much of the lag to be explained simply by the resource constraints of recent years against the massive requirements for balanced development in such an inhospitable area?[34] Possibly, the explanation lies in some combination of all of these factors.

In addition to the Party and governmental participants, there are many research institutes in the Soviet Union that are involved in studies of regional development and appear to influence policymaking on regional issues. The Council for the Study of Productive Forces (SOPS), now subordinated to Gosplan, was originally set up in the 1930s to work on the possibilities of Siberian development.[35] Its present chairman, V. Mozhin, and his predecessor, N. N. Nekrasov, are both strong advocates of balanced development in Siberia. Also influential is the Institute of Economics and the Organization of Industrial Production in the Siberian branch of the Academy of Sciences headed by economist A. G. Aganbegyan. Here an impressive staff of economists, geographers, mathematicians, and sociologists model regional systems and spatial problems and forecast Siberia's productive forces. Since 1970, the

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[33] Speech by S. Solomentsev at the discussion of the CPSU Central Committee Report in *Pravda,* February 25, 1981, p. 3; excerpts in *Current Soviet Policies--VIII,* 1981, p. 52.

[34] Allan Kroncher, "Who is to Blame for Setbacks in Siberia?" Radio Liberty Research, RL 139/78, June 21, 1978.

[35] Pallot and Shaw, p. 67.

institute has also published a journal called *EKO,* short for *Ekonomika i organizatsia promyshlennogo proizvodstva* (*Economics and Organization of Industrial Production*), the only Soviet periodical specializing in industrial economics and considered by many Western Sovietologists to be one of the most innovative and provocative Soviet economic journals. Aganbegyan indicates that his institute provides "practical alternative proposals" relating to various aspects of development, location, and specialization of particular areas of production which are sent to departments of the USSR and RSFSR State Planning Commmittees and to the institutes of the ministries involved in Siberian development.[36] From Aganbegyan's description, the institute's work does appear to have some influence on the policymaking elite, but the scope of this influence is hard to measure.[37]

In order to proceed with Siberian development in the most "scientific" and efficient manner possible, a special research organization was set up in the Siberian Department of the USSR Academy of Sciences to coordinate the vast variety of tasks of developing the productive forces of Siberia; it is known as "Project Siberia." Today, Project Siberia is a complex of 40 subprograms devoted to problems such as rational use of fuel energy, raw materials, and biological resources, environmental protection, technological problems in the major industrial complexes of the region, and so forth. The project brings together about 400 organizations from various ministries and agencies involved in Siberian development.[38]

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[36] A.G. Aganbegyan, "Towards an Integrated Approach to Research into Development Prospects of Siberia's Productive Forces," in Aganbegyan, ed., *Regional Studies for Planning and Projecting: The Siberian Experience,* Mouton Publishers, The Hague, 1981, p. 67.

[37] Criticism of the institute's work is rare, but *EKO* has been criticized by a corresponding member of the USSR Academy of Sciences for not giving enough practical advice to enterprise, association, and ministry executives about the management problems they must resolve:

> It has too many departments, and even its main articles are often too schematic and summary in character. It carries too few truly theoretical articles on new problems. It gives inadequate treatment of territorial problems, those of Siberia in particular...

T. Ryabushkin, "EKO's Seventh Year of Publication," *Voprosy ekonomiki,* No. 10, October 1976, pp. 151-152; abstracted in *Current Digest of the Soviet Press,* Vol. XXIX, No. 4, February 22, 1977, p. 32.

[38] I. Ognev and A. Usol'tsev, "Sibir'--programma deistviia primety obnovleniia", *Sovetskaia Rossiia,* October 28, 1983, p. 2.

Despite the research efforts of SOPS, Aganbegyan's institute in Akademgorodok, Project Siberia, and the Siberian Department of the Academy of Sciences, there are serious institutional impediments that stand in the way of strong ties between science and industry. The Soviets have always had difficulties translating research into improved designs or products, since a new idea must be passed through a veritable maze of bureaucracy before it reaches the implementation stage. A recent report by the U.S. National Science Foundation concluded that "science and industry in the USSR have always been separated worlds, more coexisting apart than mutually cooperating."[39] These institutional difficulties are especially evident in the case of Siberia and the Far East, largely because of the tremendous distances separating the eastern regions from the central planners in Moscow. Often, Siberian scientists complain that their designs for equipment or technical know-how specifically envisaged for Siberia are first implemented in enterprises in the European USSR and take years to penetrate Siberian industries.[40] In their own defense, the central authorities criticize the research of certain scientists within the Academy of Sciences' Siberian Division for not concentrating sufficiently on eliminating the major roadblocks to Siberian development:

> Research on the comprehensive utilization of natural resources of the country's eastern regions is proceeding slowly. The Presidium of the USSR Academy of Sciences' Siberia division pays insufficient attention to the activity of certain of the division's research centers and branches. The level of work at certain institutes still is not up to the increased demands on it. Research manpower and material and technical resources are still not being sufficiently concentrated on the most important areas of science and associated with the acceleration of scientific and technical progress.[41]

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[39] Quoted from David Brand, "Soviet Science Serves Industry Badly as Lines of Authority Crisscross," *The Wall Street Journal,* September 3, 1982, p. 1.

[40] Ognev and Usol'tsev, p. 25.

[41] *Pravda,* February 11, 1977, p. 1; translated in *Current Digest of the Soviet Press,* Vol. XXIX, No. 6, 1977, p. 12.

Once the plan has been adopted, the pace at which plan decisions are carried out is largely determined by various branch ministries who control most of the economic activity in the country. By definition, ministries are concerned with narrowly defined production targets and thus traditionally give little attention to the broader tasks of regional development. For this they are frequently criticized in the press by local officials.

The Communist Party is involved in decisionmaking not just at the top but also at the regional level. Regional first secretaries have a dual role; on the one hand, they are the local representatives of the Central Committee and as such are charged with overseeing decisions taken in Moscow and assuring their successful fulfillment; on the other hand, they are also responsible for representing the local interests of their region to the higher decisionmaking levels. In the case of many local first secretaries, the second role seems to predominate. According to Jerry Hough, this may be because of a serious lack of attention at central levels to regional development issues; it may be that regional party chiefs are obliged to take the initiative to get regional tasks accomplished. Just how severe is the lack of attention at central levels? Hough found that "in 1967, only 2 percent of the personnel of Gosplan worked in its territorial planning department and their role is said to be minimal...The planning commissions of the large economic regions have very limited authority and 'their functions are still defined with insufficient clarity'."[42] Conceivably, the size and role of the territorial department in Gosplan have increased in the intervening period.[43] Nevertheless, the regional party secretaries may still have an important influence on a given ministry's decision where or how to allot the centrally determined investment.

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[42] B. Orlov and R. Shniper, "Territorial'nyi plan: perspektivy, problemy, funktsii," *Ekonomicheskaia gazeta,* No. 29, July 1967, p. 11; quoted from Jerry Hough, *The Soviet Prefects,* Harvard University Press, Cambridge, Massachusetts, 1969, p. 269.

[43] In 1982, Gosplan was reorganized to place greater emphasis on program planning and integrated regional development; see V. Kozlov and F. Kotov, "Povyshenie roli Gosplana SSSR (K vykhodu novogo polozheniia o Gosplane SSSR)," *Planovoe khoziaistvo,* No. 10, 1982, pp. 72-79.

Although it is quite easy to document the efforts of the local party chiefs to influence the decisionmaking process, it is very difficult to determine the actual impact of their efforts.[44] What is clear, however, is that the local party chiefs from the eastern regions as a group are ardent and vocal lobbyists in representing the interests of their regions when addressing audiences of Moscow planners.[45] Their criticism is never leveled at the top policymakers, but rather at the way in which policy is translated into economic plans, which, in their view, do not allocate sufficient funds to assure "comprehensive" economic development in the eastern regions. These plans, they claim, are further distorted once in the hands of the various ministries and departments, who, due to their "narrow departmentalism," pay very limited attention to the overall development of these areas. A regional focus is particularly important in Siberia and the Soviet Far East because successful overall development of these areas depends to a large degree on the ability of many different ministries to coordinate activities closely. Ministerial neglect is a common theme of criticism from the regional officials in Siberia and the Far East, but whether they suffer more from this neglect than their counterparts in other areas of the country is difficult to judge.[46]

Some eastern region party chiefs may be unhappy with the way investment is allocated within the eastern USSR itself. The main development projects in East Siberia and the Far East are located around major industrial nodes in the Krasnoyarsk krai and Yakutsk Autonomous province. Therefore, one can reasonably assume that most of the official attention (and subsequently most investment) is drawn

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[44] Howard L. Biddulph, "Local Interest Articulation at CPSU Congresses," *World Politics,* Vol. XXXVI, No. 1, October 1983, pp. 28-52.

