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The Soviet Construction Materials Industry: Its Role in Economic Expansion

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An Intelligence Assessment

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An Intelligence Assessment

This paper was prepared by [redacted] 25X1
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The Soviet Construction Materials Industry: Its Role in Economic Expansion 25X1

Key Judgments

Information available as of 15 December 1985 was used in this report.

Mikhail Gorbachev's aggressive modernization program will challenge the construction materials industry to supply more and better quality building products for renovating and expanding production facilities. In addition, his program to improve consumer welfare depends, in part, on more and better housing. Whether the industry can meet these challenges depends on its ability to overcome a number of problems that have contributed to its deteriorating performance over the past decade. 25X1

Growth in the production of construction materials slowed abruptly between 1975 and 1982, when output rose on the average by only 1.5 percent annually. Factors contributing to slow production growth included the deteriorating quality and shortage of raw materials, aging plant and equipment, inadequate investment, shortages of labor, irregular supplies of energy, and transportation bottlenecks. These deficiencies were exacerbated by the fragmentation of administrative responsibility for the planning, production, and distribution of construction materials. 25X1

Performance improved slightly during 1983-85, because of increases in industrial capacity and labor productivity. Growth, however, is still well below the rates necessary to assure an adequate supply of materials to meet the newly promulgated investment plans for the balance of the decade. 25X1

The poor record of the industry has had a substantial negative impact throughout the economy. Shortages of materials have occurred consistently since the mid-1970s, resulting in construction delays, plant shutdowns, and worker layoffs. Major sectors of the economy have been affected by these shortfalls in recent years:

- Soviet nuclear power stations under construction have faced shortages of cement and prefabricated concrete.
- The campaign for a vast improvement in rural housing has floundered from severe shortages of construction materials, especially wall and roofing materials.
- Siberian oil-drilling sites and pipeline construction projects are experiencing shortages of cement.
- Facilities supporting construction within the defense sector continue to be short of reinforced concrete, cement, and brick. 25X1

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Soviet officials have long been aware of the problems confronting the industry. Official resolutions and numerous articles in the Soviet press have recommended the expansion of capacity, automation, and conservation of energy and raw materials. Investment, however, has been inadequate; there has been little addition to the industry's capacity since 1980. Moreover, the limited success in automation has hampered Soviet efforts to improve substantially the quality of materials produced and reduce the labor intensiveness of the industry. There has been no effort to consolidate administrative control over construction materials production and distribution. The impact of these constraints has been magnified by Moscow's inability to move ahead on the economywide conservation of construction materials. As a result, Moscow has had to increasingly rely on imports of these materials, especially insulation and refractory materials. By 1984, imports had reached $675 million—nearly 40 percent of which was paid in hard currency.

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Many of the factors that contributed to poor performance in 1976-82 are deeply rooted in the system. If Gorbachev's modernization program is to succeed, increased attention to the industry's problems is in order. The General Secretary obviously hopes that deemphasizing new plant construction and vigorous action to conserve construction materials will reduce the growth in demand for these products. He must, however, deal with two immediate problems: the inefficiency of construction materials production and the past insufficient allocation of investment to the industry. Gorbachev took a major step toward addressing the first problem by appointing Sergey F. Voyenushkin—a critic of current construction policies and an established innovator—as Minister of the Construction Materials Industry in July. We have yet to determine the industry's share of new investment in the 1986-90 Five-Year Plan.

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In the next year or so, indications that Moscow is moving smartly to improve the performance of the construction materials industry would include:

- An increase in investment allocated to the industry in the 1986-90 Five-Year Plan.
- The replacement of ineffective managers.
- The formation of a "superministry" of construction materials or the absorption of the ministry into the State Committee for Construction Affairs to address the fragmentation of material-related responsibilities.
- The signing of major contracts with Western—possibly US—firms for the renovation and modernization of cement and refractory plants.

