Regional Development and National Policy Choices: The Asian USSR

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Geographic space is a cardinal factor in economic development. Yet, it can be an *effective* factor only through the diffusion of integrative forces that cement the diverse parts of that geographic expanse into a structurally and functionally cohesive whole. Political and social integration is clearly a necessary, though perhaps not a sufficient, condition for steady, long-run economic advance — a process which then further binds the geographic fragments into an interdependent system. For any country, however, this process of integration is a lengthy one. At any particular time, some regions will have become more integrated into the political, social, economic mainstream than others. Some will be integrated in all three respects, others less than all three.[1] Physical obstacles and great distances tend to slow and may block the process, so does linguistic, ethnic or cultural diversity. To a considerable degree, the first can be conquered by technology and capital; more subtle and subconscious human adjustments are needed to overcome the latter.

Progress of integration in all three dimensions can be clearly observed through Russian-Soviet history. So can the strenuous efforts to overcome the barriers of physical geography and distance and those of ethno-cultural plus linguistic diversity resulting from expansion and conquest. The process, however, is far from complete and may never be fully completed. To this day, the USSR exhibits a strong core — periphery dichotomy both with respect to sparsely settled hinterlands and with respect to regions populated by substantial non-European nationalities linked to the Slavic core in a quasi-colonial dependency. Siberia, with adjoining Northern Kazakhstan, comprise the first type of this periphery; Moslem Central Asia — southern Kazakhstan and, to a degree, Transcaucasia represent the second type. The Baltic Republics, a sliver of Scandinavia and Central Europe inside the USSR, present a different issue of integration altogether. However, their strategic significance notwithstanding, their small size and population keep them from being a major regional issue.

Each of these two peripheries present distinct problems to the Soviet leadership, primarily because their degree of integration with the metropolis in the political, social and economic realm and the mix of these components differ greatly. In addition, internal diversity is significant both within Siberia and the Central Asian-Transcaucasian "South." Politically, both are securely tied to Moscow through the highly centralized party and government hierarchies. The pioneer hinterland from the Urals to the Pacific, however, is part of the Russian ethnocultural domain and thus fully shares the values of a body polity dominated by Great Russians. The weak and dispersed Paleo-Asian and Turkic nationalities put no real strain on internal cohesion and legitimacy in the political and social spheres. The threat comes from the outside due to strategic vulnerability and distance of supply lines that becomes pronounced east of Lake Baikal. By contrast, the

socio-political integration of the southern, non-European periphery, especially of Central Asia, is still somewhat tenuous. The peoples of Central Asia are poorly represented in the highest echelons of political life and, for the most part, are constrained in exercising power even within their own territory. And in their mores and value system, these nationalities, as all traditional societies in process of modernization, exhibit a considerable degree of schism and social strain.

In the economic sphere, incomplete integration is the rule both in the pioneer hinterland and the non-European South, particularly Central Asia. This is evident from the unbalanced, narrow profiles of their economies and linkages to the central core of economic power in the European USSR. Again, there are significant differences in that relationship not only between Siberia and that southern arc, but within both regions as well. Transcaucasia, for example, is in a much more advanced stage of socio-economic transformation than Central Asia, has been far more accessible geographically to the European core area ever since its incorporation in the Russian oecumene and, except for its fierce ethnic identity (itself a microcosm), could be regarded more or less as an extention of the European USSR. Siberia today is overwhelmingly an energy, mineral, forest hinterland for the European USSR. Central Asia, on the other hand, despite vital mineral exports, is more a "plantation economy" in its relationship to the metropolis. This difference has important implications for their respective industrial structures, for capital-labor ratios and production functions throughout their economies both in the static and dynamic sense. Within Siberia, orientation, type of linkages, and the degree of economic integration vary according to their accessibility to the established core and the priority of their resources for the national economy. Finally, the relationship of Siberian regions with the metropolis, just as those of Cental Asia, vary by the degree of their strategic importance and vulnerability.

Because, as mentioned before, economically Transcaucasia can be regarded as much an extention of the European core area as part of the Asian periphery, it will not be dealt with in this work. This paper will confine itself to the sharply contrasting parts of the Asian USSR, east of the Urals and the Caspian sea. It will stretch the geographic position of this vast hinterland and of its radically different parts in the country's economic space. And it will analyze the impact of major national policy choices that confront the Soviet leadership today on the developmental prospects of macroregions in Soviet Asia. Geographically and economically, Kazakhstan presents a serious problem to the analyst. The northern two-thirds of this republic (north of Lake Balkhash and the Aral Sea) is clearly part of that resource-rich frontier zone of Siberia that stretches from the Urals to the Pacific. At the same time, it is today mostly a part of the Slavic ethnocultural realm, with Russians, Ukrainians and Belorussians constituting over 55 percent of the population in 1979 and, with Germans added, European migrants and deportees as much as 63.1 percent. By contrast, its five southern oblasts belong to the Central Asian oasis world where, outside the capital Alma Ata, the autochtonous nationality dominates.[2] It would be desirable, therefore, so to divide this republic for purposes of analysis. However, this is possible only to a very limited extent.

Fig. 1 Siberia's Northland

Sources : L. Dienes. "The Development of Siberian Regions : Economic Profiles, Income Flows and Strategies for Growth." *Soviet Geography : Review and and Translation* Vol. 23. No. 4 (April. 1984)

1. *The Regional Setting*

The Asiatic USSR comprises three-fourths of the country's territory. These acquisitions east of the Urals and the Caspian Sea, the result of Russian expansion in the last 400 years, exceed in area that of Brazil and Australia combined and are almost as large as all of South America. Most of this enormous land, however, is unsuitable for large scale, permanent settlement, so its 71 million people are very unevenly distributed. More than half of this population (ca. 38 million persons) live south of the Aral Sea and Lake Balkhash, on only 15 percent of the territory of the Asiatic USSR.[3]

Central Asia

Central Asia-Southern Kazakhstan comprise a region quite distinct from the rest of Soviet Asia. Its deserts, scorching summers and winter temperatures with a January average ranging from 0 to only −8C° everywhere except the high altitudes of the Tien Shan clearly mark it off climatically from the Siberian realm of the north and north-east.[4] Outside small areas in Transcaucasia, Central Asia is the only region of the country with the requisite thermal regime for the cultivation of cotton and certain exotic fruits. The scanty rainfall comes entirely in winter and spring, in contrast to the world of steppe and forests north of the Kazakh desert, where year-round precipitaion exists but a summer maximum prevails. Along the southern flank, the formidable mountains of the Tien Shan and the Pamir wring significant moisture from the westerly winds in winter, when the circulation system shifts further south. In addition, their snow-capped peaks and glaciers provide water for dozens of streams flowing north towards the deserts. Their northern foothills and basins are covered with thick loess, fertile and easily cultivated. It is in this piedmont zone, varying in width from 50 to 200 miles, where most of the population has always been found. Farming depends on irrigation everywhere; settlements and economic life are heavily concentrated in oases, cultivated for millenia, where population densities today reach up to 500 per km².[5] In the deserts, semi-deserts and along mountain valleys, large herds of animals have long been driven over long distances following seasonal pastures. The nomadic way of life is now a thing of the past but the extensive pasturing of animals has continued to the present.[6]

Although it is this agricultural oasis and desert way of life which gives the region its clearest economic stamp, its geology and mineral riches have also assumed great importance in recent decades. The Kopet Dag through from the Pamir westward through the central Caspian, part of the great Eurasian geosyncline, represents one of the major deep sedimentary accumulation in the USSR, at some points almost 10 miles in depth.[7] In the 1960s and 1970s it has become a major gas-bearing and producing province and, until the construction of the mammoth pipeline system from Tiumen Oblast (West Siberia), the largest supplier of gas to the European core. Elsewhere in the region, complex metamorphic rocks are a rich source of uranium, nonferrous, rare and precious metals, of which gold, with possibly the largest deposits anywhere in the Soviet Union, is perhaps the most significant.[8] Finally, the torrential, glacier-fed rivers of the Tien Shan provide parts of the region with the largest hydoelectric potential in the USSR outside East Siberia and the Far East.

This is an ancient world, valued enough by Alexander to conquer, Tamerlane to

choose for the center of his ephemeral empire and civilized enough for Omar Khayyam to call one of its cities his home. The region has been part of Russia/USSR for not much more than a century and remains ethnically non-Russian and non-Slav. The latter represent less than 16 percent of the population today (14.2 percent in Central Asia alone, without southern Kazakhstan in 1979)[9] a share appreciably smaller than at 10 or 20 years ago, a decline explained by the virtual cessation of net Slavic in-migration and the very high natural increase of the indigenous nationalities. The overwhelmingly Moslem population has barely begun to limit its birthrate, which still averaged (weighted average) 30.8 per 1000 among the five major autochtonous nationalities of Central Asia-Kazakhstan during the 1970s.[10] Given the massive size of young cohorts entering the reproductive age, the rapid population growth of the indigenous nationalities is destined to continue for the rest of the century. The share of the Slavic *colons* overall will be reduced to insignificance and may fade even in the few large cities, where most of them are found.

Siberia–North Kazakhstan

In contrast to that ancient oasis world, virtually all of the vast expanse of Siberia–North Kazakhstan has stayed beyond the edge of settled civilization until recently. It is to this day a raw, pioneer land, Russia's America beyond the Urals. Excepting the Kazakh steppes and the south-east corner along the Amur, it was conquered and firmly attached to European Russia for over 300 years, but barely touched until much later, with accelerated development beginning only from the era of the Five Year Plans. Today Siberia accounts for all or most of the increments and very large shares of a range of resources supplied to the Soviet economy. Because of an immediate and large multiplier effect on the entire GNP, some Soviet scholars calculate that the optimum rate of expansion for the region, that which maximizes national growth, lies between 1.2 and 1.4 times the national rate.[11]

Environmental harshness, however, has always presented a truly formidable obstacle to economic exploitation even with conscript labor, tsarist or Soviet. Over the bulk of the Siberian landmass, such exploitation, in fact, has become possible only in the last few decades through modern science and technology. Most of this frontier hinterland, therefore, can never be densely populated. In particular, the vast Northland, which covers some three-fourths of the region and two-thirds with North Kazakhstan added is home for less than 5,000,000 people and has an average density of under 0.5 persons per km^2. The bulk of this territory belongs, in Soviet parlance, to the Far North[12] (Figure 1), where population densities are even lower, the percentage of economically opened or developed land(*osvoennaia territoriia*) reaches a mere 7 percent of the total area.[13] In this region of "extreme discomfort," permanent settlement of in-migrants from mid-latitude climatic zones is both unlikely and inadvisable. A number of illnesses, both physical and mental, affect residents of the Far North much more frequently than those of the mid latitude.[14] From the medical-geographic point of view, the length of stay of in-migrants should be limited to 3 to 5 years according to specialists.[15]

The southern belt of Siberia and most of North Kazakhstan, on the other hand, are certainly suitable for permanent settlement for people from the mid-latitudes, though even here the rigors of the climate do take their toll. Some 28 million persons live here,

in contrast to the less than 5 million of the Trans-Ural North.[16] On its western portion, this much more habitable zone is over 700 miles wide in meridian extent, though aridity sharply reduces densities in the center of Kazakhstan. Owing to the influence of Atlantic airmasses, the land of the North is confined to the poleward side of the 58 parallel. By contrast, east of Lake Baikal, the Arctic and Subarctic plunge southward to between 100 and 300 miles of the Chinese-Mongolian borders. Sharply increased continentality and rugged topography are responsible for that near pinch-out of the habitable, temperate zone, so that a mere ten percent of the enormous Soviet Far East is out of the Northland (Figure 1).