[45] For examples, see the speeches of P. Filatov (first secretary of the Novosibirsk Province party and P. S. Fedirko (first secretary of the Krasnoyarsk Territory party) in the discussion of the 26th Party Congress and Central Committee Report in *Current Soviet Policies--VIII,* pp. 70, 64.

[46] See George W. Breslauer, "Is There a Generation Gap in the Soviet Political Establishment? Demand Articulaton by RSFSR Provincial Party First Secretaries," *Soviet Studies,* Vol. XXXI, No. 1, January 1984, pp. 1-25.

predominantly to those areas. Evidence for this is supplied by recent complaints by some first secretaries of the other eastern oblasts. For example, the first secretary of the Irkutsk oblast party organization recently complained that the thermal electric stations in his oblast must rely on coal deliveries from the Kansk-Achinsk basin, which is inexpedient and costly. He pointed out that Irkutsk has its own coal resources much closer to the region's power stations, but they are not being developed. He also argued that there are gas reserves in the southern part of Irkutsk oblast which would reduce the cost of energy generation and air pollution in the area. He decried the "excessive" time taken for the evaluation of these projects and criticized the USSR Ministries of Geology and Coal Industry for their "sluggish" work in the region.[47] The first secretary of the Chita province party complained that his oblast suffers from lack of attention by the USSR Academy of Sciences' Siberian Division:

> It's not hard to become aware of the fact that the growth of scientific potential in a given region has an immediate effect on improving the economic condition of its individual parts and of the region as a whole. You can see this for yourself by comparing the date of the formation of the USSR Academy of Sciences' Siberian Division with that of the opening up of the Western Siberian oil-bearing regions; the date of the creation of the Siberian Division's Yakut Branch with that of the opening up of diamond-bearing pipes in Yakutia; the date of the extensive development of Irkutsk's research institutions with that of the beginning of the exploitation of the Angara's power-engineering resources, etc. In our opinion, it's now East Transbaikalia's turn...in point of fact, Chita Province is the last "blank" spot on the map of Academy science in Siberia--there's no Academy institute there.[48]

Local secretaries often point to the creation in the Tiumen' province of Gosplan's interdepartmental terrritorial commission, which was set up to handle all questions concerning the development of the West Siberian oil and gas complex, as a far more efficient format for solving regional development problems. Even though it is far from evident that this

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[47] V. Malov, "Po programme 'energia'," *Pravda,* May 12, 1982, p. 2.

[48] M. Matafonov, "Open up Siberia's Treasure Houses," *Sotsialisticheskaia industriia,* September 16, 1980, p. 2; translated in *Current Digest of the Soviet Press,* Vol. XXXII, No. 37, 1980. p. 8.

commission has any real power to influence the organization of the fuel complex,[49] other local party secretaries still call for the creation of similar on-the-spot commissions in their own regions.[50]

TERRITORIAL PRODUCTION COMPLEXES--AN ATTEMPT AT HORIZONTAL INTEGRATION

In an attempt to force the traditionally uncooperative ministries and departments to work together to develop the eastern regions and to keep down the costs of investment there, Soviet planners have come up with a new development scheme: the territorial production complex (territorial'no-proizvodstvennii kompleks--TPK). TPKs are major development projects--interbranch organizations intended to unite in one area all related industry and infrastructure needed to produce natural resources, to streamline the dissemination of research promoting regional development, and to guarantee the efficient use of material and labor resources. They are expected generally to serve as "oases of industrial development" in the eastern regions. As described by Academician Nekrasov:

> These complexes are organized on the basis of the raw material resources existing in a certain region. A TPK can be located within one or several oblasts and republics. Its structure envisages the proportional development of the production sphere as well as all the necessary elements of the social infrastructure including transport, auxiliary and service enterprises, utilities, housing, cultural and service facilities. All of this provides an opportunity to create conditions whereby personnel turnover is sharply reduced and the current and capital outlays are lowered. The developing of production capacity, the return on investment and the repayment of expenditures are significantly accelerated...[51]

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[49] Gustafson, p. 24-25.

[50] A. Skripnik, "The Aldan Crossroads," *Pravda,* August 16, 1981, p. 2; excerpts in *Current Digest of the Soviet Press,* Vol. XXXIII, No. 33, 1981, p. 4.

[51] N. Nekrasov, "How to Manage a Complex," *Trud,* May 28, 1978, p. 2; translated in JPRS 71485, *USSR Report Economic Affairs,* No. 839, July 18, 1978, p. 22.

Although the first TPKs were created in 1971, the big push for establishing them east of the Urals came after Brezhnev visited Siberia and the Far East in the spring of 1978. At the November 1978 Plenum of the Central Committee, he announced: "This is a major new achievement--the development of territorial production complexes, especially in the eastern regions of the country."[52] There were eight TPK projects identified in the Eleventh Five-Year Plan; most of them are centered around developing energy resources in Siberia and the Far East.[53]

The major TPKs in East Siberia are located in the Krasnoyarsk krai, the Irkutsk oblast, and the Tuvinskiy ASSR. They are centered around the construction of huge hydroelectric plants on the Angara-Yenisei river system and on the exploitation of local reserves of fuel and minerals for energy-intensive industrial centers. In the Soviet Far East, TPKs are being formed in the BAM zone to exploit the natural resources there. However, most of these are still in the planning stage; according to Aganbegyan, it will take 20 to 30 years for the industrialization of the BAM zone to be developed on a large scale.[54] The most well-developed TPK to date is the southern Yakutsk, whose resources and power will be supplied by the Neryungri coal basin and thermal power plant currently being built.[55]

The Soviets readily admit that although the TPKs are not new in concept, they are still in their operational infancy. TPKs require extensive preplanning, since they involve the integration of a great variety of different economic activities--such as organizing capital

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[52] *Pravda,* November 28, 1978; quoted from Gordon B. Smith, "Interbranch and Interregional Coordination Problems in the Soviet Economy" in Peter B. Maggs, Gordon B. Smith, and George Ginsburgs, eds., *Law and Economic Development in the Soviet Union,* Westview Press, Boulder, Colorado, 1982.

[53] David S. Kammerling, "The Role of the Territorial Production Complexes in Soviet Economic Policy," *Soviet Economy in the 1980s: Problems and Prospects,* Joint Economic Committee, Congress of the United States, December 31, 1982, pp. 242-266.

[54] A.G. Aganbegyan, "Towards an Integrated Approach to Research into Development Prospects of Siberia's Productive Forces," p. 9.

[55] For a more detailed discription of the TPKs in these regions, see Gordon B. Smith, pp. 107-112, and Kammerling, pp. 259-265.

construction, building and operating the infrastructure, and control over the use of multicomponent raw materials--into a unified system. Not unexpectedly, the Soviets appear to be having difficulties in assuring smooth development of these complexes; the Soviet press is full of complaints of severe supply imbalances and production disorganization within the TPKs, leading to waste of both time and resources.[56]

The question of management inevitably has stirred up significant controversy: how and by whom are these TPKs to be planned and managed? Who is responsible for the overseeing of these complexes? Clearly, this poses major problems for an overcontrolled economy which resists any form of decentralization of its decisionmaking authority; as a team of Akademgorodok researchers put it:

> ...the realization of all the enumerated advantages from the creation of TPKs within the existing system of planning and the management of the national economy is difficult. First of all, in the structure of planning and economic organs, there are not subdivisions which would be directly responsible for the drafting of plan documents on TPKs and control over the implementation of the plan of the formation of TPKs. Second, there is no clarity on the question of when, how and by whom the work should be carried out on the creation of TPKs within the current system of management of the national economy, whether there are in this system the necessary conditions and reserves for the solution of the indicated problems...[57]

Often a single TPK is situated in two or more krais or oblasts, and a major problem arises as to which unit has jurisdiction over the activities of the TPK. The Law on Krai and Oblast Councils *(sovety)* established that the executive committee of the soviet for the territory where the leading organization of the TPK is situated has the right to direct the management of the complex.[58] But as Smith points out, TPKs

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[56] Skripnik, pp. 3-4.

