

REGIONAL REVIEWS OF RESOURCE DEVELOPMENT  
IN THE CIRCUMPOLAR NORTH

Soviet Northern Development

Victor Fischer  
Institute of Social and Economic Research  
University of Alaska, Fairbanks, AK 99701

In approaching a discussion of Soviet northern development, one sometimes finds it very difficult to distinguish between truth and heresy. It all depends on whom you listen to and on what your particular perspective is. I am here in the unfortunate position, unlike the other speakers, of speaking on a country, a region, other than my own; I'd much rather be talking about Alaska. However, like my own region, the Soviet north is made up of many superlatives. For one thing, this portion of the Soviet Union, according to various definitions, constitutes about half of the entire USSR. The Soviet north is larger than all of the United States, including Alaska. It is larger than Canada and seven times the size of Alaska. This vast region stretches 4,500 miles (7,200 km), if you measure along the Arctic Circle, from the Finnish border to the Bering Straits. The population of the Soviet north is twenty times that of Alaska. Its largest city above the Arctic Circle, Murmansk, has a population roughly equal to all of Alaska. Norilsk, one of the northernmost cities in Siberia, contains almost as many people as Anchorage, Alaska, which is much farther south. I could continue heaping these kinds of statistics and superlatives upon you, but my purpose here is to attempt to put Soviet northern development in perspective, to look briefly at the historic, economic, and to some extent political aspects of Soviet northern development.

One must immediately recognize that the development of the Soviet north has taken place over a much longer period of time than that in the American north. The Russians reached the White Sea portion of the European north by the eleventh century, they had crossed the Urals by the fifteenth century, and by the middle of the seventeenth century they had reached the Pacific. From there, of course, they floated across to Alaska. The expansion and conquest of new territories in those days occurred as much or more for trade as for the causes of empire. Yet the cause of empire was in those days a very important thing. All nations that could were building empires and the Russians, rather than going for overseas empires, simply started filling up their own land mass. In Russia's European north, timber, fisheries, and some mining prospered under prerevolutionary capitalism. In Siberia, motivation for exploration and colonization was primarily furs, then timber and gold. Even agriculture was developed to some extent as early as the 1880's, when overpopulation in European

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parts of Russia pushed some of the peasants into Siberia. But the limitations of distance and the lack of transportation never gave it a chance to succeed. The Pacific fisheries off the Russian coast were controlled primarily by Americans in the mid-nineteenth century, and after them by the Japanese. Throughout this capitalist period, the Russian government was constantly concerned about foreign intrusions onto its land and foreigners taking its resources. To prevent these intrusions and trespasses the Russian government attempted to consolidate its control over these far distant lands, first through a settlement policy and then, in the 1890's, through the construction of railroads into the European north and the trans-Siberian railroad all the way to the Pacific coast. Capitalist Russia, however, did not have the means or, probably, the will power to undertake an effective program of northern resources development. In fact, there was not even very much exploration. All this changed, of course, after the great October revolution of November 1917. Under the personal guidance of Vladimir Il'ich Lenin, the founder and first leader of the Soviet state, a major thrust toward northern development was commenced. Initial efforts were impeded by the civil war that followed the revolution and by the imperialist intervention and occupation of part of European Russia and Siberia. However, active exploration and development of northern resources did begin in 1918 and have continued unabated. Around that time the Soviets established a "Special Commission for the Study and Practical Utilization of the Russian North" (something we've never had in Alaska) and a variety of other organizations, both for scientific and commercial exploitation of northern resources. Many of the top Soviet scientists were drawn into this northern exploration effort in the 1920's, including the President of the Soviet Academy of Sciences and other top men in such fields as geology, oceanography, and fisheries. Under Lenin's order, a Fisheries and Marine Science Institute was established in Murmansk that is still one of the mainstays of Soviet knowledge of the Arctic Ocean. This intensive effort had a very rapid payoff. Timber and fisheries development helped meet some of the current needs and provided resources for export. As early as 1921, copper and nickel ore deposits were discovered near Norilsk. Graphite was discovered at Nizhnaya Tunguska. Large gold deposits were discovered in the Aldan region in 1923. A major effort was made then to expand Arctic Ocean transportation and river transport to facilitate northern development. And so it went during the early and middle part of the 1920's.