The main direction of orientation in southern Siberia is east-west. The regions of this temperate zone are linked to each other and to the European USSR by east-west railways. In Trans–Baikalia and the Far East, this narrow belt is served by the single Trans–Siberian (the new Baikal Amur Railway runs through virtually uninhabited territory within the Northland almost in its entire length). West of Lake Baikal there are two east-west railways now and west of the Kuzbas, three lines, in addition to those connecting Siberia with Central Asia. By contrast, the regions of the Siberian North are almost completely isolated from each other and have virtually no direct link to the European USSR. Their orientation is southward to the Trans-Siberian, by the few existing north-south spur lines, through the chiefly north-flowing rivers and, in the Far East, by coastal shipping. The single track Baikal-Amur railway will be the first east-west link among regions of the Siberian Arctic and Subarctic, making the emergence of an east-west developmental zone possible. The Siberian North, therefore, depends on the Trans-Ural south both directly and indirectly for its development — for its supplies, some of its labor force and its export routes. Only Tiumen Oblast and the Norilsk-Igarka node near the mouth of the Enisei are able to ship much of their resources directly to the European USSR (and abroad), the first because of relative proximity and the specialized transport modes represented by oil and gas pipelines, the latter, because of easier ice-conditions and better developed navigation on the western half of the Northern Sea Route. However, even these two areas depend overwhelmingly on supplies shipped in from and through southern Siberia. The Asian North, therefore, may be regarded as a huge frontier zone that itself leans on and is linked functionally to the more established Trans-Ural hinterland.

The burden of remoteness from the metropolis increases sharply east of the Enisei and even more so east of Lake Baikal. Both by tonnage and value, the movement of goods between the rest of the USSR and East Siberia and, still more, the Far East is only a fraction of that for regions farther west. This is especially true if shipment by pipelines is counted with other commodity freight, as it properly should be. (In Siberia, the *interregional* movement of oil and gas, all of it originating from west of the Enisei, exceeds *all* other freight flows in and out of the three macroregions, West Siberia, East Siberia, Far East, by a very substantial margin.) Yet, despite this weak integration of Siberia's eastern half with the national mainstream, the bulk of its freight links are with the European USSR. For East Siberia, only a fifth of all interregional freight movements by tonnage was recorded with the Trans-Ural parts of the Russian Republic in 1977, 70 to 75 percent was recorded with provinces west of the Urals, with a few percent accounted for

by Kazakhstan and Central Asia. For the Far East the share of the Asian Soviet Union was even smaller (Tables 1–2). In fact, since 1970, the relative importance of other Trans-Ural provinces in interregional freight movements of both the Far East and East Siberia has been drastically reduced, while that with several areas west of the Urals increased substantially. In part this is due to the construction effort on BAM, in part to the huge military buildup east of Lake Baikal. However, an excessively resource-dominated economic strategy, leading to an ever-decreasing complementarity *among* the main Siberian regions also appears to be a factor.

TABLE 1
ORIGIN AND DESTINATION OF FREIGHT SHIPMENT
TO AND FROM EAST SIBERIA

(in percent of all tonnage shipped to and from East Siberia by rail, sea and river)

	1966		1970		1977	
Regions of Origin and Destination	Origin of inship-ment	Destination of outship-ment	origin of inship mest	Destina-tion of outship-ment	Origin of inship-ment	Destination of outship-ment
North-West	2.2	0.8	1.9	0.6	5.59	6.60
Central Regions*	6.2	2.1	8.1	2.6	20.28	13.80
Baltic-Belorussia	0.5	0.1	0.6	0.2	3.62	2.12
Ukraine-Moldavia	3.9	3.3	5.3	4.2	12.91	16.52
Caucasia**	1.8	4.2	3.3	4.6	10.71	8.44
Volga-Urals	44.3	13.9	29.2	10.8	21.54	21.90
Kazakhstan	3.4	14.0	6.7	8.7	4.50	8.02
Central Asia	1.3	12.2	1.6	10.4	3.87	1.64
West Siberia	27.3	31.4	32.2	37.4	8.76	9.78
Far East	8.6	16.7	10.3	18.3	2.74	0.87
Unaccounted freight (resi-dual)	0.5	1.3	0.8	2.2	5.5	10.3
USSR	100.0	100.0	100.0	100.0	100.0	100.00

*Center, Central Chernozem, Volgo-Vyatka
**North and Transcaucasus

Source : L. I. Kolesov, *Mezhotraslevye problemy razvitiia problemy transportnoi sistemy Sibiri i Dal'nego Vostoka* (Novosibirsk: Nauka, 1982), pp. 106–107.

TABLE 2
ORIGIN AND DESTINATION OF FREIGHT SHIPMENT
TO AND FROM THE FAR EAST

(in percent of all tonnage shipped to an from Far East by rail, sea and river)

Regions of Origin and Destination	1966 Origin of inshipment	1966 Destination of outshipment	1970 Origin of inshipment	1970 Destination of outshipment	1977 Origin of inshipment	1977 Destination of outshipment
North-West	1.2	2.7	1.8	2.4	5.59	6.60
Central Regions*	6.2	11.0	5.0	10.6	20.32	13.79
Baltic-Belorussia	0.6	1.6	0.5	2.5	8.58	3.72
Ukraine-Moldavia	3.2	4.6	3.1	5.8	12.91	16.52
Caucasia**	2.4	1.9	1.8	2.9	8.80	8.63
Volgo-Urals	19.1	12.7	12.9	14.1	21.53	21.90
Kazakhstan	1.8	13.8	4.0	11.2	4.50	8.02
Central Asia	1.3	4.4	1.4	4.8	3.87	1.64
West Siberia	24.7	15.3	29.0	12.6	8.76	9.78
East Siberia	39.5	32.5	40.5	33.1	2.79	7.80
Unaccounted freight (residual)	—	(0.5)***	—	—	2.36	2.60
USSR	100.0	100.5	100.0	100.0	100.0	100.0

*Center, Central Chernozem, Volgo-Vyatka
**North and Transcaucasus
***Minor discrepancy. Exceeds total.

Source : L. I. Kolesov, pp. 108–109.

2. *Relationship with Major National Policy Choices*

The economic configuration of regions is a product of major structural trends acting on these units from the outside and of the local ethos. Their future prospects are the result of this interplay. In a multinational state which, though nominally federal, is managed centrally through the vertical hierarchies of the party and the federal ministries, regional performance and direction are particularly strongly affected by major national policy choices. The development and prospect of macroregions in the Asiatic USSR are intimately tied to such policy decisions. National energy-policy issues have been and remain most crucial for West and East Siberia, although they affect these two regions in a rather opposite fashion ; strategic priorities and Soviet-Japanese relations are decisive for

the Far East ; decisions on a basically new pattern of investment allocation, industrialization, and ethnic relations will chart the course for Central Asia. Choices foregone and decisions not taken will have an impact as important as choices made.

A critical problem for the Soviet leadership today is the extended time-horizon for effective implementation of most such policy decisions at a time when both capital and labor supplies are subject a long, sustained squeeze that will not ease before the end of the century. Given this squeeze and the slow economic growth, major policy decisions increasingly become mutually exclusive. In addition, they may now demand not merely a *relative* shift of resources among sectors and regions but more and more also an *absolute* one. In contrast to the more buoyant Khrushchev and Brezhnev eras, resource allocation in large part has again become a zero sum game, though played on a far more prosperous plain than in the time of Stalin. The enormous and rapidly rising resource demand of the Soviet economy and the much sharper relief of geographic constraints, however, represent not some *deus* (or should it be *diabolos?*) *ex machina.* They are the logical development of the tonnage and gross product mentality and system of economic management that is locked into an extensive pattern of economic growth and relies on crash programs and the campaign approach to achieve key results. If, to a large extent, resource allocation is again a zero sum game, it is partly because resource use (energy, material, capital, labor) per net output has so long been and still continues to be excessive by the standards of most developed, even developing, nations. To give one example, the European USSR (including the Urals), with a current GNP comparable to that of Japan, has since 1960 cumulatively consumed well over three times as much energy as that East Asian economic giant, which itself followed a rather energy intensive pattern of development until 1973.[17]

3. *Energy Policy Decisions and Siberian Development*

The spatial distribution of economic activity is the cumulative expression of past preferences, embodied in a wide range of fixed capital and infrastructure. As such, this geographic pattern is subject to pronounced inertia : huge efforts and long lead times are needed to modify it significantly. This observation applies to energy use also and especially so in the USSR, where locationally concentrated heavy industries dominate demand even more than in the West. In contrast to the spatial inertia of energy consumption, the geographic pattern of supply and flows is more prone to change. Individual fuel deposits, particularly of hydrocarbons, but over several decades even of easily minable coal, are subject to depletion, demanding replacement and leading to changes in comparative fuel costs. Such shifts in supply costs, combined with the relative substitutability of energy sources and technological improvements in utilization technology and transport, can and do result in more rapid changes in regional energy mixes and the pattern of energy flows.

The enduring commanding position of the European USSR in the Soviet economy (only briefly challenged during the abnormal years of World War II) remains the cardinal geographic fact of the country, although substantial diffusion of industry within this core area has occurred. As a result, over three-fourths of demand for Soviet energy, as roughly for most other resources, continue to originate in this part of the country.[18] The

European USSR remained self-sufficient and *net* fuel exporter until almost the mid 1960s. By the later part of the 1970s, however, total fuel production in the European USSR was in an absolute decline, a trend which the accelerated nuclear program could not even remotely counterbalance.[19] The most critical task of Soviet enegy policy has become the massive westward shipment of fuel from the Asian hinterlands to replenish the energy deficit of the European USSR, which today approximates that of the whole EEC (European Economic Community) and to provide the additional export flows, nearly all of which goes through western border points and ports. The energy policy choices made since the early 1970s to deal with this East-West issue have had momentous regional and structural consequences. Presently, they are affecting the economy more than any other single decision in the civilian sphere.