[57] V.P. Gukov, M. K. Bandman, N. N. Kazanskiy, and O. P. Kabal'chin, "Questions of the Preplanning Research and Planning of the Formation of Territorial Production Complexes," *Izvestiia sibirskogo otdeleniia Akademii nauk SSSR, seriia obshchestvennikh nauk,* No. 1, January 1978, pp. 3-11; translated in JPRS 72204, *Translations on USSR Economic Affairs,* No. 831, May 12, 1978, pp. 26-27.

[58] G. Smith, p. 119.

are dynamic organizations and are expected to [illegible]ize over time. This could cause problems if the various ministe[illegible] political participants involved in TPK construction and pr[illegible] do not exhibit sufficient flexibility and willingness to cooperate in managing regional complexes.

There have been several proposals for management arrangements of TPKs. The main one, supported by SOPS, Aganbegyan's institute, and the local party secretaries, advocates the planning and formation of TPKs as integrated projects, under the direction of a single project manager or the directors of the major enterpises within the TPK. It has even been proposed that each TPK should be planned and financed as a single line item in the national economic plan and budget [59] Another idea suggested by Nekrasov, would be the establishment of a TPK administration for the period of its development similar to what has been done at the VAZ (Volga Automotive Plant) or the KamAZ (Kama Truck Plant). In any case, Nekrasov claims, "there must be a working body which can carry out a centralized policy in the TPK, supervise the fulfillment of the plans and make certain sectorial disproportions do not develop and the the resources of a certain region are used harmoniously and evenly."[60] However, these proposals for a greater degree of local control over the TPKs' administration have not been supported by the central planners; in fact, Pervukhin, who headed Gosplan's Department of Territorial Planning and Siting of Productive Forces in the mid-1970s, was opposed:

> I don't think that we should create special agencies for the creation of the territorial-production complexes. We have branch management of the national economy. It would be wrong for the head of a construction project or an enterprise to receive directives from both his ministry and a territorial administrative agency. Those instructions might be contradictory. Nothing good would come of this. The elimination of disproportions and the synchronization of the construction of interrelated facilities must be achieved through the creation of designs for industrial centers (the job of the USSR State Construction Committee), the compilation of summary lists of authorized construction projects when

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[59] B.N. Annekov, "Finansovie aspekty formirovaniia i razvitiia territorial'no-proizvodstvennykh kompleksov," *Finansy SSSR,* September 1980, pp. 19-24; quoted from Kammerling, p. 256.

[60] Nekrasov, "How To Manage a Complex," p. 25.

> annual plans are drawn up (the job of the USSR State Planning Committee) and the strict fulfillment of these designs and plans by the ministries. Coordination at the local level should be handled by Party and Soviet agencies.[61]

It is clear that the TPK approach to regional development, introducing a horizontally organized economic structure within a firmly entrenched vertical economic decisionmaking bureaucracy, has not yet proven successful. Dienes points out that "the current emphasis on territorial-production complexes has done nothing to solve that old problem. Indeed, it may have made the issue more acute, for these entities serve to emphasize regional objectives without providing any mechanism for coordination between ministerial planning. By defining clearly defined foci for regional objectives, the complexes furnish a stage for interindustry and interagency conflicts..."[62]

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[61] Interview with Pervukhin in *Literaturnaia gazeta*, No. 7, February 18, 1976; abstracted in *Current Digest of the Soviet Press*, Vol. XXVIII, No. 16, May 19, 1976, pp. 3-4.

[62] Leslie Dienes and Theodore Shabad, *The Soviet Energy System*, John Wiley and Sons, New York, 1979, p. 277.

IV. BARRIERS TO DEVELOPMENT IN EAST SIBERIA AND THE SOVIET FAR EAST

The Soviets speak optimistically about prospects for Siberian and Far Eastern development, describing the regions' natural endowments and their potential contribution to the national Soviet economy in glowing terms. However, these grandiose predictions give a skewed image of these regions' resource wealth and actual state of development. To begin with, the natural resource wealth most often cited refers to potential, not exploited reserves. The distinction is important because many of these deposits are too remote to be exploited economically and there are no plans at present to begin developing many of them. In this section, we will be concerned with obstacles to development in the eastern regions arising from policy omission or commission: lack of a stable, well-trained labor force and minimum infrastructural base--housing, transportation, social facilities, processing plants and so forth--which in these harsh climatic conditions must be superior to what is required in the western regions.[1] The Soviets are also confronted with a growing energy shortage in East Siberia and the Far East (primarily due to poor planning), ecological costs of rapid development, and the difficulty of enlisting foreign help in developing regional resources.

LABOR FORCE AND HOUSING

According to the chairman of the RSFSR State Committee on Labor, despite the population increases in the past decade (see Appendix Table A.1), the eastern regions are still inadequately populated to achieve projected levels of economic development.[2] This is largely due to the high levels of outmigration, especially of technically skilled workers;

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[1] The cost of building infrastructure in Siberia runs as high as 17,000 to 20,000 rubles per person per year, according to Aganbegyan, "The Siberia Program."

[2] A.G. Sozykin, "Manpower for Siberia: Needs and Reserves," *Ekonomika i organizatsiia promyshlennogo proizvodstva*, No. 5, May 1980, pp. 3-7; abstracted in *Current Digest of the Soviet Press*, Vol. XXXII, No. 32, 1980, pp. 6-7.

from 1961-1973 Siberia lost more than a million people.[3] The rates of labor turnover in Siberia are still much higher than the average for the RSFSR.[4]

The success of Siberia's development programs depends to an overwhelming degree on the quality and quantity of the labor force. There are numerous complaints about the lack of qualified workers with expertise suited to Siberian conditions and the lack of institutes of higher education in Siberia to train new specialists.[5] Despite progress toward reversing the major exodus from east to west and continued emphasis by government officals on the need to maintain sufficient levels of incentives, and social services in these regions, outmigration persists. It is claimed that wages in these regions have grown at a more rapid rate than the national average, and additional wage supplements have recently been introduced,[6] but during each of the last three Five Year Plans, the level of supply of food and many consumer goods and services to the Siberian and Far Eastern population did not attain the all-Union or the republic average, and the dearth of consumer goods for sale in Siberia is openly and frequently criticized in the press.[7] The lag of consumer supply behind the growth of money incomes lowers the effectiveness of wage incentives, which also increases cash savings and expenditures by Siberians outside the region.[8] Although the slow growth of consumer goods and services is a problem characteristic of the Soviet economy as a whole, it is more pronounced in the case of

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[3] For the most recent data for East and West Siberia, see E. D. Malinin and A. K. Ushakov, *Naselenie Sibiri,* Moscow, "Statistika," 1976, p. 47.

[4] Sozykin, p. 7. Unfortunately, recent and detailed data are not available.

[5] N. A. Denisov, "Spetsialist dlia Sibiri: gde ego uchit'?" *Ekonomika i organizatsiia promyshlennogo proizvodstva,* No. 1, 1983, pp. 137-144.

[6] L. N. Shirokova, and L. L. Mosina, "Evaluating and Providing Incentives for Labor," *Ekonomika i organizatsiia promyshlennogo proizvodstva,* No. 2, 1982, pp. 105-116; abstracted in *Current Digest of the Soviet Press,* Vol. XXXIV, No. 23, July 7, 1982, pp. 20-21.

[7] For an example, see I. Evsikov, "A kontakta net," *Ekonomicheskaia gazeta,* No. 44, October 1982, p. 17.

[8] T. I. Zaslavskaia, V. A. Kalmyk, and L. A. Khakhulina, "Social Problems in the Development of Siberia," *The Soviet Review,* Vol. XXIV, No. 1, Spring 1983, p. 71. Real incomes are being depressed by shortages of consumer goods with tightly controlled prices and inflation in the black markets.