In 1928, when communist Russia reached the prewar production level (a goal they had been trying to achieve since World War I and the chaos and destruction of the Civil War), a major new thrust was started for massive industrialization of the entire country. This included a major emphasis on development of eastern and northern resources, which were then deemed to have vast potential. Still, very little knowledge of these resources was available, despite

the initial exploration. Soon afterwards, however, a tremendous investment of Russian capital and effort transformed the Urals into Russia's leading processing and production center for steel and other metals. Mining of coal and other minerals started in other parts of Siberia. Extensive exploration of frontier areas ensued. Because of its proximity, the European north saw the initial thrust of industrialization in the north. The emphasis there was primarily on such things as timber and paper, oil and gas, minerals and fertilizer, agriculture, and fisheries. (Some of us visited Murmansk in late 1975 and were tremendously impressed by the sight: an arctic port (Murmansk, because of the Gulf Stream, is ice free) filled with one fishing fleet after another, as well as with processing plants for fisheries. If you took all the commercial facilities in Alaska and put them into one port, they would still be dwarfed by Murmansk.

In Siberia, development also started seriously after 1928. The northern sea route was formally organized and, year by year, progress was made towards establishing a basic transportation system. The rivers form the basic life lines in Siberia. Flowing north-south, they provide a perfect link to the ocean transport with the Yenisei River being navigable by ocean going vessels. More roads and railroads were built. Further mineral discoveries created a continuing story of gold, tin, minerals, oil, and gas. Siberian oil and gas in those years were too remote to be transported with existing technology, and the 20's and 30's saw no oil and gas development in Siberia except on the northern Sakhalin Islands, where oil was used primarily for Pacific fleet purposes.

One might stop at this point and ask what was behind Russia's emphasis on northern development at a time when America was doing so little in its northern possession. The most obvious reason is that the Russian north contained the major portion of Russia's resources. Second, those in power felt the need for self-sufficiency in raw materials. Unlike capitalist countries that were able to buy (or, as my Russian friends say, steal) raw materials from their colonies and underdeveloped nations, the Russians had no access to markets. This was because they lacked both the political proximity and the hard currencies for purchase. And, because of defense considerations, they deemed resource self-sufficiency as critical.

A further reason for development of Siberia was the general goal of development and industrialization, which the Soviets viewed as the only means of making Russia a first rate power. As early as the 1930's their slogan, as well as their economic development goal, was catch up to and overtake the United States.

I might add that the experiences of World War II tended to justify Russia's desire for self-sufficiency. When much of the European portion of Russia was overrun by the Germans and some of the north-

ern parts were under siege, the Russians moved many of their factories into Siberia. That trend has continued.

The drive for industrialization and conquest of the north, of the late 1920's, 1930's, and 1940's, took place under Joseph Vassaryonovich Stalin, the great Russian ruler whose name is no longer mentioned in the Soviet Union. (You can spend weeks in Russia and never see or hear his name.) He allocated tremendous capital resources and manpower to the goal of northern development. Investment and development decisions generally had little to do with economics. It was primarily a matter of need and the determination to get things done. Stalin, building on a tradition practiced by the Tzars, devised a scheme for having free labor available by the millions to build canals and railroads, work the mines, and otherwise provide slave labor in the arctic. Anyone who has read Alexander Solzhenitzen's description of those years in the Gulag camps is aware both of the horrendous suffering and waste of manpower, and of the tremendous inefficiency of that effort. Today the slave labor camps are gone; the Soviet north thrives without them. Many argue they are better off now and are getting more for their money and development effort.