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Gorbachev will be hard pressed to reconcile his concomitant needs to boost investment in machine building, meet the investment needs of energy and agriculture, and increase investment in the construction materials industry. On the demand side, he will find it difficult to deemphasize new construction as much as he would like and to otherwise get the economywide construction materials conservation he is counting on. Therefore, unless investment in the industry is increased substantially to develop new sources of raw materials, commission new production capacity, renovate old plants, and increase output of processing equipment, continuing construction materials shortfalls will seriously hamper Gorbachev's modernization and consumer welfare efforts. Specifically, new housing starts will slow, capital renovation will be delayed, and the planned increases in the production of advanced and higher quality construction materials will not be realized.

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The Setting

The efficiency of the national economy and the rates of our growth depend to a great extent on the structure and quality of materials. At present we are lagging in this task.

Mikhail S. Gorbachev
at the June 1985 Science and Technology Conference

Since coming to power, Mikhail Gorbachev has set in motion the most aggressive economic agenda in the USSR since the mid-1960s. His initiatives are aimed at raising productivity and efficiency throughout the economy by matching more and better equipment with a motivated work force.[1] Although Soviet economic performance has improved in recent years from the low levels of 1979-82, accelerated growth is required if targets are to be met

One of the constraints to growth is inadequate investment for economic modernization and expansion. Renovating and reequipping existing enterprises rather than building new ones is a key element of Gorbachev's modernization strategy. Unless more resources are allotted to expansion of the construction materials industry, however, the goals for modernization and renovation of industrial facilities will not be achieved.

We agree with the General Secretary that construction is the main support mechanism that will facilitate economic expansion. To maintain an effective construction sector, the construction materials industry must provide more and better quality materials, particularly cement, concrete, wall materials (especially gypsum), and ceramic products. About two-thirds of the total output of construction materials is used in domestic construction—both civilian and military. Construction is the largest consumer of cement, prefabricated concrete products, lumber, glass, bricks, and structural metal elements (see figure 1).

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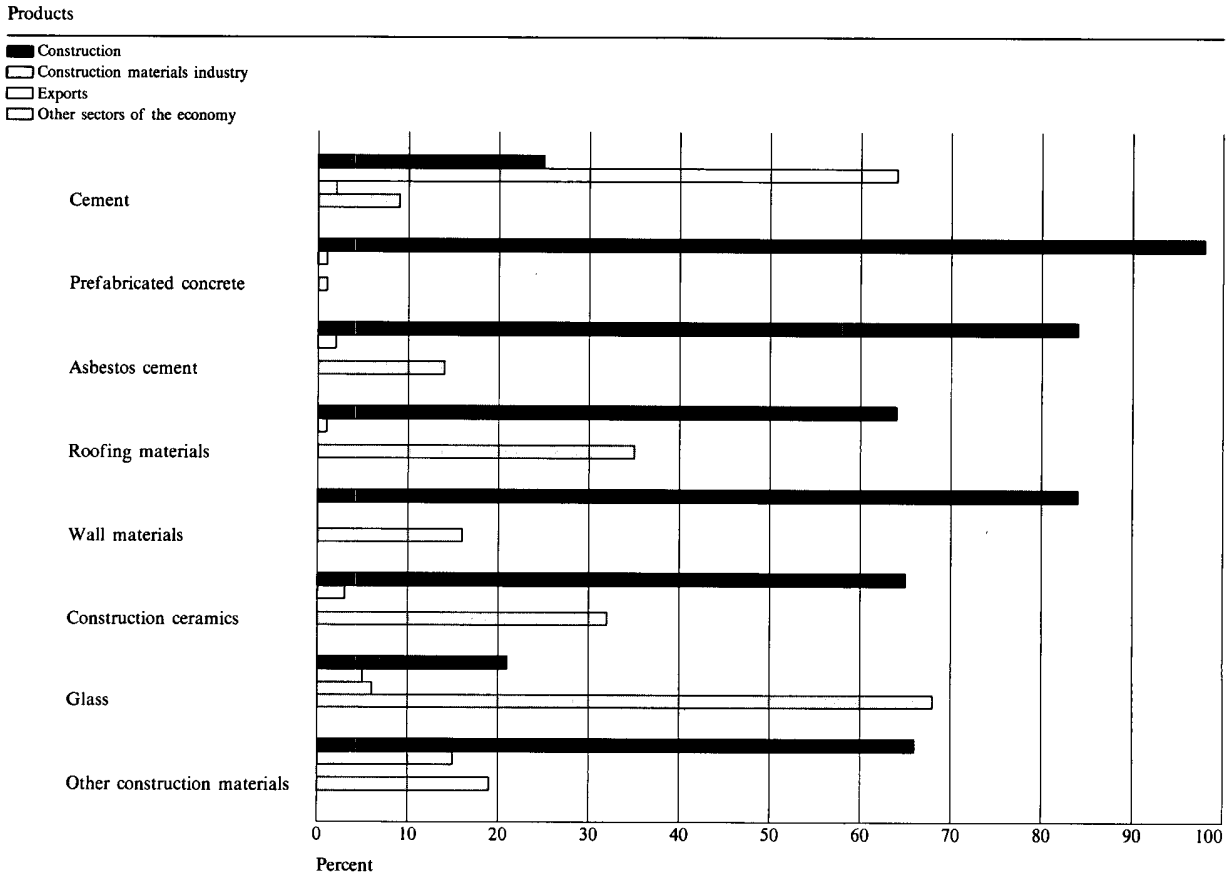
The Soviet Construction Materials Industry