I have long argued that during the 1970s Soviet leaders had no choice but to turn to the giant oil fields of Tiumen Oblast and throw *that* resource into the huge energy breach. At that time, no other fuel source could guarantee the required massive increments and also bridge the spatial gap between demand and supply. Technological and transport constraints would delay the full-scale contribution of Siberian gas to the Soviet economy essentially until the end of that decade, indeed, until the 1980s. At the same time, a coal-centered energy strategy, or even one which would try to moderate significantly the decline in the share of solid fuels (although promulgated in the mid 1970s), was to be short lived, with no hope of success. (Contrary to widespread belief, the USSR is not a coal-rich country, once location and quality is taken into account. Big energy increases from coal are simply impossible to achieve before the later 1990s even with far greater investments, which—at any rate—were not and still are not forthcoming.[20]) The oil fields of the Middle Ob, still remote but more accessible than West Siberian gas, were thus crash-developed, leading to premature peaking and admitted damage to some reservoirs. In a mere ten years (1970–1980), the production *increment* in the West Siberian oil fields reached 282 million tons and in 13 years (1970–1983) 338 million tons, an expansion unprecedented anywhere in the world. The region, whose output in 1965–66 was negligible, has by the end of 1984 cumulatively produced over 3.1 billion tons of oil.[21]

What is past is prologue. The choices made during the 1970s set the stage for energy strategy in the 1980s and for its consequences. To a very large degree, they also set the *course* of that strategy, despite the wide surface swings of Soviet energy policy — from coal, to more oil and finally to the current gas program, the biggest economic crusade since the 1930s. In his masterful study of the Soviet gas campaign, Gustafson has documented these erratic changes[22] and they are important in illuminating the decision-making process. Yet, the failure of these ephemeral strategies during the middle and late 1970s has been preordained; they left virtually no impact before they were overwhelmed by the massive shift to Big Gas. The performance of the 1970s in petroleum could not be duplicated even in West Siberia: during that decade, one single supergiant, Samotlor, contributed a full half of all Siberian (and 56 percent of all Soviet) *increment.*[23] However, no more supergiant has been found and, because of forced development, the deposits put on line before 1971 have entered the declining phase by 1980, and those put on line before 1975 peaked by 1982.[24]

The massive shift to gas and the equal efforts needed to keep West Siberian oil

production up or marginally growing, have had momentous consequences for Soviet regional development and economic structure. While unquestionably rational, the shift to gas has been too sudden and undertaken on too immense a scale. It was embarked on without adequate preparation for the inter-sectoral, inter-regional and foreign trade requirements and impacts of its unprecedented resource demand. And it was bruised by the Reagan Embargo and confounded by the world's volatile energy market. As a result, the 50 billion rubles of investment funneled into the West Siberian oil and gas province during the 1965–1980 period have had to be matched by a similar amount in the single FYP of 1981–85 in a manner which amounts almost to force-feeding. To quote Gustafson: "Knowing that daily performance reports were (and still are) being sent to the Kremlin, pipeline builders, downhole drillers, and everyone else in the campaign have been encouraged in all the classic tendencies of Soviet 'storming'." This could not but produce distortions, huge amount of waste, and a sharp rise in cost.[25]

In 1982, over 8 billion rubles were reportedly channeled into the West Siberian oil and gas complex. Given the sagging performance of the petrolium industry in the region and, the ever more urgent and apprehensive tone of recent reports from the region, it may be closer to 10 billion now. In other words, one-third or more of all Siberian investment today flows to a single province, Tiumen (and, combined with Tomsk Oblast over 35 percent[26]), with 17 others that comprise Siberia and the Far East having to share the remaining two-thirds. Tiumen province, with less than 6 percent of Siberia's population in 1970, has also accounted for 22 percent of its population growth and 40 to 45 percent of all *net* inmigration into Siberia since that time.[27] A mechanical increase of 400,000 to 450,000 (i. e., net inmigration) in Tiumen Oblast during the past 13 years, however, is the consequence of a total migration (arrivals plus departures) 7 to 7.5 times as large. Each *year* in Tiumen 300,000 to 350,000 persons take part in the migration process, one-third of the province's population.[28]

Tremendous distortions and wastages are the inevitable side effects of such a "supercampaign." This is true both inside Tiumen Oblast and outside it: in the interregional and sectoral proportions of the Siberian, but even the whole Soviet, economy. Internally, such pell-mell growth leaves infrastructural and social development even further behind, and especially so per capita, despite the strenuous efforts to correct the lag. In the 10th FYP (1976–1980), for example, the share of all "nonproductive" investment in the total capital outlays of Tiumen Oblast as a whole comprised a mere 19 percent, significantly smaller than in most developed areas of the USSR.[29] Social infrastructure and housing receives only a part of that, especally in the northern oil and gas areas, where only 5 billion rubles, less than a tenth of total investment have been so allocated for the 10th and 11th FYP.[30] As a result, at the close of the 1970s only 6 square meters of housing space was available per capita in the oil and gas regions of Tiumen, with almost certainly no improvement since.[31] The systematic diversion of funds to "productive" activities, combined with the excessive surge of population has led to an absolute per capita decline of social investment in several cases, which in the prevailing conditions of Siberia means an even greater decline in facilities commmissioned.

Every sign points to the further hardening of "departmentalism" and a rampant *sauve qui peut* spirit among enterprises and trusts, which have seen their hands strengthened by

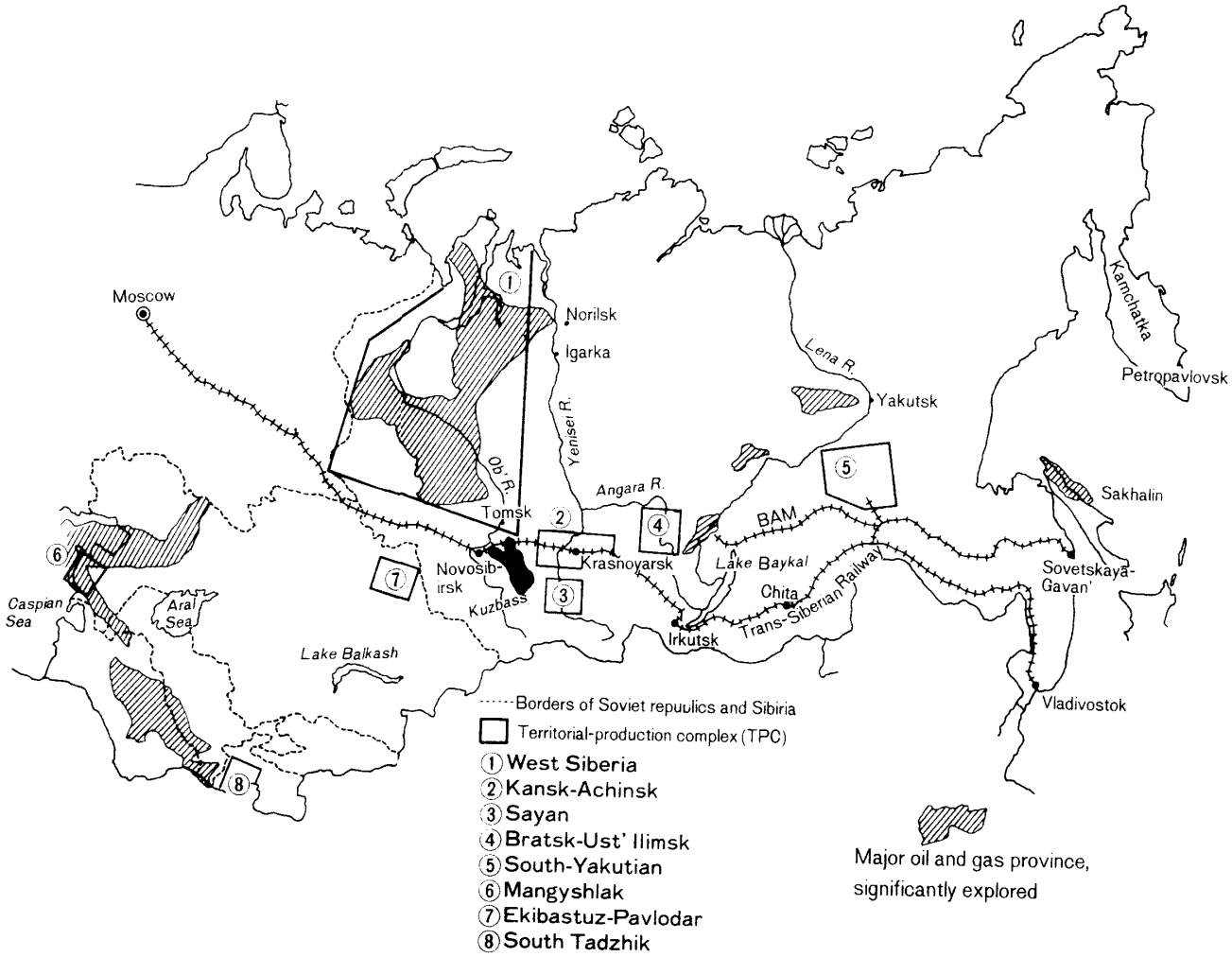

Fig. 2. The Asian USSR Aspects of Resource Development

the sharp decline in the share of budgetary allocations in total capital investment (in the West Siberian TPC, i. e. territorial production complex, from 76 percent 1971 to 56 percent in 1977) and a corresponding rise in that coming from their own resources.[32]

Gustafson described recent Soviet efforts to deal with this old problem in the Tiumen oil and gas complex, which is so big and crucial that it demands new or improved instruments of coordination. The creation of a special 36 member commission of Gosplan, located directly in Tiumen city, is the most notable of these efforts (according to Gustafson, such a thing with headquarters right in the field of action has never been done before). However, the powers of this commission have been described by its chairman in strikingly weak language. It may actually have lost power since its establishment and it is evidently undermined not only by the major ministries but by the Tiumen "party apparatus that does not welcome potential rivals."[33]

The interregional distortions of this oil and gas-focused policy, with its huge resource requirements centered mainly in one province, are also obvious. My estimates based on scattered Soviet data suggest that the mounting capital needs of Tiumen, combined with that of the BAM and the military build-up in the Far East, has led to stagnation and even the *absolute* decline of investment in most other regions of Siberia. In addition, investment in such a crucial part of the European core area as the Ukraine (as no doubt also elsewhere west of the Urals) also suffered an absolute decline from 1978 through 1982.[34] This is creating its own economic risks for the future both for the Soviet economy as a whole and for Siberia *perse*, since this frontier zone is critically dependent on machinery and technology supplies from the metropolis. In the early 1970s, for example, West Siberia had to ship in 73 percent of all the machinery it used (nearly all from the European Soviet Union) and East Siberia 85 percent.[35] Since that time, the two regions lost further ground, their relative contribution to the country's engineering output declined and their dependence on supplies from centers west of the Urals could only have increased.[36]