Natural Resources. The Soviet press and other publications are constantly reporting new discoveries of natural resources, new pipelines, new railroads, new roads, new hydro projects, and new and expanded communities. They are replete with stories about man conquering the north for the glory and economy of the nation. It's impossible here to inventory the resources of the Soviet north or comprehensively discuss its development. Rather, I'll try to give just a feel for the situation there and discuss some of the more important developmental issues and problems.

As in Alaska, oil and gas is the big thing in Russia today. The west Siberian fields are said to have a potential substantially exceeding that of Saudi Arabia's petroleum resources. Exploration and development have been proceeding northward from Chu-ming, which is just above the trans-Siberian railroad. Massive fields were developed in the Surgut area of the central part of western Siberia. In more recent times, additional discoveries have been made and are being made in the northern part of western Siberia, in the arctic and subarctic. In addition to shipping oil and gas to other parts of the USSR and exporting it, the Soviets are developing a massive petrochemical industry within the western Siberian lowlands, close both to the transportation system (connecting it to European Russia) and to the fields themselves. Major gas finds have also been made in Yakutia. Some of this gas is being used locally while some is planned for export to Japan. There have been discussions, as probably many of you know, about possible shipment of natural gas from that region to the United States. Additional large reserves are suspected in the northern part of Yakutia but exploration hasn't reached that

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area yet. Similar potential reserves are believed to exist in the region between the Lena and the Yenisei to the west. Some findings have been made and more reserves are suspected in Chukotka, inland as well as offshore.

The Soviet north also contains massive coal deposits, estimated to amount to over half of the coal resources of the Soviet Union. Again, these are being used primarily for local production, but there are also plans for exporting major amounts to Japan and possibly other countries. The Amur-Baikal Magistral (as I'll discuss later) is designed in part to help ship some of these resources to the Pacific.

The north also contains the bulk of Russia's nonferrous and noble metals, rare elements, and valuable minerals. These include such metals and minerals as nickel, titanium, gold, tin, lead, zinc, copper, bauxite, diamonds, apatite, and mica, all very important to modern industry. Siberia also has massive resources of iron and other metals. These exist in profusion but simply cannot be economically produced at this time since there are sufficient reserves in more accessible parts of the country.

Continuing with our quick resource inventory: 50% of the Soviet Union's commercial timber grows in the north. Any of you who have been to Russia have seen the taiga, the subarctic evergreen forest, that seems to stretch on forever as you fly over or traverse the country on the trans-Siberian railroad. A couple of years ago I traveled on the trans-Siberian railroad from Novosibirsk to Irkutsk. I was impressed by the number of trains passing from the opposite direction and I started timing them, recording the time that each oncoming train passed. Over a span of many hours, these trains averaged one every four minutes (sometimes they ran two minutes, sometimes a little longer). About half of those trains were loaded either with logs or sawed timber. It was quite an impressive experience after having ridden the small, leisurely Alaska Railroad for over 25 years.

Agriculture. There are tremendous expanses of land potentially suitable for crop production but, despite the great stories one hears out of Russia, very little of it is being utilized. They do have experimental farms, however, and are emphasizing production of vegetables for local consumption. Most communities have greenhouses as well as outdoor gardens, but they produce no major crops. This is primarily a matter of economics. The cost of production in the Soviet north is about two or three times the cost of production in other parts of the Soviet Union. On the other hand, stock breeding is extremely important. There are about one million head of cattle in the Soviet north, half in European Russia and half in Siberia, mostly in Yakutia.

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Horse breeding is also very widespread in Yakutia, both for food and for work. The Yakut horse is a fascinating creature. It is self-sufficient in the north; it can survive off the land for 12 months in the year, browsing under the snow. As some here know, I've been carrying on a campaign to make sure the next time the Russians want some of our musk-ox that in return we get some Yakut horses for breeding in Alaska, instead of pole cats for the Washington Zoo.

As probably all of you know, there are massive reindeer herds in the Soviet Union. They have something like two and one-half million deer, which are used for food, work, and transportation. In addition, fur farming is very widespread; Russians receive a lot of hard currency from the sale of furs. They breed such animals as mink, sable, and various types of fox on a large scale, as well as carrying on extensive trapping and hunting.