Siberia and the Far East because most consumer goods are produced outside the region; local light industry is still underdeveloped. Thus, increased demand from Siberian consumers for these goods puts additional strain on already overtaxed light industries in the western part of the country; the supply problems discourage further immigration to Siberia and the Far East.

Housing is the other major problem planners face in the East. Not only does the general availability of housing in the eastern regions lag behind that of the rest of the republic, but the quality of the housing is poor, falling below the standards set by the USSR State Committee for Civil Construction and Architecture. Only 30 percent of the planned housing is designed for climatic conditions in Siberia, a far cry from the 60 percent minimum called for by the planners in 1980. In 1980 the overall housing space per city dweller was 12.1 square meters in West Siberia and 11.5 square meters in East Siberia, both levels falling below the RSFSR average of 13.5 square meters.[9]

The availability of housing in Siberia varies greatly from region to region; in the Kemerovo region it is slightly higher than the national average, while in Tiumen' it is only 70 to 80 percent of the national average. Even though over a thousand new towns have been created in Siberia during the Soviet era, many simply represent conversions of existing towns or villages to city status.[10] The major reason cited for the lag in housing construction is the low level of industrialization of the local construction industry, which impedes the efficient use of investment to develop new and more sophisticated types of housing. Judging from the volume of articles by local Siberian and Far Eastern party chiefs and heads of enterprises criticizing ministries who underinvest in adequate lodging and from official pronouncements on the housing crisis, it is safe to assume that the shortage of housing is the number one reason for the continuing high rate of turnover in the labor force.

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[9] *Ibid.*, p. 74.

[10] J.H. Bater, "Planning Problems in Siberian New Towns," *The Bloomsbury Geographer*, Vol. 9, 1977, p. 55.

Also playing a large part, however, is the general lack of social and cultural amenities--insufficient medical care, preschool and day care facilities, and so forth. Acording to the calculations of the Central Economic Scientific Research Institute (a unit of the RSFSR State Planning Committee), medical care norms[11] in the eastern regions of the country must be increased by 30 to 40 percent to equal the level of medical services available in the European SSSR.[12] The relatively young population in the eastern regions (especially in those areas where large fuel extraction projects are under construction) plus its naturally higher birth rate requires preschool facilities per capita that are 1.5 to 2 times greater than in the western regions, yet the current plans are not being fulfilled and the current ratio of preschools to population in the eastern regions is lower than for the republic as a whole. Other disadvantages of living conditions in Siberia were highlighted by a team of Soviet researchers who noted that as a result of lower levels of social amenities and services, "Siberians have less free time than the populations of the central regions and the Baltic republics and there are greater disparities between the amount of time spent on housework between eastern and western regions."[13]

A survey of workers in the Tiumen' and Tomsk oblasts taken in 1968-1969 provides insights into the decisions made by new workers on what attracted them to migrate east and what made them decide subsequently to leave the region.[14] Although quite a few reasons were given for moving east, most attributed their decision to the promise of higher wages. Lack of sufficient housing, cultural and social amenities, and consumer goods were all listed more frequently than the severe weather conditions as motivation to leave the eastern regions.[15] Thus, while the promise of higher pay attracts some to Siberia, it does

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[11] According to Murray Feshbach, medical care norms are composed of a variety of ratios, including the doctor/patient ratio, supplies of hospital beds, sheets, food, and the number of medical specialists per person in a given region.

[12] Zaslavskaia et al., p. 73.

[13] *Ibid.*, p. 74.

[14] E. D. Malinin and A. K. Ushakov, pp. 93-107.

[15] *Ibid.*, pp. 95, 102.

not appear to be an effective mechanism for retaining a stable work force. More importantly, according to Powell, Siberia appears to be gradually losing its preferential status with respect to real wages; the rate of growth of wages in other areas of the RSFSR has been greater than in either Siberia or the Far East and real income levels within the Russian republic are not nearly as unequal as they used to be.[16] Clearly, more than nominal wage increases will be necessary to attract and retain an adequate labor force in Siberia and the Far East.

TRANSPORTATION

The great distances separating the western industrial core of the USSR from the Siberian and Far Eastern energy sources dictate the necessity of a well-developed and dependable transportation network, especially railroads. Yet a characteristic feature of most of Eastern Siberia and the Far East is the absence of year-round transportation. With the exception of the Ust-Ilimsk region in Irkutsk, where a railroad was constructed prior to the tapping of natural resources there, most Siberian and Far Eastern centers find themselves vitually isolated from a consistently reliable source of transportation. From the frequency and intensity of the criticism directed at the Ministry of Transport Construction, it is clear that the existing transportaion network is inadequate and that the approach to developing transportation in the area remains highly fragmented and inefficient, despite criticism and instructions to improve from the highest levels.[17] USSR Gosplan's Institute of Complex Transportation Problems estimated recently that the economy loses approximately 6.5 billion rubles per year in industrial production and more than 4 billion rubles per year in farm produce due to late deliveries and subsequent spoilage because of unmet demand for shipping facilities. Citing this estimate, a spokeman for the Transport Ministry singled out railroad transport in particular for falling especially short of planned rates of development.[18] Currently, the USSR

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[16] David E. Powell, "Siberian Manpower: Implications for Energy Development", Russian Research Center, Harvard University, Cambridge, Massachusetts, December 1979, pp. 41-42.

[17] See Brezhnev's speech in *Pravda,* April 7, 1978.

[18] A.A. Mitaishvili, "Development of the USSR's Transportation System," *Voprosy ekonomiki,* No. 3, March 1980, pp. 6-15; abstracted in *Current Digest of the Soviet Press,* Vol. XXXII, No. 15, 1980, pp. 7-8.

claims to produce over 21 percent of the world's industrial output but has less than 7 percent of the world's top-grade roads and railroads, substantially less than corresponding figures for West European countries.[19]

This lag in rates of growth of rail and truck transportation behind those of industrial development is occurring at an alarming rate in Siberia. The length of the rail network in Siberia amounts to only 10 percent of the total for the USSR but Siberia is involved in 17 percent of all freight shipments in the country.[21] Often singled out for criticism is the rail line from Tiumen' to Surgut in West Siberia, where the railroad's capacity is not keeping up with the level of fuel extraction. Recently the director of the Krasnoyarsk railroad sounded a cry of alarm at the worsening situation in the Kansk-Achinsk coal basin where surplus coal is waiting to be carried away.[22] An additional problem is that Siberia lacks repair facilities for locomotives. It appears that there is not one good regional base for such repairs in all of Siberia or the Far East, and the great majority of locomotives have to be shipped to the European USSR for repairs.[23]

It is well known that the Soviet railroad network as a whole is greatly overstrained. This is an especially pressing problem for Siberia (Table 8), since the region as a whole consumes more than it produces, with respect to all gross output, total industrial output, and the production of ferrous metallurgy, machine building, construction materials, food, and light industry. Particularly significant is that the development of the transport system is not keeping up with the rapid increase of freight imports into the region or with the total shipments

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[19] *Ibid.*, p. 7.

[20] Boris Rumer, "Current Problems in the Industrialization of Siberia," project report for the National Council for Soviet and East European Research, 1982, p. 84.

[21] *Ibid.*

[22] G. Fadaev, "V obe storoni-tupik," *Sotsialisticheskaia industriia,* February 22, 1983, and "Magistral' i predpriiatiia," *Ekonomicheskaia gazeta,* No. X, May 20, 1983, p. 19. Also see "A gory rastut," *Komsomol'skaia pravda,* February 24, 1982, p. 2.

[23] "Zdes' nachinaiut beg vagoni," *Pravda,* September 30, 1982.

of fuel freight from east to west, which doubled in volume between 1971-1975.[24] The railroads' inability to cope with the increasing volumes being shipped in either direction often causes idleness in plants in the European USSR, which depend on raw material imports from the East, and slowdowns in construction in the eastern regions, which rely on construction material imports from the western regions.