Within the Siberian hinterland, the Kuzbas-Altai area and the southern zone of East Siberia have been the most obvious losers. (Fig 2) In the Kuzbas, total industrial output consistently grew slower than the national mean already since 1960.[37] During the 1960s, however, this poor performance was mainly associated with an unfavorable industry mix, with one strongly biased towards slow growing traditional heavy industries and the dearth of more dynamic branches. In the more traditional industries, which had become the region's specialty (coal mining, ferrous metallurgy, some branches of heavy engineering and heavy chemicals), growth rates in the Kuzbas still kept well ahead the national average for these industries. In the 1970s however, the disadvantageous industry mix effect and Soviet failure to inject more modern manufacturing into the province have become increasingly compounded by below average performance of the Kuzbas *within* these slow-growing branches themselves. In other words, the province was losing out to other regions even in some of these industries, especially iron and steel and chemicals.[38] By the late 1970s even coal production began to stagnate, though the sharp decline affecting the Donbas was at least avoided.[39] However, not a single new coal mine has come on line in the Kuzbas for 20 years and the reconstruction of old collieries drags on 16 to 17 years on the average.[40]

East of the Kuzbas, the Enisei-Angara zone has been almost equally affected. The vast energy-riches of that zone (hydropower resources and Kansk-Achinsk lignite) have so far defied attempts to trasmit and ship them over great distances. In the case of the highly variegated, troublesome coals of Kansk-Achinsk, even large-scale local consumption encounter serious technical difficulties. Though close to the surface, no other basin of the country has such complex cover of overburden,[41] the coals are extremely diverse, are prone to caking, spontaneous combustion and explosion.[42] Existing power stations burning this fuel have suffered reduced efficiency and availability and their use in much larger 800 MW units (boiler and turbine blocks) still not fully solved.[43] In addition, the environmental consequences of the massive burning of this fuel in huge power stations in unprocessed form is today judged unacceptable. Earlier plans for 8 then 6 giant stations (in one source even 12) of 6400 KW each have now been abandoned. The latest sources claim feasibility for only two to three or, in case of a most sanguine advocate of Siberian energy development, three to four.[44]

In the latest scholarly publications, Kansk-Achinsk coal still appears as one of only five national fuel bases able to provide for future growth and compensate for declines elsewhere. (The others are West Siberian and Central Asian oil and gas, Ekibastuz and Kuznetsk coal.) However, it is now envisaged to furnish only 9 to 11 percent of the *increment* in total fuel supply and 4 to 6 percent of gross output even in the next 15 to 20 years.[45] Equally important, no massive movement of energy from the Kansk-Achinsk Basin (either in the from of fuel or electricity) out of Siberia is now contemplated. Instead, this lignite is to be used entirely in Siberia—initially to raise the share of thermal versus hydro capacity in the Central Siberian Grid (see below), then to free up more Kuznetsk coal for Western regions and eventually to create a large synfuel-coal chemical complex in the area, which, with the thorough processing of lignite and the recovery of much waste products, would be environmentally more acceptable than the massive burning of raw coal.[46] (Fig. 2)

None of these ideas are new and I have discussed them already in 1977.[47] However, statements that little, if any, coal and probably even electricity from east of the Kuzbas will make it to and across the Urals, and that the development of the Kansk-Achinsk complex is feasible only in the long term are now unequivocally voiced and seem to be more or less accepted by the whole energy establishment. There is also a concensus that the further development of the Kuzbas and the Kansk-Achinsk Basin represent one integral problem and must be approached together. And it is the former, not the latter, whose main task it will be to supply consumers further west. Whether a large-scale synfuel and coal-chemical industry based on Kansk-Achinsk coal, acknowledged to be very costly, will ever materialize, however, is far less certain. Two pilot plants (with 175 ton and 100 ton per hour capacity) to process that lignite via two competing routes are under construction, one at least for 6 to 7 years.[48] Clearly, final decision has not yet been made, but renewed anxiety about the prospect of petroleum may have given a fillip to the project.

In the more immediate future, an accelerated growth in coal production in Central Siberia does appear to be called for. The preponderance of hydro stations in the region has led to instability and vulnerability of power supply in dry years, while the insufficiency

of peaking and semipeaking capacity (a perennial problem in the Soviet Union) has further reduced utilization factor. In the early 1980s, hydrostations represented 52 percent of all capacity of the Unified Siberian Grid, that extends westward to Omsk, which means that east of the Kuzbas this share must have exceeded two-thirds.[49] Hydrostations here have often been forced to operate at greatly reduced availability—a mere 36 percent of the time (3118 hours) in Krasnoiarsk Krai during 1980—and whole settlements, many factories and collective farms have suffered from power cut-offs over the past years.[50] These strains and shortages of electricity supply, surely an ironic situation for Central Siberia, may further retard the already slow shift of energy-intensive industries eastward in the opinion of two of the foremost Soviet authorities.[51] While the plans call for the rapid expansion of wood processing, pulp and paper, petrochemicals and non-ferrous metallurgy in the region, and the 11th Five Year Plan (1981–85) reportedly earmarks a 3.5 fold growth of investment in the Kansk-Achinsk Basin,[52] the complex is well behind schedule.[53] (Fig. 2)

At the same time, Siberian officials have also expressed some dissatisfaction about the excessively coal-oriented fuel strategy (*ugol'nyi perekos*) in the area, which aggravates living conditions and demands inordinate labor expenditure in an already difficult environment, plagued by manpower shortages and high turnover.[54] While close to 60 percent of urban heat supply in East and West Siberia (though only half in the Far East) is furnished centrally from coal-fired cogenerating plants and large boilers, the remainder and practically all rural heat is still derived from the direct burning of unsorted solid fuels (much of it still gathered by the population) on the premises.[55] In the mid-seventies this represented over a quarter of all gross energy use in Siberia and the servicing of thousands of small boilers alone was said to employ over 100,000 persons, not counting those engaged in the transport of coal and ash.[56] Scholars pressing for the more rapid development of Central Siberia (as of the Far East) argue for the expansion of cogeneration even into much smaller settlements than in the European USSR. They would also like to raise the flow of Tiumen natural gas to the Tomsk-Kuzbas-Novosibirsk area, though they appear to recognize that it is increasingly less probable,[57] and eventually secure gas from Iakutia both for Irkutsk Oblast and the Far East.[58]

4. *Soviet Foreign Trade Policy and the Far East*

The extreme remoteness of the Far East from the metropolis prevents its full integration into the Soviet spatial economic system. Its position calls for a developmental strategy rather different from that applied to more accessible regions. The theoretical options include, though perhaps are not limited to, the following[59] ; a) a more or less autonomous line of development, with a large degree of local control over investment, other budgetary allocations and trade ; b) a foreign trade-oriented strategy, whereby the region's rich natural resources are developed by the metropolis overwhelmingly for export—(preferably with the help of foreign capital) and the revenues earned, secured, and disposed of by the economic power center in accordance with its overall sectoral and regional policy ; c) continued massive subsidies to the region for its crucial strategic and *potential* economic value, but acceptance of a very immature, narrow economic profile and below average growth for the near future.

It is clear that in the early and mid-1970s the Soviet leadership anticipated and appeared very sanguine about the success of the second option. An energy crisis has just hit a totally unprepared advanced industrial world. The specter of OPEC-like cartels over other natural resources has resulted in panic-buying and a radical increase in the price of energy and raw materials on the world market. The vast resource-base of the Soviet Far East in relative proximity to resource hungry Japan, whose nervousness about supplies was only too palpable, seemed like a combination highly favorable to the USSR. The policy of East-West detente, the easier availability of Western credit and an apparent willingness on the Soviet side to accept a much greater degree of integration with the world economy, all seemed to mark out the eastern half of Siberia for a largely foreign trade driven economic boom. To hasten that future, Soviet leaders themselves were prepared to make huge investments in that vast area to improve accessibility. The decision to build the BAM was the most obvious manifestation of that commitment. Besides its strategic value, BAM was also regarded as a gateway to Pacific Sibera whose vast and, with the railway, much more accessible resources would vest the USSR with strong bargaining power *vis-à-vis* resource poor capitalist countries and especially Japan.

These expectations appeared reasonable in the anxious days of the first oil crisis. However, from the perspective of a dozen years, it is now clear that this bargaining power has not materialized and most unlikely to do so in this century. The second oil shock already failed to drive up the prices of non-energy minerals and other raw materials : indeed the deep recession it helped to create forced these prices downward. And, just as OPEC, the USSR has failed to foresee the long-term conservation measures put into effect and the deep structural changes experienced throughout the industrial world. By 1980, for example, Japan was spending 7.7 percent of all investment in plants and equipment on energy saving outlays, with another 1.7 percent on fuel conversion.[60] The shift away from heavy industries in the advanced economies is exemplified by a 25 percent (122 million tons) drop in steel production between 1974 and the end of 1983 throughout the OCED, one-sixth of that absolute decline taking place in Japan. As a result of this shift and new technologies applied to save materials as well, world demand for a host of metals (aluminium, copper, zinc, lead, tin, nickel, etc.) have been stagnant and even declining.[61]

These momentous changes in the non-Communist industrial countries, not the least in Japan, has reduced the attractiveness of investment in resource projects of the Soviet Far East and Eastern Siberia. From the late 1960s through the first half of the 1970s Japan and the USSR have undertaken eight joint projects, though the expansion of the port of Vostochnyi did not involve natural resources. Cooperation in these projects, however, has proved rockier than had been anticipated. Unpredictable changes of plans and inadequate technical information on the Soviet Side, serious differences over financing have frustrated the Japanese, while the harsh physical environment and the lack of infrastructure in the region caused serious delays in some of the ventures.[62] These economic difficulties have been exacerbated by the deteriorating political climate, caused by Soviet refusal even to discuss the issue of the occupied, and later fortified, Japanese northern islands, by the huge military build-up in the Pacific provinces of the USSR, the invasion of Afghanistan and Japan's response in joining the U. S. in the Olympic boycott

and other sanctions against the Soviet Union.

Lengthy interviews by the author in Tokyo with officials of major trading companies in November 1984, proved revealing. Japanese businessmen, while desirous to improve commercial relations, are showing a complete lack of interest in new Soviet resource projects in the interior. Even along the coast the recent agreement to import 3 million tons of LNG and 1.25 million tons of oil per year from Sakhalin for two decades, beginning in the early 1990s and with a $3.8 billion price tag for the project, was concluded after long years of wrangling and only after the Soviets have failed to shift Japanese attention to gas import from the Iakut ASSR.[63] Indeed, the Japanese will try to renegotiate their contract for South Iakutian coking coal and reduce the yearly quantity purchased by over one-fifth, while remain unmoved by Soviet urging to invest in Udokan copper, Molodezhnoe asbestos, Seligdar apetite and the like. Their lack of enthusiasm is only reinforced by Soviet admission that several Siberian and Far Eastern deposits have turned out to be much more complicated geologically than originally anticipated, due to inadequate prospecting.[64] Whether the statement of the Soviet Deputy Foreign Trade Minister about offers of large new trade deals to Japan[65] will in fact herald some improvement in commerce between the two countries remains to be seen. However, large resource-related investments for Japan inside Siberia will continue to be unattractive.