Industry. Industrial development in the north amounts to about 3% of total industrial production in the Soviet Union. Even though that is an insignificant figure, it does include a number of industrial items of critical importance to the national economy. Among these is almost the total production of diamonds in the USSR; a large proportion of gold, tungsten, tin, mica, and other minerals; and more than one-third of all timber. One-third of the fish catch is landed in the north and one-fifth of paper production takes place in the north, mostly in the European part. The north, by the way, supplies a large share of Soviet export commodities and some have referred to it as the "foreign currency mint" of the USSR.

Transportation. We switch now into another area that's important to northern development, transportation. Karl Marx (who, in contrast to Joseph Stalin, is referred to quite often in the Soviet Union) once commented that a well developed transport system leads to higher population densities, while its absence or limited development tends to keep population down. In the northern region, in the Soviet Union as well as in America, transport networks are far weaker than they are in the southern part. The Soviets, however, have been trying to do something about it. In the European part of the Soviet north, which is quite accessible to Russia, a network of railroads and roads traverse the region. One might say that compared to northern North America or Siberia there are no transportation problems in the European north. According to recent accounts, as one moves north, away from the Siberian railroad and its limited spurs, there are only three railroads that extend from mineral extraction or production sites to a river or tidewater. None of these three railroads is longer than 100 miles (160 km). The Soviet Union, however, is constantly planning new railroads and a number are presently under development. Truck and wagon roads are also quite scarce in the Siberian north. There is one very long road, extending about 2,500 miles (4,000 km), which reaches from the south up to Yakutsk, and then

wanders through various mining districts to Magadan. Although some people here have managed to take excursions on that road, I would hate to travel that 2,500 miles. Significantly, the Russians don't view transportation as primarily a means of opening up and developing the northern regions. Transportation (railroads, truck roads) generally follows discoveries and/or development decisions. Transportation links are built only when there is an actual need.

Most resources are still shipped via ship. The rivers, as I mentioned, serve as major transportation arteries. Flowing north-south, many of them can connect to the trans-Siberian railroad as well as to the northern sea route. In fall 1975, when picnicking with friends on the banks of the Lena River, I was quite impressed by the endless procession of barges, small freighters, and hydrofoils moving up and down the river. From that standpoint, Alaska has hardly been touched. Rivers of the Soviet north, of course, are also used for transportation in winter, with vehicular roads being built upon them. As I mentioned, the backbone of the transportation system is the north sea route and the north-south rivers connecting it to the trans-Siberian railroad to the south.

The important new transport development is the Amur-Baikal Magistral which, in our current lingo here, would be a multi-modal transportation corridor, as BLM would like to see in various places in Alaska. This corridor starts, essentially, in the north portion of Lake Baikal and ties into the Pacific part of the Soviet Union. The corridor is designed to include railroads, roads (eventually, although they have a very low priority), power lines, pipelines, and any other means of transshipping raw materials and manufactured goods. The corridor and its facilities are being very specifically designed to pick up such resources as gas, coal, timber, iron and various other available wealth as it traverses Siberia. It is being built north of Lake Baikal, a comfortable distance from the Chinese border. While reports always tie this to economic development of Siberia, everyone is pretty well convinced, including the Russians, that the main purpose of this new transport corridor is to get Russia's east-west lifeline away from the Chinese border (and it is literally along the border).

I haven't mentioned aviation but, as in Alaska and northern Canada, aviation is the principal means for moving people and freight. I'll just mention that while flying back from Yakutsk we landed in an area where no landing had been scheduled, according to the information we had. It was a fascinating little mining town in the middle of nowhere, very interesting looking, which was called Mama (probably named by some sentimental explorer). We sat there for quite a while. Ed Crittenden (architect and planner from Anchorage, Alaska) and I wandered around through the village, intrigued by the way they live back there. When we got back, people were loading

box after box onto the plane. I asked the pilot what was going on. He said, "We are picking up a shipment of mica because we were flying with so few passengers. When I reported that in, they asked us to stop off here and pick up a load of mica." It all sounded very informal. I'm sure no provision for that existed in the five year plan.