The USSR Ministry of the Construction Materials Industry includes more than 300 production associations, enterprises, and organizations at the national level as well as 15 republic ministries. The all-union ministry is organized into seven general divisions—Administration, Industry, Economy, Science and Technology, Supply and Repair, Workers, and Miscellaneous—each of which contains several departments and administrations.

The Industry and Economy divisions are of primary importance because they coordinate planning and production targets with the State Planning Committee. Most of the other divisions provide contributions to the Economy Division when their efforts may affect plans and targets. The Economy Division measures performance and provides guidance when deviations from plans occur. The Industry Division is involved most heavily with the use of resources needed for material production and distribution. It contains the departments responsible for the eight product sectors of the industry—cement, prefabricated concrete, asbestos cement, wall materials, roofing materials, construction ceramics, glass, and other construction materials.

Although the industry processes many varied products that have uses in all sectors of the Soviet economy, output of the construction materials industry constitutes only 5 to 6 percent of total Soviet industrial production.

Figure 1
USSR: Estimated Disposition of Output From the Construction Materials Industry, 1982



Source: CIA update of work done on the recontructed Soviet Input-Output Table in Producers' Prices (Matrix of Direct Input Coefficients) by the Center for International Research, US Bureau of the Census.

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The various sectors of the construction materials industry are closely linked, with poor performance in one affecting the others. The key sector is cement, which "sells" over 60 percent of its product to six of the remaining sectors. Slow growth in cement supplies, for example, has constrained the production of prefabricated concrete, a major ingredient in construction.

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A Troubled Industry

Rapid increases in the output of construction materials in the 1961-75 period—up by an average of nearly 10 percent per year—were followed by an abrupt slowdown in growth to only 2 percent annually in the

Table 1
USSR: Average Annual Growth of Construction Materials Output

Percent

	1961-75	1976-80	1981	1982	1983	1984	1985 [a]
Total	**9.6**	**1.9**	**0.9**	**0.3**	**2.3**	**1.6**	**1.0**
Cement	7.9	0.6	1.7	−2.8	3.8	1.5	0.8
Prefabricated concrete	9.7	1.2	1.8	−0.4	3.2	3.0	1.1
Wall materials	1.7	−1.6	0.4	−0.3	2.6	−0.6	NA
Asbestos cement	6.7	−1.3	2.0	1.5	4.1	2.8	NA
Roofing materials	5.9	−0.3	−0.8	−0.4	7.9	2.4	NA
Construction ceramics	6.2	2.3	8.4	5.0	4.8	2.2	NA
Glass	6.0	4.4	0.0	−0.4	4.7	2.9	NA
Other construction materials [b]	4.7	1.1	1.1	1.1	−1.0	0.4	NA

[a] Estimated.
[b] Includes construction lime, gypsum, rock products, and mineral wool insulation.

Source: CIA's index of Soviet industrial production.