A significant thaw in Soviet-Japanese political relations and some tangible manifestation of Soviet goodwill (e. g., the return of some of the occupied islands and /or a lowering of the military profile in Russia's Pacific provinces) would almost certainly induce greater Japanese cooperation in developing the Far East. So far there is no sign of this. In the mix of ingredients that goes into foreign policy-making in the USSR, military strength has always occupied the central position. In the Soviet (and in large measure also pre-Soviet) mental perspective, international prestige and influence derives chiefly from that strength and this conviction is mirror-imaged to the opposite player. Neither on the policy making level nor among the general elite is it yet appreciated in the USSR that extraordinary economic success and an admirable record in coping with the oil shocks of the recent past have fostered a new type of self-confidence, even self-assertiveness in Japan, and that new Japan no longer sees raw military might, in others as much as in herself, as the chief source of international power and prestige. Writes Hiroshi Kimura :[66]

> Soviet strategy towards Japan is based on premises which are wrong, unrealistic, or increasingly out-of-date, including the notion that the rôle of military strength carries extraordinary weight in asserting the "correlation of forces."... It thus become necessary, if the Soviets are to be successful in their couduct of foreign policy towards Japan, that they undergo a kind of mental reprogramming — for instance, transformation from obsession with military strength to a more non-military such as economic, scientific-technological, psychological) factor-oriented mentality.

Such a mental transformation, however, will be complicated by the fact that in East Asia, Moscow confronts not only Tokyo but Beijing and Washington as well, with U.S, power

being both regional but also part of the global competition with the USSR. "The Soviet Union must live and cope not only with different powers in East Asia, but also with different dimensions of military, political and economic relations."[67]

Barring fundamental changes in foreign policy relation with East Asia, I believe that Soviet economic policy in the Far East will remain basically a holding action, approximating the third option mentioned above. As efforts focus on more accessible regions west of Lake Baikal and, especially, the Enisei, BAM will assume basically a transit role in supplying the Pacific coast north of Sovetskaia Gavan', Kamchatka and the island of Sakhalin, with much of this traffic being military supplies. Over the coming decade, that role in military freight will likely be the most important function of that new railway. About a third of the Soviet Pacific naval force (13 to 14 percent of the country's as a whole) and three-fourths of the submarines assigned to that ocean are based at port northward from Hokkaido and Sovetskaia Gavan', and they can be serviced most rapidly through BAM. Some 20 percent of the 11 million tons of war materiel of the Far East Military District is reportedly already stocked along the railway[68] and that ratio is most likely increase in the future. When in full service, some Soviet officials expect BAM to handle some international cargo as well, though the Japan-Europe (and Iranian) container traffic, using that "Siberian landbridge" will continue to flow mostly through the old Trans-Siberian[69] (Fig. 2).

In contrast to this transit role for supplying the coast, the larger BAM program for the development of that huge virgin territory is at a virtual standstill, with most of the proposed TPC's (territorial production complexes) postponed. A recent volume claims uncertainty about the size of anticipated capital investment even among major project-making organization of Gosplan.[70] A November 1984 source expects efforts in the 12th Five Year Plan (1986–1990) to be devoted to more geological prospecting technical-economic documentation and the further development of the, as yet rudimentary, energy, construction, repair and service infrastructure. There is no mention of starting any new resource projects, for which decisions will only be made during the 1990 decade. Udokan, in particular, is now putoff until the 14th Five Year Plan (1996–2000) and beyond.[71] While specialized monographs devoted to the BAM zone continue to list a series of TPC's along the railway, no such complexes apart from South Iakutia, are shown in the most recent edition of *Atlas SSSR* and even the presence of only very few mineral resources are noted.[72]

5. *Regional Economic Policy and Central Asia*

Over the past decades a small number of Western studies have focused or touched on the complex relationship of Central Asia to the commanding Slavic core.[73] Such inquiries have become possible by a growing number of analytical, sophisticated monographs and articles of surprising frankness—now appearing from the capitals of these republics. These studies lament the slow growth of processing industries in the region that lead to an excessive degree of import dependence on the RSFSR in food and light industry psoducts, cautiously question the wisdom of the massive export of fuels and raw materials and of an investment policy still geared more to such resource exports than to the expansion of employment in the area. Since the share of federal outlays in the region's industries have

risen through the decades (reaching almost three-fourths of all industrial investment in Kirgizia during the 10th FYP),[74] the latter are inevitably serving and are responsive to outsde interests, not primarily to those of these republics.

A sharp decline in the rate at which the expanding local adult population participates in the state sector and collective farm work is beyond dispute. Even though officially 99.3 percent of the employed population and some 82 percent of the population of working age are workers, employees and kolkhozniki, with roughly another 8 percent students and in the armed forces,[75] the ratio of nominal to average yearly employment has increased tremendously (Table 3). Both in the socialist sector as a whole and on collective farms, that ratio rose sharply through the 1970s in all four republics of Central Asia and particucarly so on collective farms. By contrast, because of the growing demand for labor in the northern two-third of Kazakhstan, the ratio of nominal to actual average employment in this republic as a whole now approximates that for the RSFSR. It is still much higher on collective farms alone which are concentrated in the southern portion of the republic with a strong native majority. (For Soviet figures relating to the Kirgiz SSR, see Table 4.)

A careful Geman study by Anna-Jutta Pietsch and Reinhard Uffhausen [76] attemps to gauge the current and projected extent of the labor surplus in Central Asia, both as evidenced by those in the work-age group remaining outside the socialized sector (excluding students and members of the armed forces) and as it is manifest in the overstaffing of collective and state farm operations. The authors come up with a total of 1.1 million surplus in Central Asia for 1979, some three-fifths of which were found *outside* the sphere of "socialized production," two-fifths *within* socialized agriculture. The estimates for Kazakhstan yielded another 315,000 surplus, almost equally divided between those within and without "socialized production." The authors also project these figures forward to 1990 on the basis of the anticipated population in the work-age category and past trend in employment, expecting at most a 1.8 million surplus in Central Asia and half as much in Kazakhstan.

The problem of significant labor surpluses in the countryside, juxtaposed with severe labor shortages in many Slavic regions has been discussed and debated in Soviet literature for some two decades. So far the natives of Central Asia show no inclination to migrate elsewhere or even to move to the main industrial cities of their own republics, which also struggle with manpower shotages. The pull factor to migration is clearly absent and, with cultural, linguistic, housing — and in northern republics climatic — barriers, it is almost certain to remain so in the foreseeable future. Outmigration from the Central Asian rural districts hinges on a sufficiently strong push factor, i. e., deteriorating economic conditions, brought about by relative overpopulation. It is on this factor that Lewis and associates base their prediction of large-scale outmigration. More importantly, the touchstone of Soviet policy towards Central Asia is and will be the degree that push factor is cushioned or reinforced or simply allowed to make its impact. As Lewis himself writes, "...if for reasons of policy or the welfare nature of Soviet society, wages and employment are maintained, one reasonably cannot expect significant outmigration."[77]

Despite endless discussion about the need to increase the mobility of Central Asians, Soviet authorities have shown no willingness so far to force outmigration by permitting,

TABLE 3
RATIO OF NOMINAL EMPLOYMENT OVER ACTUAL AVERAGE YEARLY EMPLOYMENT IN THE STATE AND COLLECTIVE FARM SECTORS
(Actual average yearly employment=100)

	1970*		1979*		1982
	In Entire Socialist Sector	On Collective Farms	In Entire Socialist Sector	On Collective Farms	On Collective Farms (estimates)**
Uzbek SSR	112.5	122.4	124.6	141.4	140
Kirgiz SSR	112.2	117.4	118.4	127.5	129
Tadzhik SSR	117.5	135.6	129.7	156.0	164
Turkmen SSR	109.4	108.4	115.5	119.2	122
Central Asian Republics	112.8	121.8	123.3	138.1	139
Kazakh SSR	110.9	111.7	106.2	112.0	117
RSFSR	106.6	101.2	106.5	102.6	108
USSR	107.4	107.1	108.5	109.3	114

*Nominal employment is according to the January censuses of 1970 and 1979; average annual employment according to these corresponding years.

**Estimates made by applying the growth rate of collective farm households from 1979 through 1982 to the 1979 number of collective farmers. The estimated 1982 figures for collective farmers were then divided by the official yearly avergage employment of kolkhozniki in the socialist sector.

Sources: Number of state employees and collective farmers from TsSU, *Itogi vsesoiuznoi perepisi...*, 5 (Moscow: Statistika, 1973), pp. 26–45 and TsSU, *Chislennost' i sostav naseleniia SSSR* (Moscow: Finansy i statistika, 1984), p. 156. Yearly average employment and number of collective farm households from *Narodnoe khoziaistvo SSSR v 1970 godu*, pp. 405 and 514–515; *Nar. khoz. SSSR v 1979 godu*, pp. 290 and 390; *Nar. Khoz. SSSR v 1982 godu*, pp. 262.

let alone abetting, the decline of living standards in the *kishlak*. However, one should properly separate welfare measures and passive arrangements resulting in the safeguarding of living levels from policies aimed at employment and job creation at the source of surplus manpower. Evidence points to a significant role of an economic cushion in blunting the push factor, while policy measures at increasing employment have so far had more modest success.

Notwithstanding the slow rise of labor productivity in Central Asian agriculture, the growth of collective farm revenues so far has kept ahead of population increase, resulting in a modest per capita expansion even during the second half of the 1970s. Moreover, as

TABLE 4
PARTICIPATION OF KOLKHOZNIKI IN SOCIALIST PRODUCTION OF KIRGIZ COLLECTIVE FARMS

Age Groups and Sex	Participating in the Socialist Sector (Percentages)		
	1970	1975	1980
Population of Working Age	93.2	86.8	66.6
Males	93.9	87.6	66.9
Females	92.5	85.8	66.3
	Share of Participants Not in Working Age as Percent of Those in Working Age		
Youngsters	39.9	33.1	29.0
Over Retirement Age	21.2	15.2	15.5
Youngsters and Retirees Combined	37.5	26.2	35.7

Source : V. V. Bushman, *Prognozirovaniia i razmeshcheniia sel'skogo khoziastva Kirgizskoi SSR* (Frunze : Ilim, 1982), p. 121.