Having looked somewhat hurriedly at various aspects of Soviet northern development, I'd like to just very briefly consider some of the basic problems that face the Soviets. Here I'll be relying not just on my own judgment, but also on that of Gregori Agranat, who is an economic geographer in the Soviet Union and a good friend. My information comes from an article that he wrote for the journal *Kommunist*, the political and theoretical organ of the communist party, for a special issue devoted to problems under the current five year plan (the 1976 to 1980 five year plan). In his office, he discussed the problems of northern development that have to be faced. It's generally much more interesting to see what the Russians write about development in the Russian north than just project our own images and interpretations of what we see, because they are probably often more critical than we are. First, a quick look at labor.

Workers in the north receive special allowances, and, of course, everything in the Soviet Union is done according to norms. Special wage increments are given for service in the north, depending on the zone; and the income differential may be 100 or 200% above that of workers in the southern part of Russia. Even so, there is an eternal shortage of labor (one hears that over and over again in Siberia), as well as a tremendous turnover of people. In established towns like Magadan and Norilsk, the turnover will run 25 to 30% of the population a year. In most northern communities in Siberia, the turnover is probably more like 50%, and some have been reported to have a turnover of 100% of their population a year. This doesn't mean that everybody leaves once a year, but some people will stay only a couple of days, like on our pipeline. They come up and see it and say, not for me. The reasons for that, of course, are the severity of climate, the lousy living conditions (very primitive facilities), and remoteness from families and friends. Planners have been recognizing this and they constantly talk about building such things as better communities, better infrastructure, better social facilities, and more activities for the people there. Interestingly, within a structure where wages are essentially frozen to certain levels, competition becomes based on such things as which community or which economic/industrial enterprise can provide better amenities for living. This works to competitively upgrade communities, but the wage level is still extremely low.

On the subject of labor, the level of labor skills among the working population is also extremely low. Productivity is low and not much improvement has been evidenced in recent years. In view of these labor shortages and this low productivity, more and more stress is being placed on capital-intensive operations. Here, again, the system frequently breaks down. The machinery and equipment that reaches the north are generally designed for national use, primarily in the south. It simply doesn't stand up under northern conditions, where the environment is not only extreme (in the case of transport, the roads are almost non-existent) but repair facilities are primitive and spare parts almost unavailable. Many of these pieces of machinery and equipment simply don't function. According to their own figures, among various enterprises the cost of routine maintenance and repair of a piece of equipment through the year amounts to 25 to 30% of its original cost. And if major repairs are required, they generally exceed the initial cost. The Russians always marvel when we tell them about how D-8 and D-9 Cats and other equipment, which are built according to requirements for the entire country, with virtually no special adaptations for the arctic, will function year-round at virtually any temperature (even though it gets uncomfortable at times). The northerners, those concerned with development of resources in the arctic, are constantly haranguing the central government to develop special facilities, special equipment, for the north; to keep that in mind. Argranat makes this case again and again; I've read it over and over. Some of it is being done, but very little. The same thing, by the way, in terms of quality, holds true for most buildings. Few are specially designed for the north except as regards allowances for permafrost conditions or some new designs to create micro-climates. Building construction itself is standard throughout the USSR - concrete panel construction; new buildings are going up 6, 9, 19 stories. Workmanship is unbelievably bad, both within the factories and on-site. (Someday I might show some slides, it's unbelievable.) At the same time, in the case of equipment and machinery, one sees some examples of very high quality construction, especially in such places as hydro-electric facilities, other power plants, and some of the more important factories.