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last half of the 1970s. Since 1980, performance in the industry has been mixed: production virtually stagnated in 1981-82 but made a moderate recovery in 1983-84. The severe winter hampered output in the first quarter of 1985; we currently expect the industry's output to grow by only 1 percent for the year as a whole, a significant drop from 1983-84 growth rates (see tables 1 and 2).[2] Overall rates of growth in the output of construction materials will thus be less than half those originally targeted for 1981-85.

Most of the industry's poor performance since the mid-1970s is due to the substantial decline in both the growth of capital and labor inputs and their productivity (see table 3). Many factors contributed to this decline.

Deteriorating Quality and Shortages of Raw Materials

The quality of quarry products, such as limestone and gypsum, has been deteriorating because of increasing reliance on the exploitation of marginal deposits. Soviet use of lower quality raw materials increases both production problems and costs. For example, according to one Soviet study, up to one-third of the decline in cement production in 1979 resulted from difficulties in processing low-quality raw materials.

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Chemical additives—essential for building materials exposed to extreme cold—as well as steel reinforcing material and crushed stone are in short supply. Shortages of stone have caused concrete plants in some construction administrations to operate at as little as one-fifth of capacity in recent years. Although industrial byproducts, such as blast furnace slag, nonferrous wastes, and fly ash, can compensate for inadequate supplies of some raw materials, annual increases in the availability of these substitutes have fallen off with the drop in growth rates of the metals and coal industries.

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[2] Performance in the precast ferroconcrete sector was so abysmal that the Soviets withheld monthly production statistics for three consecutive months earlier this year.

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Table 2
USSR: Production of Major Construction Materials

	1975	1980	1981	1982	1983	1984	1985 [a]
Cement *(million tons)*	122.1	125.0	127.2	123.7	128.2	129.9	131.0
Precast ferroconcrete *(million m³)*	114.2	122.2	124.5	123.6	128.3	132.4	133.8
Of which:							
Prestressed reinforced concrete	27.2	27.2	28.1	27.6	28.5	29.4	NA
Asbestos cement *(billion tiles)*	7.8	7.3	7.5	7.6	7.9	8.1	NA
Wall materials *(million bricks)*	63.0	58.0	58.3	58.1	59.6	59.2	NA
Of which:							
Construction brick	47.2	41.8	41.8	41.6	42.5	41.8	NA
Of which:							
Refractory brick	33.7	27.5	27.4	27.1	27.6	27.1	NA
Soft roofing materials *(million m²)*	1.8	1.7	1.7	1.7	1.8	1.9	NA
Roofing tile *(million m²)*	1.9	0.6	0.6	0.6	0.7	0.7	NA
Linoleum *(million m²)*	71.9	93.1	95.1	96.2	99.9	106.0	NA
Ceramic floor tiles *(million m²)*	23.7	23.2	26.0	27.6	29.5	30.3	NA
Styled ceramic wall tiles *(million m²)*	24.1	32.6	35.4	37.5	39.3	40.4	NA
Acid-proof ceramics *(thousand tons)*	601.0	609.0	605.0	601.0	616.0	612.0	NA
Sanitary ceramics *(million units)*	8.9	9.6	9.7	9.7	9.9	10.0	NA
Window glass *(million m²)*	269.0	245.0	245.0	243.0	247.0	247.0	NA

[a] Estimated.

Source: *Narodnoye khozyaystvo SSSR*, various years (hereafter referred to as *Narkhoz*).

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Table 3
USSR: Average Annual Growth of Productivity in the Construction Materials Industry

Percent

	1961-65	1966-70	1971-75	1976-80	1981	1982	1983	1984
Combined productivity [a]	−1.2	0.3	0.6	−2.3	−1.2	−2.8	−0.6	0.2
Capital	−7.9	−2.1	−3.7	−5.4	−4.3	−3.8	−3.3	−3.1
Labor	4.6	2.3	4.2	0.3	1.4	−2.1	1.7	2.9

[a] Combined productivity is calculated using a Cobb-Douglas production function. Inputs of capital and labor are weighted with their respective income shares in 1970, estimated in the derivation of GNP at factor cost in that year. Labor is assigned 55.1 percent and capital, 44.9 percent.