Pietsch and Uffhausen conted, the constant and near identical relationship between gross and net income both per capita and total suggests that as long as labor productivity does not decline, real income levels on the farm will at least be maintained.[78] That through the 1970s the rise in wages in the region's agricultural sector was way out of line with productivity growth is shown by data from the Kirgiz SSR. While in the Kirgiz economy as a whole each one percent rise in productivity corresponded to a 1.2 percent increase in wages and salaries, in the agricultural sector of this republic it was matched by a staggering 8.7 percent.[79]

Favorable procurement prices for the region's agricultural products have been cited by Soviet demographic experts as one factor impending outmigration from the Central Asian countryside. In view of this acknowledged link, the recent sharp rise in the procurement price of cotton introduced in 1983 would suggest, in the words of a Western authority, that "however favorably the authorities look on outmigration, they are charry of antagonizing the Central Asians by allowing poverty and need to drive them out of rural areas." The new prices are expected to raise the profitability of the farms by as much as 77 percent, which should permit the rise of per capita income on the collectives at previous rates for perhaps another decade.[80]

In addition to the socialized sector, private agriculture provides very substantial additional income for farm families. From 1969 through 1978, average labor productivity per gross output on Kirgiz private plots, for example, amounted to two-thirds of that in socialized agriculture when weighted by the higher prices for its products. Per value added, it rose to 94 percent of that prevailing in the socialized sector due to the lower

material intensity of private agriculture. Finally, and most relevant for the topic at hand, personal income per unit of labor input on the private plot exceeded that derived from work on the collective farm by 48 percent, since in private agriculture all value added remained with the farmer.[81]

Active welfare measures and passive arrangements, such as an even greater tolerance of the "second economy" than would be the case in the Slavic republics, have both been instrumental in providing a cushion against declining living standards. Measures aimed at job creation and increasing employment outside the agricultural sector have been less successful, though not without some results. Today, out of every 100 new jobs in the country still only 6 to 7 are created in Central Asia.[82] The Union ministries continue to locate these mostly in large cities and settlements under 50,000, which account for two-thirds of the growth of able-bodied labor, received only 30 percent of capital investment during the 10th FYP.[83] Distressingly low labor productivity and product quality but, most importantly perhaps, the very inadequate development of construction organizations in Central Asia outside the principal cities (which results in longer delays and higher costs for ministries than elsewhere in the USSR outside the North) have impeded small-town industrialization.[84]

Given such unflattering performance, the reluctance of Union ministries to locate extensively through the region's countryside is, perhaps, understandable. So is the lobbying of Central Asians for a shift of emphasis from large integrated mills towards greater number of small specialized plants in the light and food industries and even some other branches.[85] To bring greater local influence over plant location and management, it is even argued to transfer those enterprises which process Central Asian agricultural and mineral resources from the tutelage of Union ministries to republican and even local control.[86] A Western study also reports that, at least in the strongest republic, Uzbekistan (but also in Turkmenia), the management of enterprises even in industries subordinated to Union ministries are being entrusted increasingly to indigenous personnel.[87] This fact and the strenuous lobbying of Uzbek elite may help to explain the relative progress of branch plant location in that republic compared to the weaker ones. During the 10th FYP (1976–1980), 290 branch plants and shops were created in small towns and settlements of Uzbekistan, permitting the employment of almost 30,000 persons. A very ambitious plan calls for an additional 130,000 new jobs by 1985 in this way.[88] However, even Central Asian specialists differ on the extent such industrialization should concentrate on the traditional cotton, wool and food processing branches or be extended to more modern industries. They also disagree on the degree the rural processing of raw materials can soak up surplus labor on the farms.[89]

It is therefore not suprising that the further expansion or irrigation to increase arable land today is urged ever more forcefully by most of the Central Asian elite. The old issue of water adequacy and the need for river diversion has again become a subject of intense and open debate in recent years. Helped by the promulgation of the Food Program and the sixth consecutive poor harvest in a row, the advocates of river diversion have won the battle with respect to the European project.[90] While water diversion into Kazakhstan and Central Asia from the Irtysh and the Ob (and perhaps the Enisei) is both more ambtious and controversial, the approval of the European scheme will certainly strengthen

the hands of its supporters. The most authoritative exposition of the two opposing views was reported recently in *Soviet Geography*.[91] What seems telling, however, is the frank admittance of two ecologically concerned scholars that "the determining factors over the long run would be factors of *socioeconomic* nature since these arguments carry the most weight in policymaking...in the area of interbasin projects and use of water resources." (They cite the shortage of capital and its high opportunity cost in alternative uses elsewhere to argue against diversion.)[92]

Realistically, however, socioeconomic factors are inseparable from the political context, especially in multinational federal states, with very diverse constituent parts. And it is doubly so in the USSR, where nine-tenths of all investment is centrally managed. Ultimately, therefore, the issue will have to be decided on political grounds involving conflicting regional and ethnic interests on a far larger and disturbing scale than perhaps any in the history of the USSR. Such a focus on the needs of Central Asia "would not yield the immediate ecomic benefits that crash development of transportable Siberian resources or modernization and reequipment in the European provinces are likely to provide. Both the pro-European and pro-Siberian lobbies in the planning hierarchy (and even the non-Russian nationalities west of the Urals) should agree on that point."[93] On the other hand, one must note the historic need of the Soviet system for Pharaonic projects and its preference for engineering solutions rather than more subtle adjustments. One possible strategy would be to proceed with the undertaking relatively slowly, especially since in the early stages the benefits albeit more modest than would be later on) would accrue entirely to the regions north of the Aral Sea. What seems certain at any rate is that within this century the economic development of Central Asia-southern Kazakhstan will be barely affected by the project even if it is approved. Its start would have more of a political (and symbolic) significance for these Moslem republics in demonstrating the regime's commitment to their welfare in a highly visible manner.[94]

6. *Conclusion*

This paper examined the geographic position of the Asian USSR in the spatial dimension of the Soviet economy. Furthemore, it analyzed the crucial impact of major national policy choices on the developmental prospect of Soviet Asia. Most of this hinterland is still weakly integrated into the country's economic mainstream, but the degree of that integration varies sharply, according to accessibility to the economic heartland, the nature of resource endowment and the ethno-cultural composition of population. Because this landmass is so huge, its disparate regions play very dissimilar roles in the Soviet spatial system and are affected by different policy choices and issues on the national level. As shown, Central Asia-southern Kazakhstan forms an entirely distinct geographic and cultural realm, with almost nothing in common with the rest of the Trans-Ural USSR, that vast frontier zone broadly referred to as Siberia. The latter, however, is far from a monolith. Physical geography, resource endowment and perhaps most importantly, contrasting accessibily to the economic heartland of the European USSR and the world outside, have destined its macroregions to play radically different roles in the spatial economic system of the country. Not only are there striking develomental contrasts between the more settled southern belt and the far more

inhospitable huge Northland, which plunges far to the south-east of Baikal, but the economic roles and prospects of Siberian regions contrasts sharply according to their east-west positions.

In any country, the economic profiles and prospects of regions are a result of interaction between external and internal impulses. External forces, whether coming from the world at large or from the geographic locus of power within the same state, tend to dominate in the case of raw, pioneer areas with small population. In the centrally managed USSR, regional development is inexorably intertwined with major national policy choices and priorities. These almost totally detemine the prospects of the different Siberian regions. The population of this vast land has remained too small and scattered even to cope with major projects of national importance without the influx of large numbers of temporary workers, let alone to be able to broaden local industries and social infrastructure essential for a more advanced and mature economic profile. The situation is somewhat different in Central Asia. National prorities have dominated the development of this non-Slavic and culturally non-European periphery as well and the region is now more strongly tied to the controlling "metropolis" in a state of economic dependency than ever in its history. Yet external factors are not so totally overriding as in Siberia and may be still less so in the future. The regional maket is large, manpower reserves plentiful, if not yet adequately trained. The degree to which the vast cohort of mostly rural youth can acquire skills, enter and integrate into the economy will be of fundamental importance to the region's future and, indeed, for the future of the USSR. However, investment from the Center (for which, at any rate, there are mounting claims from all over the country) alone will not solve the problem. Considerable reliance on local efforts and initiative and a combination of traditional skills and modern production methods will be necessary for development in the years ahead.

The article has shown that throughout Siberia the urgency and resource demand of major national policy decisions are making economic growth highly selective and distorted both in the sectoral and regional dimensions. The frenetic nature and unprecedented capital requirement of the current energy campaign have set the course for West and East Siberia and determined their industrial profile well into the future but affect these regions and their subunits in contradictory fashion. West Siberia, but particularly Tiumen Oblast, has become a quintessential energy colony of the European USSR, thanks to its oil and gas resources and the transportability of these fuels on a massive scale. Yet such pell-mell growth, focused almost exclusively on exploitation and outshipment of two commodities, leaves infrastuctural and social development even further behind and forestalls any hope for a more balanced development. By contrast, East Siberia and even the Kuzbas-Altai area of West Siberia have suffered because their vast energy riches (coal and hydropower) are far less mobile and must be utilized locally. The mounting resource need of the current energy campaign, so strongly focused on Tiumen Oblast, however, is affecting economic development throughout Siberia and the Far East. It has lowered economic growth rates in most other regions to below the Soviet mean. And, apart from gas and oil, it has reduced the rate of industrial expansion *below* the Soviet average in all three macroregions between the Urals and the Pacific.

The disappointing growth of the Soviet Far East is also strongly linked to the

evolution of foreign economic relations and national policy towards Japan. Because of that, major developments on the world market and the Japanese economy are almost as important as Soviet domestic constraints on labor and capital. Profound structural changes in Japan, highly successful conservation measures and abundant alternate sources of raw materials have made Soviet resources essentially superfluous and increasingly unattractive to that economic giant. BAM, constructed at huge cost, has failed to improve Soviet bargaining position significantly in the economic sphere, though it has strengthened Soviet strategic position on the Pacific. Given no likelihood of massive foreign investment in the Far East, and especially not in the interior, and given priority efforts focused on regions west of the Enisei, Soviet economic policy in the Far East over the next decade must be essentially a holding action. Long-term prospects will remain hostage to the interplay of international relations, Soviet strategic concerns and aspirations on the Pacific, on the one hand, and of domestic capital and manpower needs of regions more accessible to the country's heartland, on the other.

National policy choices with respect to Central Asia are of an altogether different nature. They are intertwined with fundamental political and ideological issues to a greater extent than elsewhere in the Asian USSR, since the extent and nature of investment allocation, transfer payments, population mobility and elite participation cannot be separated from the ethnic issue. Unlike through most of Siberia, where the incomplete integration into the national mainstream is essentially a question of physical obstacles, distance and weak infrastructure, in Central Asia it also linked to deep-seated cultural issues. The regime so far has been quite successful in responding to the burgeoning population growth (thus forestalling the decline, even the stagnation of living standards) through active welfare measures and passive arrangements, such as a greater tolerance of the second economy than elsewhere. Its accomplishments in dispersed, more flexible rural and small town industrialization, which involves greater local initiative and preferences than development in large cities, have been decidedly more modest. At the same time, further large irrigation projects, to which central planners have always been partial, are now possible only through interregional water-diversion schemes. This again lifts the policy choice, besides its other ramifications, squarely into the political realm. Here concerns for domestic stability, personal and institutional power relations at different levels of the leadership hierarchy and national emotions are no less important for the outcome than issues of economic rationality or equity.