In another problem area, odd as it may seem, the Soviet system is not conducive to comprehensive, multifaceted, regional development schemes. This is true especially for those that take into account longer term developmental requirements, economics that go beyond the current five year plan. Despite the central planning structure that they have, the implementation of the system is highly decentralized and unbelievably inefficient. Productivity runs into roadblocks at every step of the way and all sorts of disincentives seem to be built into the system (obviously not by design, but they exist). For example, when the Russians go into a new region, say in western Siberia, for petroleum development, the Ministry for Petroleum Production, let's say, is given the lead role for building a new town, develop-

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ing the factories, doing everything. This ministry, in turn, then contracts with the Ministry for Pipeline Construction to build pipelines, with the Ministry for Refinery Construction to build refineries, with the State Committee on Civil Construction for building houses and community facilities, with another Ministry for construction of roads, and so on. There are hundreds of Ministries and State Committees and each one has to be coordinated. The fact is they don't come together because each of these Ministries also has competing priorities. So they're playing the field, but primarily they are interested in how they can optimize their own credit, their own profits. When these ministries don't coordinate, things don't get done when they are supposed to be done, they don't get done right, or they don't fit. You see this reflected over and over again in the Soviet press; complaints, complaints, complaints, and nothing is being done. I had an interesting experience a couple of years ago. I visited with regional economic planners in Irkutsk who were concerned with industrial development in connection with the Amur-Baikal Magistral as well as development of what they call complexes, which are integrated economic development systems. They seemed desperate. They wanted to know if there were any examples in America or anywhere in the world where you have had a really well guided, well organized, properly implemented regional development scheme. My response to them was the only one I can really think of, TVA. Then we got into a discussion of TVA. They also were interested in how we in America make decisions as to where to put limited capital resources. I explained to them the capitalist system, money markets, and costs and profits, as these might be affected by public policy. They just sat there shaking their heads, wishing they had something that was a little more efficient. When we sometimes feel unhappy about the way things are done, all one needs to do is look behind their curtains. Anyway, there are, despite the central planning, new unified general plans for economic and social development of the northern regions. Everyone goes his own way; there is no unity in the north at all. Argranat argues very strongly in his article, which was a direct appeal to the highest levels of the communist party, the government, for broad, long term economic approaches for furthering rational and concerted development, particularly in connection with such massive undertakings as the Amur-Baikal Magistral. It will be interesting to watch and see whether there will be any different approaches, because reports so far indicate that it's being developed in piece-meal fashion.

A few more quick problems. As in Alaska and Canada, there is constant reference to the need for more exploration, more knowledge, more maps, more people, and more science, to provide a basis for dealing with Soviet northern development. Another problem that is increasingly pointed out in the Soviet Union is the disregard for environmental protection. Much has been made about Lake Baikal

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and the protection of the lake from pollution. As good as that solution might have been, it is, from all reports, again including Agranat's article, virtually a singular instance in the Soviet Union. On the other hand, you have endless examples of the destruction of the surface of the tundra and the results that we know so well in Alaska in connection with oil and gas exploration and development. Those who read Farley Mowat's The Siberians got a very vivid description of what happened at Mirney when they, in the eagerness to open the diamond mine, stripped the tundra off the top, and it took them years and years to be able to work that area again. There are lots of horror stories all around, pulp mills and so on. So far, these are only appeals; very little is being done. They are interested in what is happening in the United States, but neither in the urban areas nor farther outside has anything major been done. There are many issues of settlement policies. The Russians, for a long time, pushed development of big cities in the north; that was their big thrust. It was the old extension of the empire, plus their gigantomania (bigger is better); but also it was to claim and settle the north. There are some serious questions being raised because people just don't acclimatize well enough to the north; the construction of whole, well rounded, communities is not necessarily economically the most efficient method. Increasingly, they are taking a look at what we are doing in Prudhoe Bay development, where industrial resource development is going ahead without building the total infrastructure for family life. It's a very interesting discourse that some of us are participating in.

A final question - what does all this add up to? It says, of course, that the Soviet north is big. It has fabulous resources. These resources are critical to the economy and growth of the Soviet Union. Accordingly, the Soviet Union has pursued northern development to the utmost over the almost 60 years since the revolution. Despite their tremendous efforts, they have many, many problems.