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Problems With Capital Equipment

The Soviets have added little new capacity in the construction materials industry since 1980, and, according to a plethora of Soviet press reports, much new equipment operates far below rated capacity. Moreover, the majority of the capital equipment currently in use is over 20 years old. The amount of repair work has consequently skyrocketed with shutdowns for repair—exacerbated by shortages of labor and materials—taking a significant toll on production and efficiency. Because of the limited additions to plant and equipment, Moscow—despite the growth of the pool of skilled repair workers—has been unable to compensate for this loss.

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Inadequate Investment

During 1971-75, the construction materials industry's share of total industrial investment was 5.5 percent. By 1984, its share had declined to 3.7 percent, reflecting the higher priority accorded to other branches of the economy. Moreover, the investment that has been dedicated to the construction materials industry, as in some other branches of industry, has been skewed toward the construction of finished product capacity to the relative neglect of developing raw materials, storage facilities, and social infrastructure such as worker housing.

Shortages of Labor

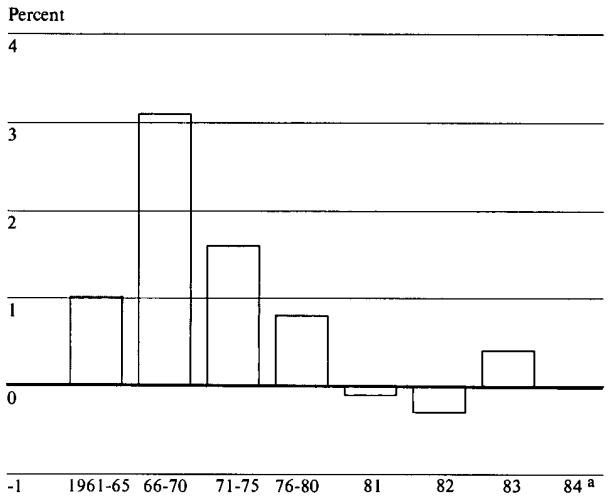
In line with a general decline in the growth of the Soviet labor force, growth of employment in the construction materials industry has fallen since the early 1970s, with zero growth recorded in 1984 (see figure 2). This has resulted in an acute shortage of skilled labor across the entire industry. A large, continual turnover of labor because of inadequate investment in social infrastructure has exacerbated the problem.

the share of such investment in the cement industry alone would have to be almost doubled to prevent excessive labor turnover.

Irregular Supplies of Fuel and Electricity

The construction materials industry is heavily dependent upon electricity and gas, and interruptions in the supply of energy have pushed down production of

Figure 2
USSR: Average Annual Growth of Employment in the Construction Materials Industry, 1961-84



[a] Zero or no growth.

Source: *Narkhoz*, various years.

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construction materials.

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Since the late 1960s, the industry has attempted to reduce its reliance on coal by replacing it with gas, which is both more efficient and reliable. Limited gas storage facilities and distribution lines, however, have prevented a faster transition.

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Transportation Bottlenecks

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Bottlenecks in transportation—especially in 1979, 1982, and 1985—have also restricted output. The siting of many construction materials plants near raw material deposits has necessitated the transportation of building products over increasingly longer distances (see figure 3). As a result, Moscow has to cope with rising shipping losses due to theft and spillage along

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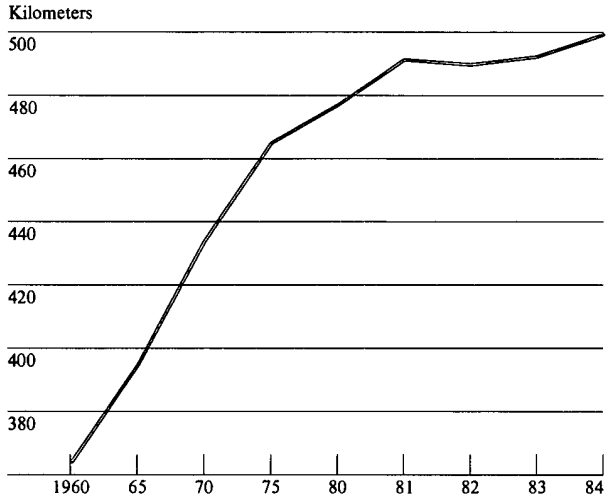
Figure 3
USSR: Average Length of Haul by Rail for Construction Materials, 1960-84



Source: *Narkhoz*, various years.