Notes

1 John Friedman, "Integration of the Social System : An Approach to the Study of Economic Growth," *Diogenes*, Spring, (1961), pp. 75–97.

2 Tsentral'noe statisticheskoe upravlenie SSSR (henceforth TsSU), *Chislennost' i sostav naseleniia SSSR* (Moscow : Finansy i statistika, 1984), pp. 116–123.

3 *Narodnoe khoziaistvo SSSR v 1982 godu*, pp. 11–16, 538 and 546 and *Narodnoe khoziaistvo Kazakhstana v 1982 godu* (Alma-Ata : "Kazakhstan", 1983), p. 5.

4 *Glavnoe upravlenie goedezii i kartografii, Atlas SSSR* (Moscow, 1983), p. 99,

5 Densities in Tadzhikistan's Gissar Valley actually exceed 500 per km^2 with the prospect of reaching 1000 by the turn of the century. Andizhan Oblast in Uzbekistan has a density of 336 per km^2, greater than that of Moscow City and Moscow Oblast combined. *Molodoi Kommunist*, No. 9, 1982, pp. 67–72. Translated in *CDSP*, December 8, 1982, p. 12.

6 Leslie Dienes, "Pasturalism in Turkestan: Its Decline and Its Persistence," *Soviet Studies*, July 1975, pp. 343–365.

7 Authur A. Meyerhoff, "Soviet Petroleum: History, Technology, Geology, Reserves, Potential and Policy," in R. G. Jensen, T. Shabad & A. W. Wright, eds., *Soviet Natural Resources in the World Economy* (Chicago: University of Chicago Press, 1983), p. 335.

8 Michael Kaser, "The Soviet Gold Mining Industry," in R. G. Jensen, *ibid.*, pp. 580–581; T. Shabad, "Geography of Uranium Resources," in Dienes and Shabad, *The Soviet Energy System: Resources Use and Policy* (Washington: Winston & Sons / John Wiley, 1979), pp. 174–179 and T. Shabad, *Basic Industrial Resources of the USSR* (New York: Columbia University Press, 1969), pp. 326–31, 337–9.

9 TsSU USSR, *Chislennost' i sostav naseleniia SSSR*, pp. 110–137.

10 Even among the Kazakh, the birthrate during the 1970–78 period averaged 30.6%. Among the Uzbeks it stood at 40.8% and among the Tadzhiks as high as 41.8%. E. K. Vasil'eva, ed., *Rozhdaemost': izvestnoe i neizvestnoe* (Moscow: Financy i statistika, 1983), p. 22.

11 A. G. Granberg, "Sibir' v narodnokhoziaistvennom komplekse," *Ekonomika i organizatsiia promyshlennogo proizvodsva* (henceforth *EKO*), No. 4, 1980, pp. 102–103.

12 S. V. Slavin, *Osvoenie Severa Sovetskogo Soiuza* (Moscow: Nauka, 1982), pp. 12–14.

13 L. M. Kaplan and I. Iu. Marav'eva, *Ekonomicheskie problemy upravleniia stroitel'stvom na Severa* (Leningrad: Stroiizdat, 1983), p. 26.

14 Soviet medical investigations, for example, show that in Iakutsk children under 14 are 50 to 100 percent more prone to sickness and disorders of the endocrinal system than those in mid-latitude cities; three times more prone to illnesses afflifcting the nervous system, and suffer from blood deficiencies infinitely more. Soviet sources attribute these higher risks to the physical environment itself, though poorer nutrition and the inadequacy of preventive medical services must be a contributing factor. N. S. Iag'ia, *Zdorov'e naseleniia Severa* (Leningrad: Meditsina, 1980), pp. 202–214.

15 S. V. Tiashchenko, "Medico-Geographical Investigations in Siberia," *Soviet-America Seminar on the Social-Geographical Aspects of Environmental Change*. Institute of Geography, USSR Academy of Sciences, Irkutsk, August, 1983, p. 7.

16 TsSU RSFSR, *RSFSR v tsifrakh v 1983 godu* (Moscow: Finansy i statistika, 1984), pp. 8–13; *Narodnoe khoziaistvo Kazakhstana v 1980 godu*, p. 5 and Slavin, p. 22.

17 Foreign Press Center / Japan, *Japan's Energy Situation*, 1977, p. 6 and 1981, pp. 4–5 (Tokyo, October 1977 and August 1981); Japan Institute for Social and Economic Affairs, *Japan 1984* (Tokyo: Keizai Koho Center, 1984), p. 58 and *Narodnoe khoziaistvo SSSR*, Various issues. Table: *Toplivno-energeticheskii balans* for official consumption figures for whole USSR. The European Soviet Union still uses over 3 / 4 of all energy today, with a somewhat higher share earlier. L. A. Melent'ev and A. A. Makarov, eds., *Energeticheskii kompleks SSSR* (Moscow: Ekonomia, 1983), p. 193.

18 Melent'ev and Makarov, *ibid.*, p. 193.

19 Ia. A. Mazover, ed., *Problemy razvitiia i razmeshcheniia toplivnykh baz SSSR* (Moscow: Nauka, 1982), pp. 13–14.

20 The author has pointed this out as early as 1975 and 1977. L. Dienes, "Energy

Self-sufficiency in the Soviet Union," *Current History*, July-August, pp. 10–14 and 47–51 and "The USSR: An Energy Crunch Ahead," *Problems of Communism*, September-October, 1977, pp. 41–60.

21 T. Shabad, "News Notes," *Soviet Geography*, April, 1984, p. 266; Dienes and Shabad, pp. 46–47 and *Izvestiia*, December 7, 1984, p. 2.

22 Thane Gustafson, *The Soviet Gas Campaign: Politics and Policy in Soviet Decisionmaking* (Santa Monica: Rand, June 1983), Chapter 3.

23 See footnote 21.

24 S. N. Starovoitov, ed., *Problemy razvitiia Zapadno-Sibirskogo neftegazovogo kompleksa* (Novosibirsk: Nauka, 1983), pp. 80–81.

25 Gustafson, especially pages 38–43. Citation on p. 9.

26 Starovoitov, p. 33 for investment in 1982. Two recent Soviet sources give 47 billion rubles and 55 billion rubles respectively as total invesment in the West Siberian oil and gas complex. The latter source specifically includes outlays for the Tomsk and Tobolsk petrochemical *kombinaty* in the total. N. Kazanskii and N. Singur, "Sibir' i Dal'nyi Vostok v narodnokhoziaistvennom komplekse strany," *Planovoe khoziaistvo*, No. 4, 1984, pp. 99–100 and D. V. Belorusov, "Zapadno-Sibirskii territorial'no-proizvodstvennyi kompleks," *Problemy Severe*, No. 21, 1983, p. 55. I take Kazanskii and Singur's statement that over 120 billion rubles are earmarked for Siberia and the Far East for the 11th FYP to refer to state investment only, else outlays for Siberia would grow no faster than for the entire USSR. The head of Gosplan RSFSR also declared that in 1983 more than 27 billion rubles should be allocated to Siberia. *Izvestiia*, December 1, 1982. So with a similar ratio between state investment and investment from all sources that obtained during the 10th FYP on the one hand, or multiplying the *Izvestiia* figure 4.8 to 5 times, the total of 130 to 135 billion for Siberia during the 1981–85 period emerges.

27 *RSFSR v tsifrakh v 1983 godu*, pp. 8–13 and *Narodnoe khoziaistvo SSSR v 1970 godu*, pp. 27–32. Natural increase in Siberia during recent years has been only slightly above the Russian Republic average. Because of the higher proportion of single males, it is probably not much higher in Tiumen Oblast. Therefore, the difference between the actual population and that projected on the basis of natural increase representative of the RSFSR is basically *net* inmigration.

28 A. D. Khaitun, *Ekspeditsionno-vakhtovoe stroitel'stvo v Zapadnoi Sibiri* (Leningrad: Stroizdat, 1982), p. 9. In the past two decades, the total number of migrants into and out of West Siberian oil and gas region has exceeded 7 million. T. G. Gaponova, "Formirovanie i zakreplenie naseleniia," Akad. nauk, SSSR, Sibirskoe otdelenie, Seriia obshchestvennykh nauk, *Izvestiia*, No. 11, 1983, p. 54.

29 S. D. Agaeva and B. D. Orlov, "Nekotorye cherty investitsionnogo protsessa v zapadnosibirskom neftegazovom komplekse," Akad. nauk SSSR, Sibirskoe otdelnie, Seriia obshchestvennykh nauk, *Izvestiia*, No. 11, 1982, p. 88.

30 *Ekonomicheskaia gazeta*, No. 36, September, 1984, p. 9. Public health fares even worse. Only 0.5 percent of the monies allocated for "non-productive" construction has gone for public health. That is one-eighth of the norm. *Sovetskaia Rossiia*, December 9, 1983, p. 3.

31 S. N. Shelezko, *Sotsial'no-demograficheskie problemy v zone BAMa* (Moscow: Statistika, 1980), p. 40.

32 B. N. Annenkov, "Finansovye aspekty formirovaniia i razvitiia territorial'no-proizvodstvennykh kompleksov," *Finansy SSSR*, No. 9, September 1980, p. 21.