In his perceptive evaluation of problems of Siberian industrial development, Rumer points out some important characteristics of the transportation situation in the Soviet Union. The first is that the USSR cannot, to the same degree as Western countries, make large-scale use of ocean shipping, which is much cheaper than rail shipping, for transporting raw materials. The Soviet's Pacific and Arctic coastlines are often frozen over, limiting use of shipping facilities there. More important is the fact that the Soviets cannot avoid the extremely costly long haul shipping across land, because the primary use of the extracted materials is destined for the European SSSR and for export to Eastern and Western Europe. Despite the increasing role of pipeline transport, which has lifted some of the burden from the railroads, it is unlikely that pipelines can make up substantially for the lag in railroad transport.[25] (See Table 10.) The Director of the Russian Republic Ministry of Inland Shipping recently claimed that improving the utilization of water transport in East Siberia and the Far East would be three to five times cheaper than the development of railroads to deliver the same volume of freight,[26] but this has been resisted primarily because Siberia's severe climate makes it very difficult to depend on river transport on a year-round basis.

The Baikal-Amur Mainline (BAM), of course, is expected to alleviate some of the pressure from the overtaxed Transsiberian Railroad and provide additional transport capacity for East Siberia and the Soviet Far East. In the long run, the BAM will certainly prove to be an

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[24] Rumer, "Current Problems in the Industrialization of Siberia," pp. 82-84.

[25] *Ibid.*, p. 83.

[26] A. Markov, "Along the Transsiberian Railroad," *Pravda*, August 10, 1981, p. 2; abstracted in *Current Digest of the Soviet Press*, Vol. XXXII, No. 32, 1981, p. 8.

Table 10

UTILIZATION OF USSR AND SIBERIAN TRANSPORT NETWORKS

(Million ton-km per km of line)

Method of Transport	Siberia				USSR			
	1960	1965	1970	1975	1960	1965	1970	1975
Railroad	23.20	24.50	31.80	38.10	11.90	14.80	18.40	23.40
River	0.24	0.39	0.52	0.70	0.72	0.94	1.20	1.52
Automobile	0.64	0.69	0.63	0.72	0.36	0.38	0.43	0.54
Oil pipeline	27.30	6.30	14.67	26.75	2.96	5.20	7.53	11.76
Gas pipeline	--	--	11.80	7.60	0.54	1.49	1.87	2.92

SOURCE: *Sibir' v edinom narodnokhoziaistvennom komplekse,* p. 212.

indispensable link between the resources of East Siberia and the Far East with the Pacific basin countries. But currently the BAM is a drain on scarce Soviet investment funds, and benefits from the railroad may well be a long time in coming. The BAM has experienced numerous setbacks and delays, many of which have been caused by severe material supply problems.[27] In addition, the complicated geostructure is making tunneling very difficult. Arguably most important, however, is the severe lack of amenities for the BAM crews and their families; only one third of the projected living space has been built and less than one quarter of the schools and preschools. Most of the roads in the BAM zone are unimproved and are classified as temporary, permitting only very slow travel.

According to Mote's estimates, the BAM will only be fully linked by February 1985, yet as he points out, mere linkage does not mean the railroad will be fully operational. That will no happen until the end

[27] Of the latter, the insufficient supply of sleepers was the most serious; as of 1981, 2000 sleepers were required for every kilometer of BAM railway, yet by the end of that year, suppliers had failed to deliver 130,000 of them--enough for 65 km of new railroad. See Victor L. Mote, "Reflections on the BAM: Nine Years and Still Counting," *Soviet Geography: Review and Translation,* April 1983, p. 284.

of the 1980's. In the meantime, BAM construction is becoming more and more expensive; it is estimated that the capital investment required for infrastructure in the BAM zone exceeds the cost of BAM construction itself by 60 to 100 percent.[28] Moreover, the demand for raw materials underlying the BAM project now appears overstated. The BAM project was begun when prices of energy and raw materials were at record high levels on the world market. Subsequently, because of recession in many Western countries that caused a general shift away from coal and steel-consuming industries, as well as increased efforts to conserve energy, world prices for these resources have dropped. The only major project currently under way to extract raw materials in the BAM zone is the Neryungri coal mine, which is being built with a $450 million loan from the Japanese and will supply Japan with 5 million tons of coking coal annually starting in 1985.[29] Clearly, the Soviets are having to shoulder more of the financial burden for the BAM than they had originally intended and are taking a gamble on future foreign demand for East Siberian and Far Eastern resources.

Construction of the BAM implies much more than the construction of the railroad alone. The Soviets fully expect the BAM to unleash economic development in the BAM "zone of influence," which is not limited to the territory lining the railroad. It is defined by the deputy chairman of RSFSR Gosstroi and chief architect for the BAM as an area of 1.6 million square kilometers in East Siberia and the Far East.[30] To ease the managerial burden of this task, a new all-Union ministry was created in 1979--the USSR Ministry of Construction for the Far East and the Baikal area--to facilitate coordination between ministries involved in development of the BAM zone. However, very

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[28] V. S. Katargin and L. I. Yurkevich, "Territorial Production Complexes in the Middle Stretch of the BAM Zone," *Izvestiia Akademii nauk SSSR, seriia ekonomicheskaia,* September-October 1977, pp. 95-100; translated in JPRS 70394, *Translations on Economic Affairs,* No. 811, December 29, 1977, p. 66.

[29] Anthony Robinson, "A Dazzling Future, Perhaps," *Financial Times,* March 21, 1983.

[30] V. Butuzov, "Construction of Communities Along the BAM Route Surveyed," *Arkhitektura SSSR,* No. 1, 1979; translated in JPRS 75910, *USSR Report Transportation,* No. 13, June 19, 1980, p. 21.

little is known about the actual functions or organization of the new ministry; it appears unlikely that it will improve interministerial management of Siberian planning to any great extent or tangibly facilitate the logistics of Siberian and Far Eastern development. Most Western observers are pessimistic that an additional ministerial layer will substantially improve a situation already suffering from overbureaucratization.

Other proposals for improving the transport system in East Siberia are the construction of specialized rail lines to haul coal westward, double tracking the entire eastern section of the south Siberian Mainline, and increased construction of power transmission lines and pipelines. However, critics of Siberia's transportation system feel that the overstraining of the system has more to do with the huge distances and the increase in fuel shipments from east to west. The average length of railroad haul has increased from 861 km in 1970 to 894 km in 1975 and to 923 km in 1980, with further increases expected during the 1980s[31]. Once again, poor planning of industrial location is especially criticized for this state of affairs, yet the gap between local manufacturing and processing industries in Siberia and the Far East and the extractive industries in these regions continues to grow.[32]

Astonishingly, what little nonfuel industry Siberia and the Far East does have is geared in general toward producing goods for consumption outside the region. This is particularly true in the machine building industry: in the case of some plants, more than 90 percent of the output is shipped outside the region.[33] This adds to the transport burden. In addition, the nonfuel industrial facilities which are located in Siberia and the Far East (chemical, petrochemical, construction, and machine building in particular) were designed in the western areas of the country and are thus often ill-suited to Siberian conditions. One Soviet economist estimated that approximately 70

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[31] Theodore Shabad, "News Notes," *Soviet Geography: Review and Translation,* Vol. 23, No. 10, December 1982.

[32] Rumer, "Current Problems in the Industrialization of Siberia," p. 32. Also see V. Chichkanov, "V dal'nem regione," *Pravda,* November 20, 1983.

[33] Chernyi, p. 100.

percent of the Siberian construction projects he observed were designed by organizations outside the region, making it difficult if not impossible for them to keep in touch with the construction effort, to monitor the assembly and installation of the equipment, and to coordinate necessary design changes that take into consideration Siberia's severe climate and geography.[34] In addition, he observed that Siberia uses fewer prefabricated components and thus requires additional inputs of already scarce labor, which is both more expensive and time-consuming. Reorienting location policy so that Siberian and Far Eastern industry would produce equipment for use in local industries would involve considerable expenditures, but Siberian officials believe that the capital investments could be recovered in four to five years from the savings on transportation alone.[35]

THE EASTERN REGIONS' ENERGY SHORTAGE

The fuel and energy resources of Siberia and the Far East are, of course, intended for consumption outside the region, so much so that since the 1970s these regions have found themselves with an energy shortage. One cause is the lag in development of Siberia's Unified Power System: the immensity of the physical territory plus the weakly developed energy transmission network have contributed to the unreliability of the electric energy supply. However, the primary cause is the distorted structure of investment in Siberian power. This situation, according to Rumer, is the outgrowth of poor planning in the 1950s and 1960s when the vast majority of investment in Siberian power went to hydroelectric power, with extremely little going to thermoelectric power. How did this decision lead to the current energy shortage? Rumer explains:

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[34] V. Tumin, "Siberian Industrial Development Needs Time Reduction," *Planovoe khoziaistvo,* No. 10, 1982; translated in JPRS 83223, *USSR Report Economic Affairs,* No. 1048, April 7, 1983, p. 103.