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the route. Ironically, many of these same construction materials plants have exhausted the supply of raw materials at nearby quarries. As a result, heavy and bulky materials must be brought in from elsewhere, adding to the transportation system's already heavy burden.

Fragmentation of Administrative Responsibility

Administrative responsibility for the planning, production, and distribution of construction materials is divided among a myriad of organizations. The Ministry of the Construction Materials Industry is nominally tasked with these duties, but we have identified at least 16 other ministries, committees, and directorates with material-related responsibilities. For example, the Ministry of Ferrous Metallurgy produces the blast furnace slag to be used in slag bricks; the Ministry of Construction produces concrete for civilian construction projects; the Main Directorate for Special Construction produces concrete for military construction projects; and the Ministry of the Chemical Industry produces and distributes polymeric materials and phosphogypsum. This division of responsibility exacerbates poor performance caused by the other factors noted above. 25X1

Impact of Poor Performance

The poor performance of the construction materials industry, along with excessive waste in Soviet use of construction materials, has had a substantial negative impact throughout the economy. Many different industries as well as specific geographical areas have been affected 25X1 Although 1979 and 1982 were particularly bad years, shortages of construction materials have occurred consistently since the mid-1970s and have continued to affect Soviet enterprises in 1985. Appeals to the State Committee for Material and Technical Supply (Gossnab) and the Central Committee of the CPSU have resulted only in the issuance of decrees calling for additional production from enterprises of the Ministry of the Construction Materials Industry and increased availability of rail transport. 25X1

The major sectors of the Soviet economy affected by construction materials shortfalls in the 1981-85 period include: 25X1

- *Nuclear power.* Soviet nuclear power stations have faced shortages of cement and prefabricated concrete. 25X1

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- *Rural housing.* According to *Izvestiya*, rural housing continues to face severe shortages of construction materials, especially wall and roofing materials. This has led the USSR People's Control Committee to reprimand the Main Administration for Trade in Economic Goods for causing the shortages.

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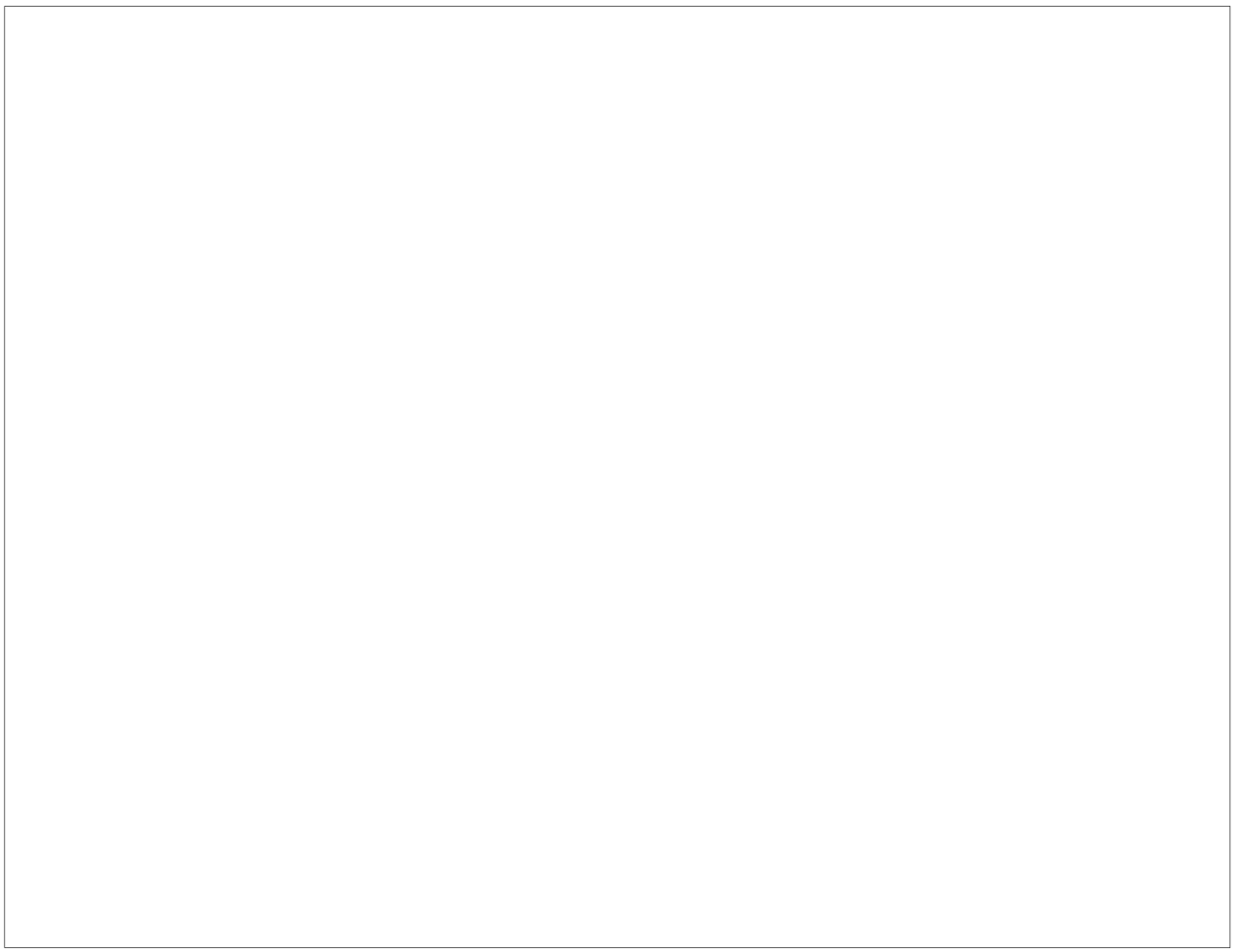