33 Gustafson, pp. 23–26.
34 *Narodnoe khoziaistvo SSSR v 1979 godu*, p. 374 and *Narodnoe khoziaistvo SSSR v 1982 godu*, p. 345.
35 A. G. Aganbegian, ed., *Sibir' v edinom narodnokhoziaistvennom komplekse* (Novosibirsk : Nauka, 1980), p. 183.
36 T. B. Baranova, "Osnovnye pokazateli razvitiia promyshlennosti Sibiri v Desiatoi Piatiletke," Akad. nauk SSSR, Sibirskoe otdelenie, Seriia obshchestvennykh nauk, *Izvestiia*, No. 11, 1982, p. 73.
37 *Narodnoe khoziaistvo SSSR v 1975 godu*, pp. 196–203 and *Narodnoe khoziaistvo RSFSR v 1975 godu*, pp. 45–50.
38 A. I. Shrago, "Kuzbasskii territorial'no-proizvodstvennyi kompleks," Akad. nauk SSSR, Sibirskoe otdelenie, Seriia obshchestvennykh nauk, *Izvestiia*, No. 6, 1980, pp. 122–123 ; *Gorizonty Kuzbassa : Ekonomicheskii ocherk* (Kemerovskoe knizhnoe izdatel'stvo, 1982), pp. 12–15 ; *Narodnoe khoziaistvo SSSR v 1975 godu*, pp. 196–197 and *Narodnoe khoziaistvo SSSR v 1982 godu*, pp. 116–117.
39 T. Shabad, "News Notes," *Soviet Geography*, April 1984, p. 276.
40 *Sovetskaia Rossiia*, January 21, 1984, p. 2 and *Pravda*, October 6, 1983, p. 2.
41 *Trud*, August 10, 1983, p. 2. This came as a surprise to me. To my knowledge no such statement about this basin has yet been made in the open literature where the incomparably low extraction cost of this coal has always been stressed.
42 Iu. L. Marshak *et al.*, "Osnovnye voprosy szhiganiia uglei Kansko-Achinskogo basseina," *Elektricheskie stantsii*, No. 1, 1981, pp. 18–24 and V. E. Popov and P. V. Shemetov, eds., *KATEK i razvitie otraslei khoziaistva Sibiri* (Novosibirsk : Nauka, 1984), pp. 53–61.
43 *Sotsialisticheskaia industriia*, November 19, 1977, p. 2.
44 V. A. Popov, K. M. Zviagintseva and A. P. Kuz'min, "Dolia Kuzbassa," *EKO*, No. 4, 1984, p. 6 and *Trud*, August 10, 1983, p. 2.
45 Mazover, (1982), p. 38.
46 V. E. Popov and P. V. Shemetov, pp. 16–22 and 61–85 ; Popov, Zviagintseva and Kuzmin, p. 11 ; *Sotsialisticheskaia industriia*, January 13, 1983, p. 2 and February 13, 1983, p. 2.
47 Leslie Dienes, "The USSR : An Energy Crunch Ahead," *Problems of Communism*, September-October, 1977, pp. 51–60.
48 *Sotsialisticheskaia industriia*, January 13, 1983, p. 2 and Popov and Shemetov, p. 78. An earlier report on one of these plants being under construction in 1979 was made in P. S. Neporozhnyi and Z. F. Chukhanov, "Comparative Analysis of Traditional and Complex Processing Methods for Deriving Liquid Fuels from Coal," (Paper presented at US-Soviet seminar under energy agreement, 1979).
49 L. L. Peterson and A. Sh. Reznikovskii, "Rol' GES i GRES v OEE SSSR," *Elektricheskie stantsii*, No. 8, 1983, pp. 33–37.
50 *Elektricheskie stantsii*, No. 5, 1983, p. 7 and *Pravda*, January 28, 1979.
51 Melent'ev and Makarov, p. 170.
52 *Pravda*, February 16, 1982, p. 2 and March 22, 1979.
53 *Ekonomicheskaia gazeta*, No. 35 (August, 1983), p. 6.
54 A. G. Aganbegian, ed., *Razvitie narodnogo khoziaistva Sibiri* (Novosibirsk : "Nauka", 1978), pp. 173–79.
55 V. P. Korytnikov *et al.*, "Osnovnye napravleniia razvitiia teplosnabzheniia i teplifikatsii v gorodakh Sibiri i Dal'nego Vostoka," *Teploenergiia*, No. 2, 1979, p. 11 and G. P. Dobrovol'skii, "Nauchnye issledovoniia potselevoi programme 'Toplivno-Energeticheskii

Kompleks Sibiri'," "Akademiia nauk SSSR," *Vestnik*, No. 5, 1982, p. 43.

56 Aganbegian, p. 174 and Korvtnikov, p. 11.

57 L. S. Khrilev *et al.*, "Opredelenie effektivnosti i mashtabov primeneniia toplofikatsiia," *Teploenergetika*, No. 8, 1983, pp. 2–6 and Korytnikov. Even major industries are not getting the needed gas. The construction of two ammonia plants in Kemerovo Oblast and a huge methanol unit in Tomsk are nearing completion. Without the doubling of the Nizhnevartovsk-Kuzbas pipeline, which has not even been approved yet, they will not have the needed raw material. *Izvestiia*, January 5, 1984, p. 2. Also Popov and Shemetov, p. 120.

58 A. G. Aganbegain, A. A. Kin and V. P. Mozhin, eds., *BAM. Stroitel'stvo khoziaistvennoe osvoenie* (Moscow: Ekonomika, 1984), p. 71.

59 A more detailed elaboration of these options are found in Leslie Dienes, "Economic and Strategic Position of the Soviet Far East," *Soviet Economy*, No. 2, Spring, 1985, pp. 164–7.

60 Foreign Press Center (Japan), *Japan's Energy Situation*, 1981, pp. 4 and 9–12, especially Table 5. Purporseful and steady expansion of nuclear power capacity in countries like Japan and France, more fitful but nonetheless steady advance through most of Western Europe is further helping to reduce energy imports. *The Japan Times*, October 27, 1984, p. 2 and *The Christian Science Monitor: Weekly International Edition*, October 6–12, 1984, p. 3.

61 Akademiia nauk SSSR, Institute mirovoi ekonomiki i mezhdunarodnykh otnoshenii, *Ekonomicheskoe polozhenie kapitalisticheskikh i razvivaiushchikhsia stran: Obzor za 1983 god i nachalo 1984 goda* (Moscow: "Pravda", 1984), pp. 39 and 42.

62 Galina Orionova, "Cheerless Prospect for Soviet-Japanese Economic Cooperation," *Radio Liberty Research*, March 1, 1984, pp. 1–6.

63 *The Oil and Gas Journal*, August 27, 1984, p. 28 and Allen S. Whiting, *Siberian Development and East Asia* (Stanford: Stanford University Press, 1981), pp. 146–148.

64 Aganbegian *et al.*, eds., . (1984), pp. 12, 52, 71, 96–97; *Far Eastern Economic Review*, March 17, 1983 and A. A. Nedeshev, F. F. Bybin and A. M. Kotel'nikov, *BAM i osvoenie zabaikal'ia* (Novosibirsk: Nauka, 1979), pp. 96–97.

65 *The Daily Yomiuri*, December 10, 1984, p. 1.

66 Hiroshi Kimura, "Soviet Policy Towards Japan," *Washington Quarterly*, Summer, 1984, pp. 29–34. Citation on page 33.

67 Gerald Segal, ed., *The Soviet Union in East Asia* (Boulder, Colorado: Westview Press, 198), p. 1.

68 "Soviet Far East Bases," *Jane's Defence Weekly*, April 14, 1984, p. 560.

69 *Shipping and Trade News*, October 23, 1984 and interview with Takeshi Miyamoto, President of JEURO Container Transport Inc., Yokohama, November, 1984.

70 E. B. Aizenberg and Iu. A. Sobolev, *Kompleksnye programmy razvitiia vostochnykh raionov SSSR* (Moscow: Ekonomika, 1982), p. 126.

71 *Ekonomicheskaia gazeta*, No. 46 (November, 1984), p. 14.

72 *Atlas SSSR* (Moscow: Glavnoe upravlenie geodezii i kartografii, 1983), especially p. 132.

73 A most up-to-date, excellent treatment of the issue is found in the two-part study by Marie-Agnès Crosnier, Michèle Kahn, Part I and Hervé Gicquiau, Part II, "Développement et dépendance économique de l'Asie Centrale soviétique," *Le Courrier des pays de l'est*, No. 276, September, 1983, pp. 3–58 and No. 277, October, pp. 3–34.

74 Akademia nauk Kirgizskoi SSR, Institut ekonomiki, *Ekonomika Kirgizi i sostavnaia chast'*

narodnokhoziaistvennogo kompleksa SSSR (Frunze, 1977), p. 88. Quoted in Hervé Gicquiau, "Développement et dépendance économique," Part II, *Le Courrier des pays de l'est*, No. 277, Octobre 1983, p. 32.

75 TsSU, *Chislennost' i sostav naseleniia* (1984), p. 156; Anna-Jutta Pietsch and Reinhard Uffhausen, *Arbeitskräftepotential und Migrationsverhalten in der zentralasiatischen Republiken und Kasachstan* (Osteuropa-Institut, München. Working Papers, No. 83, December, 1981), pp. 24–25; Godfrey S. Baldwin, *Population Projections by Age and Sex : for the Republics and Major Economic Regions of the USSR 1970–2000* (U. S. Department of Commerce, Sept., 1979), p. 128.

76 Pietsch and Uffhausen, especially pp. 21–38.

77 Robert A. Lewis and Richard Rowland, *Population Redistribution in the USSR* (New York : Praeger, 1979), pp. 416–417.

78 Pietsch and Uffhausen, pp. 44–48.

79 V. V. Bushman, *Prognozirovanie razvitiia i razmeshcheniia sel'skogo khoziaistva Kirgizskoi SSR* (Frunze : Ilim, 1982), p. 124.

80 Ann Sheehy, "Prospects for Early Outmigration of Rural Central Asians Remains Bleak," *Radio Liberty Research*, September 28, 1983, pp. 7–8.

81 Bushman, pp. 78–80.

82 G. Kopanev *et al.*, "Segodnia i v budushchee," *Ekonomika i zhizn'*, No. 2, February 1982, p. 23.

83 *Pravda*, June 18, 1984, p. 2 and Kopanev, pp. 23–24.

84 Kopanev, pp. 24–25; I. I. Iskanderov, ed., *Voprosy povysheniia effektivnosti obshchestvennogo proizvodstva v Uzbekistane* (Tashkent : FAN, 1982), pp. 3, 24, 78–79 and 113; *Ekonomika i zhizn'*, No. 11, 1980, pp. 74–75.

85 A. A. Asanova, *Problemy nauchno-tekhnicheskogo progressa i povysheniia effektivnosti promyshlennogo proizvodstva* (Frunze : Kirgyzstan, 1981), pp. 111–113 and 116.

86 *Pravda*, May 5, 1983 and Bushman, pp. 129–130.

87 Gicquiau, p. 32.

88 R. I. Khakimov, *Effektivnost' sovershenstvovaniia proportsii promyshlennosti v soiuznoi respublike* (Tashkent : Uzbekistan, 1982), p. 118. See also T. Shabad, "Some Aspects of Central Asian Manpower and Urbanization," *Soviet Geography*, February 1979, pp. 121–122.

89 Khakimov, pp. 120–122; Bushman, pp. 127–128.

90 The first stage of this project involves the annual diversion of 5.8km^2 of water from the North-West of the European USSR to the Volga-Don Canal to and the Sea of Azov.

91 See the articles and reports under the heading, "The Problem of Redistribution of Water Resources in the Midlands Region of the USSR," *Soviet Geography*, December 1983, pp. 713–727.

92 *Ibid.*, pp. 721–722 and 727. A little known proposition made in one of the above reports is the conversion of the Bukhara-Ural two strings gas pipeline to a pilot water transport project in the opposite direction. With a relatively short extention, it would be able to carry 2km^3 of water per year to Uzbekistan without any water loss or deterioration of water quality and may serve as a "pilot experiment to test the cost benefit aspect of using Siberian water in Central Asia," *ibid.*, p. 726.

93 L. Dienes, "Regional Development," Chapter 8 in Adam Bergson and Herbert S. Levine, *The Soviet Economy : towards the Year 2000* (London : George Allen & Unwin, 1983), p. 257.

94 David S. Kamerling, "The Soviet Geographic Chimera." Paper presented at the National Convention of the AAASS, Kansas City, October 22–25, 1983.