[35] V. Chichkanov, "Call to Spur Economic Growth in Far East," *Pravda,* November 20, 1983; abstracted in *Current Digest of the Soviet Press,* Vol. XXXV, No. 47, December 21, 1983.

> In building the Krasnoyarsk hydroelectric station (with an annual capacity of six billion kilowatt-hours, the largest not only in the USSR but in the world), which was to provide practically the entire increase in Siberian power production in the 1980s, an inconsistency was permitted between parameters of the reservoir intended for the annual and seasonal regulation of water flow and turbine capacity. The station's power generating equipment could not provide an even output on both an annual and seasonal basis and still maintain a water throughput sufficient for intensive ship traffic on the Yenisei--an important meridianal transportation artery in Siberia. Therefore, the station works at half capacity throughout the year...which led to the development of a very serious situation with power in the Angara-Yenisei area where it is located. And this is one of the most important industrial regions in Siberia.[36]

Overinvestment in hydroelectric stations was coupled with underinvestment in thermal electric power plant capacity, where production is not dependent on natural conditions. Due to these capacity limitations, the thermal power plants cannot compensate for the shortfall of output of the hydroelectric stations during periods of low water flow. This situation has become so serious that it is undoubtedly now a major factor contributing to the reluctance of many ministries in charge of manufacturing and processing industries to locate their energy-intensive enterprises in the Siberian regions. The Siberian energy shortage is receiving attention in Moscow, as evidenced by the Council of Ministers' recent adoption of a resolution, "On Measures to Ensure the Development of Siberia's Electric Power Engineering in 1983-1985 and in the Period up to 1990," which calls for commissioning new energy-generating capacities and for the construction of new transmission lines.[37] However, the fundamental imbalance of hydroelectric versus thermal electric power generation has not been addressed. Solving the energy shortage problem in Siberia and the Far East will require time and serious restructuring of the overall energy system to increase the

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[36] Rumer, "Current Problems in the Industrialization of Siberia," p. 18.

[37] Petr Lidin, "Decision on Siberian Power Industry Viewed," Moscow TASS, in English, 1545 GMT, April 27, 1983; reported in *FBIS Daily Report Soviet Union,* April 28, 1983, p. S6.

share of thermal power production. It is planned to construct thermal power plants based on coal from the Kansk-Achinsk basin, and the success of that major undertaking will determine the nature of electric power development in Siberia as a whole.

ECOLOGICAL COSTS OF SIBERIAN AND FAR EASTERN DEVELOPMENT

The extraction of Siberian resources at such a rapid pace and on such a huge scale has provoked heightened concern for ecological problems in the eastern regions. The Soviet press is full of articles decrying the lack of attention paid to preserving the natural environment and criticizing the attitude that the eastern regions' virtual warehouse of natural reserves can be exploited without taking the ecological costs of extraction into account. One Western analyst recently estimated that in the tundra and forest tundra zones of western Siberia, "approximately 95-105 thousand square kms., or 13-14 percent of their territory, have been irreversibly destroyed to date as a result of erosion or oil pollution."[38] On a recent visit to the Siberian gas fields, an American gas industry executive pointed out that by buliding extensively on top of the permafrost, the Soviets might be doing major damage to their geological structures.[39]

At a recent round table discussion between Siberian scientists and writers from *Novy mir,* critics particularly zeroed in on the huge ecological damage incurred by the hydroelectric stations in East Siberia, which are flooding millions of cubic meters of timber and vast areas of fertile land. The Krasnoyarsk hydroelectric station has had "utterly unpredictable effects on the ecological situation," claimed one critic who explained that the station has "made it more difficult to combat river pollution by substantially reducing the amount of heat the Yenisei discharges into the Arctic Ocean."[40] He went on to call for an

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[38] Zeev Wolfson, "The Environmental Risk of the Developing Oil and Gas Industry in Western Siberia," The Soviet and East European Research Centre, The Hebrew University of Jerusalem, Research Paper No. 52, October 1983, p. 17.

[39] Albert Axebank, "American Executive Sees Potential for U.S.-Soviet Gas Ties," *Journal of Commerce,* August 12, 1983, pp. 1A, 5A.

[40] "Siberia's Ecological Problems Discussed," *Ekonomika i organizatsiia promyshlennogo proizvodvsta,* No. 3, March 1982; abstracted in *Current Digest of the Soviet Press,* Vol. XXXIV, No. 23, July 7, 1982, p. 2.

increase in capital investments in the region for reforestation in the eastern regions. The open cut method of strip mining, the method used in almost all of Siberia's coal mines, was also criticized for disturbing the soil layer and lowering the groundwater level in surrounding areas, thus damaging agriculture. Other critics complained more generally that "the problem is that we set economic tasks and then go about accomplishing them at any price. As a result, we are incurring a mounting debt to nature--a debt that will eventually have to be repaid... Sometimes we regard development solely in terms of industrial measures and scientific and technical progress, forgetting entirely about the people of future decades for whose sake all this development is supposedly taking place."[41]

FOREIGN PARTICIPATION IN SIBERIAN AND SOVIET FAR EASTERN DEVELOPMENT

One of the most important issues in the discussion of developing East Siberia and especially the Soviet Far East is the desirability, if not the necessity, of enlisting the participation of the main capitalist trading partners, the United States and Japan, in the area. Soviet economists have argued that in view of the huge overland distances separating the Soviet Far East from the economic core of the USSR, the Far Eastern economy needs to be increasingly oriented toward the Pacific basin and rely more heavily on maritime exports and imports rather than on the expensive overland crosshauls across Siberia. Foreign trade must be allowed to play a major role in the development of this region, especially since its immediate neighbor, East Siberia, is also a developing region requiring major capital investment for industrialization. A Moscow University observer develops an argument in favor of a more autonomous strategy for developing the Soviet Far East that has many common features with the reasoning put forth in the 1920s toward the same goal:

> In the long run, we may have to revise the traditional concept that industrialization in the Soviet Union necessarily advances from west to east. In particular, there may be grounds for questioning the view that that Eastern Siberia will serve as a base of operations for the eastward advance of

[41] *Ibid.*, pp. 2-4.

> industrialization. Both on economic and geographic grounds, there is a vast difference between that notion and the concept of Western Siberia's serving as a jumping-off point for industrial development of Eastern Siberia. A more reasonable point of view is to look to the opening up of the Siberian interior not only from the European side, but from both sides of the country, thus giving play to the impact of the deve' pment of the Soviet Pacific coast. Such an approach would fit in with the need of maneuvering foreign trade operations on both the western and eastern frontages of the Soviet Union so that the nation's vast territory, by its involvement in world economic relations, would assume far greater economic 'mobility' and begin to play a more influential role in the world economy.[42]

The relaxation of political tension between east and west combined with the oil crisis of the early 1970s permitted the Soviets to be openly hopeful about prospects for attracting foreign investment to help develop Siberia and the Far East. In a 1974 speech to the U.S. Chamber of Commerce, Evgenii Shershnev, deputy director of the Institute of U.S. Studies, USSR Academy of Sciences, announced a policy of expanded economic ties with Capitalist nations which was then spelled out in the 10th Five Year Plan: to participate more actively in the "international division of labor" in order to resolve national economic problems and to encourage advances in scientific and technical knowledge. He revealed that as early as the mid-1960s, Soviet economists had begun to study the possibility of specializing the entire Soviet Far East for production of goods for export, given the region's general unsuitability for integration with the western areas of the country. This is the first time, he claimed, in the Soviet Union's economic history "that the prospects of one of the country's entire regions has been considered from the point of view of opportunities for its orientation on exports."[43] He went on to to say that interested Pacific Basin

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[42] I.M. Mayergoyz, "The Unique Economic-Geographic Situation of the Soviet Far East and Some of the Problems of Using It Over the Long Term," *Soviet Geography: Review and Translation,* Vol. XV, No. 7, September 1975, p. 434.

[43] Evgenii Shershnev, "Siberia's Economic Development and the Prospects for Soviet-American Economic Ties," Moscow, November 21, 1974, p. 13.

countries should be encouraged to help develop the Soviet Far East's resources by supplying credits and modern equipment in exchange for raw materials and fuels. In a 1977 article, Boris N. Slavinsky (head of the Soviet Foreign Policy and Far Eastern Foreign Relations Division, Institute of History, Far East Science Center, in Vladivostok) placed particular emphasis on Japan and the United States as partners in developing the resources of the Soviet Far East and Siberia, regions which "will become increasingly active participants in the mutually profitable international trade and economic cooperation in the Pacific region."[44]

Japan in particular is seen as the natural trade partner because of its proximity to the Soviet Far East, its dependency on imported natural resources, and the caliber of its technological exports, which the Soviets desperately seek. From the Japanese perspective, there are both incentives and disincentives to engage in codeveloping Siberian energy sources with the Soviets. Although Japan's political and security orientation is toward the West, the Japanese are interested in making codeveloped energy projects a sign to the Soviet Union of their commitment to maintaining peaceful relations in Asia. Japan is also interested in diversifying its energy sources in order to reduce its dependance on Middle East oil, and its leaders have traditionally looked to the Soviet Union as a provider of these resources. Indeed, Japan is the single most important market for Soviet coal and timber and is an important potential consumer of natural gas from East Siberia.[45] Thus, it is evident that Japan's official position on energy imports is an extremly important factor in the Soviets' planning of the development of the eastern regions, particularly the Soviet Far East.

Japan's dependance on imported energy is well known. Yet despite this dependance, Japanese energy imports from the Soviet Union have been small, in both value terms and as a percentage of total energy supplies; in recent years, the value of all Soviet energy exports to Japan has not

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[44] Boris N. Slavinsky, "Siberia and the Soviet Far East Within the Framework of International Trade and Economic Relations," *Asian Survey*, Vol. XVII, No. 4, April 1977, p. 329.

[45] "Japanese-Soviet Energy Relations," *Technology and Soviet Energy Availability*, Office of Technology Assessment, Congress of the United States, November 1981, Chapter 11.

exceeded $300 million annually, which amounts to less than one percent of all Japan's imports.[46] However, Japan's purchases of Soviet coal, timber, lignite, and other minerals are important to the USSR; the Japanese are more important to the Soviets as a customer than the Soviets are to the Japanese as an energy supplier. Perhaps even more significant, between 1975-1979, Japan supplied almost 30 percent of all Western energy-related exports to the Soviet Union and 45 percent of Japan's total exports to the Soviet Union during 1979 were of energy-related equipment. During this same period, Japan ranked first among Western nations in the dollar value of energy equipment and technology trade with the Soviet Union.[47]

The Soviets and the Japanese have been collaborating in codevelopment projects in Siberia since the early 1960s. In 1966, the Soviet-Japanese Economic Committee was formed to coordinate the two nations' cooperative efforts.[48] The idea was for Japan to provide machinery and other material to be repaid by a portion of the extracted output. Seven projects were proposed,[49] including the South Yakutia Coal Project (general agreement signed in June 1974), the Yakutian Natural Gas Project (general agreement signed in December 1974), and the Sakhalin Continental Shelf Oil and Natural Gas Exploration and Development Project (general agreement signed January 1975). With the exception of the Sakhalin coventure, however, the grandiose projects for codevelopment of Siberian resources have not gotten off the ground. There are several reasons for this, not the least of which are the difficulties encountered in working with a cumbersome Soviet bureaucracy in a geographically inhospitable environment. Also complicating Japanese-Soviet business relations has been the failure to come to an agreement over the Northern Islands territorial dispute and Japan's priority relations with China. With the worsening of international

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[46] *Ibid.*, pp. 326-327.

[47] *Ibid.*, p. 330.

[48] Richard Edmonds, "Siberian Resource Development and the Japanese Economy: The Japanese Perspective," project on Soviet Natural Resources in the World Economy for the Association of American Geographers, No. 12, August 1979, p. 7.

[49] *Ibid.*, pp. 8-11.

tensions, particularly after the Soviet invasi n of Afghanistan, the Japanese have been under increasing U.S. pressure to curtail Soviet-Japanese commerce and have responded by restricting export credits, boycotting the 1980 Moscow Olympic Games, and suspending ministerial meetings with the Soviets. (Japanese businessmen claim to have lost ten contracts for factory sales worth more than $100 million each, with a very important gas pipeline contract worth $1.7 billion going to the West Germans).[50] Japanese trade sanctions announced after the coup d'etat in Poland reflected a somewhat softened stance and a renewed interest in preserving its interests in Siberia.[51] However, since the first Japanese-Soviet talks on developing Siberian resources, the structure of Japanese industry appears to be changing. In the past decade, Japanese industry has been moving away from heavy energy and raw materials-consuming industries in favor of electronics and high-technology sectors. According to one analyst, this reorientation is becoming characteristic of many industrialized countries and is "part of a global process which has conspired to make the high cost development of Siberian resources look much less urgent and much less attractive."[52]

Today, the outlook for increased Soviet-Japanese resource trade is not optimistic. With the exception of liquified natural gas (which, if all goes according to plan, will only provide Japan with 7.5 million tons in 1995--less than 15 percent of projected Japanese gas imports for that year or about one percent of Japan's total energy supply),[53] no one predicts any major increase in Japanese resource trade with the eastern USSR by 1990. Interestingly, reports Edmonds, Japanese academicians do not contribute much to the study of Siberian and Far Eastern resource trade and have had very little effect on Japanese policy. "In Japan, there is only one Slavic Studies Center at Hokkaido University with a

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[50] Sung-beh Chung, "La Participation Japonaise au Developpement des Ressources Siberiennes," *Le Courier des Pays de L'Est*, La Documentation Francaise, Paris, No. 262, May 1982, p. 42.

[51] For a good summary of joint Soviet-Japanese ventures, see Chung, pp. 43-46.

[52] Anthony Robinson, "Siberian Coal Project Hostage to Japanese Industrial Change."

[53] "Japanese-Soviet Energy Relations," p. 340.

staff of six...the number of Japanese academicians working on Soviet-Japanese economic relations probably does not number more than a dozen. Most of the academic work has been based on Soviet and American statistics and research."[54] According to Edmonds, the Japanese are currently more optimistic and enthusiastic about furthering trade with the Chinese than they are with the the Soviets.

At one time, the United States also displayed interest in participating in Siberian and Far Eastern development projects. In a 1974 speech entitled "The Siberian Frontier," Lewis W. Bowden, at that time Deputy Assistant Secretary of Commerce, declared "that the U.S. government encourages American businessmen to explore this involvment [in Siberian development] in every way."[55] Of particular interest to American businessmen was the gas exploration in the Yakutia region. A protocol of intent was signed between between El Paso and the Ministry of Foreign Trade in June 1973 which provided that when adequate gas was found in the Yakutia region, El Paso would ship it in liquified form to the United States; the Soviets would purchase exploration equipment with Western credits repayable from liquified natural gas revenues. In December 1974, the general agreement on exploration was signed which defined the terms of the exploration project more concretely: sales to the USSR of $50 million of exploration equipment, half from the United States and half from Japan, with financing split equally between the Japanese, Eximbank, and Bank of America. However, the Jackson-Vanik and Stevenson amendments limited the level of Eximbank credits available for trade with the Soviets in general and energy investments in particular and thereby put an end to any realistic hopes of pursuing long-term codevelopment schemes in Siberia and the Far East. American oil and gas executives contintue to make informal visits to Siberia, and explorations of reserves have been carried out and financed by El Paso Natural Gas and Occidental Petroleum, but very little, if any, cooperation is projected for the immediate future.

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[54] Edmonds, p. 39.

[55] Speech by Lewis W. Bowden, delivered in Los Angeles, November 21, 1974.

V. FUTURE DIRECTIONS OF SIBERIAN AND FAR EASTERN DEVELOPMENT

Soviet and East European economic growth for the rest of this decade and most likely until the end of this century will depend increasingly on fuel and energy sources from East and West Siberia and the Soviet Far East. The Soviet leaders have made it clear that they welcome foreign participation in opening up the regions' natural wealth, but they have also made it clear that they will pursue development there regardless. Whether or not development of the eastern regions will finally provide a net benefit or impose great costs on the Soviet economy as a whole will depend to a great extent on the pace of development pursued in the eastern regions and the success of the planners in overcoming the enormous obstacles inherent in such an ambitious undertaking.

Looking back on the approach to Siberian development proposed by the earliest plans, which aimed to provide the industries west of the Urals with fuel and raw materials, it is evident that very little has changed; the emphasis continues to be on the extraction of natural resources at the expense of other development in the region. Despite the desire to foster more balanced economic growth within Siberia and more equitable growth between the eastern and western regions, there is strong evidence to suggest that a classic "colonial" relationship between the European USSR and the eastern regions has become the permanent basis of Soviet plans for future economic development east of the Urals.[1] Despite severe weather conditions, lack of sufficient population and transportation links with the western regions, and a generally underdeveloped infrastructure, the Soviets have proceeded with large-scale energy extraction projects in the hopes that these would in turn induce a greater degree of overall economic development in the eastern regions, but this has not happened.[2] This suggests that despite apparent official enthusiasm for permanently developing Siberia and the

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[1] Jensen, 1978, p. 198.

[2] Dienes, "Investment Priorities in Soviet Regions," p. 446.

Far East, the Soviets have not reordered national economic priorities to achieve these goals.

A recent article by a Soviet economist speculated on three alternatives for Siberian economic development in the 1980s.[3] The first "scenario" sees contintued concentration of Siberian industry on extraction of energy for the western regions with little growth in Siberia's processing industries. This, he says, "would be the least efficient way to develop Siberia's productive forces." His second scenario proposes the location in Siberia of energy-intensive industries (such as chemical, petrochemical, wood/pulp/paper, and microbiological production) which would raise production efficency by using the region's raw materials on site and by substantially reducing transport costs. The third scenario envisages a more completely balanced picture of Siberian development, with the eastern regions producing a greater proportion of finished manufactured goods. He predicts that future Siberian development will initially tend towards the first scenario rather than the second, which will be followed eventually by a reduction in the region's specialization and a rise in favorable conditions for the second scenario.[4]

Clearly, realization of Orlov's third scenario would require not only tremendous reallocation of financial and material resources, but would also demand considerable far-sightedness on the part of the Soviet political and economic decisionmaking elite. Given the general investment constraint the Soviet economy is now facing, combined with the Soviet leadership's resistance to reform and change, it is unlikely that we will see a major shift and restructuring of investment for regions east of the Urals that a balanced general economic development would require.

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[3] Orlov, "Razvitie ekonomiki Sibiri na otdel'nikh etapakh sotsialisticheskogo stroitel'stva." Although Orlov specifically discusses prospects for "Siberian" development, his article clearly includes the Far East in his projections as well.

[4] *Ibid.*, p. 70.

APPENDIX

Table A.1

POPULATION OF SIBERIAN ADMINISTRATIVE DIVISIONS (1939-1982)

(Thousands)

	1939 census	1959 census	1970 census	1977	1982
West Siberia	8,928	11,251	12,109	14,264	14,879.4
Tyumen' Oblast proper	850	906	1,055	2,031	2,155
Khanty-Mansi National Okrug	93	124	271	672	523.1
Yamal-Nenets National Okrug	48	62	80	193	750.3
Omsk Oblast	1,390	1,645	1,824	1,973	1,984
Novosibirsk Oblast	1,861	2,299	2,505	2,657	2,676
Altay Krai proper	2,225	2,525	2,502	2,687	2,698
Gorno-Altay Autonomous Oblast	162	157	168	174	175
Kemerovo Oblast	1,654	2,786	2,918	2,990	3.014
Tomsk Oblast	643	747	786	887	904
East Siberia	4,771	6,473	7,463	8,910	9.033
Krasnoyarsk Krai proper	1,659	2,160	2,465	3,265	3,304
Khakass Autonomous Oblast	275	411	446	508	516
Taymyr National Okrug	15	33	38	48	49
Evenki National Okrug	10	11	13	17	17
Tuva ASSR [a]	-	172	231	269	273
Irkutsk Oblast	1,303	1,976	2,313	2,616	2,645
Buryat ASSR	546	673	812	929	950
Chita Oblast	963	1,037	1,145	1,258	1,279
Far East		4,834	5.781	7,157	7,350
Amur Oblast	634	717	793	969	990
Yakut ASSR	414	487	664	883	916
Khabarovsk Krai	657	1.142	1,346	1,610	1,636
Maritime Krai	888	1,381	1,721	2,013	2,046
Sakhalin Oblast	100	649	616	669	676
Kamchatka Oblast proper	86	193	257	392	406
Koryak National Okrug	23	28	31	35	37
Magadan Oblast proper	151	189	251	490	500
Chukchi National Okrug	22	47	101	139	143

SOURCE: *Narodnoe khoziaistvo SSSR*, various years.

[a] Tuva was not in USSR in 1939; Sakhalin included only the northern part in 1939.

Table A.2

SIBERIA'S CONTRIBUTION TO THE SOVIET ECONOMY

(Percent of national output)

	1940	1950	1960	1970	1973	1975
Energy Resources						
Coal	23	27	28	32	33	34
Coking coal	17	29	26	29	30	31
Oil	1.6	1.6	1.1	9.6	21	31
Natural gas	-	1.5	0.7	5.0	8.5	14
Electric power						
Capacity	7.2	12	15	20	19	
Output	6.6	11	15	18	18	
Hydro output	4.4	3.6	10	36		
Iron and Steel						
Iron ore	1.6	5.5	5.7	6.5	6.9	6.4
Pig iron	10	10	7.1	8.5	9.5	9
Crude steel	10	13	8.4	8.1	8.3	9
Rolled steel	9.1	15	10	8.9	10	
Chemicals						
Sulfuric acid	1.1	1.7	3.8	5.9	5.2	
Soda ash	2.5	8.2	3.1	1.2	7.2	
Caustic soda	-	8.9	9.1	10	12	
Fertilizer	6.8	6.7	4.4	5.0	4.0	
Man-made fibers	-	-	16	13	11	
Machinery						
Machine tools	1.4	5.2	4.3	2.3	2.6	
Metallurgical equipment	-	7.2	4.8	5.2		
Tractors	19	9.5	8.8	7.3	7.4	
Tractor-drawn plows	-	22	43	37	38	
Tractor-drawn drills	-	31	18	26	14	
Grain harvesters		5.0	15	18	27	
Wood Products						
Roundwood	23	23	26	33	34	
Sawnwood	23	19	23	26	27	
Pulp	-	4.3	9.3	20	22	
Paper	0.1	5.2	7.3	8.9	7.0	
Paperboard	0.5	4.3	8.0	16	18	
Building Materials						
Cement	8.8	13	13	12	12	

Table A.2--continued

Textile and Leather Products					
Cotton fabrics	0.8	2.0	2.0	3.6	3.2
Wool fabrics	0.5	1.1	1.1	0.8	3.3
Man-made fiber fabrics	-	-	2.8	3.7	4.1
Linen fabrics	1.7	1.1	0.8	0.6	0.7
Leather shoes	3.1	5.1	5.2	5.2	4.7
Consumer Durables					
Radios	-	13	19	24	20
Refrigerators	-	-	-	18	15
Washing machines	-	-	13	13	15
Food Products					
Meat	13	12	11	9.1	10.1
Butter	23	17	13	12	12
Population	8.9		10.8	10.5	10.5

SOURCE: Shabad and Mote, p. 54.

NOTE: Official statistical tables listing the Siberian share of selected commodities appeared regularly in Soviet statistical yearbooks until 1973; these regional breakdown tables have since been omitted.

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