- *Oil and gas development.* Siberian oil-drilling sites and pipeline construction projects are experiencing shortages of cement. Shortages of construction materials needed for well repairs and infrastructure development in the oil and gas fields have been a chronic complaint of the oil and gas ministries for several years.

- *Military construction.* Facilities subordinate to the Defense Ministry's Main Directorate for Special Construction—a prime contractor for the initial and ongoing construction support of facilities for strategic offensive and defensive forces—continue to be short of reinforced concrete, cement, and brick.

A variety of Soviet enterprises also faced shortages of clinker and slag, glass, gypsum, refractory bricks, and slate during 1984 and 1985. These have resulted in construction delays, plant shutdowns, and worker layoffs.

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Past Attempts To Address the Problem

The Central Committee supports the ideas expressed [at the June Science and Technology Conference] on the need for . . . the production of efficient construction materials.

Mikhail S. Gorbachev
at Tyumen' in September 1985

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Table 5
USSR: Commissioning of New Capacity in the Construction Materials Industry [a]

	1966-70 [b]	1971-75 [b]	1976-80 [b]	1981	1982	1983	1984
Cement *(million tons)*	3.5	4.1	2.2	0	1.8	0.3	1.8
Asbestos cement shingles *(million tiles)*	272.4	252.8	119.4	113.0	0	32.0	66.0
Precast ferroconcrete *(million tons)*	4.8	5.9	5.1	5.1	4.0	5.3	5.0
Window glass *(million m²)*	5.5	6.9	5.0	0	0	0	2.3

[a] These figures include capacity originating in new construction and in expansion of existing plants.
[b] Annual averages.

Source: *Narkhoz*, various years.

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Senior Soviet officials have long been aware of the problems confronting the construction materials industry. As long ago as 1972, they recommended alleviating these problems largely by developing additional capacity, expanding automation, and instituting an economywide effort to conserve construction materials. However, these exhortations were not backed by sufficient investment throughout the 1970s. Since 1980, there has been little addition to the industry's capacity. Moreover, the limited success in automation has been unable to improve the quality of materials produced and reduce the labor intensiveness of the industry. The impact of these constraints has been magnified by Moscow's inability to move ahead smartly on eliminating waste in the use of construction materials and in reducing the material intensiveness of construction. As a result, Moscow has had to increasingly rely on imports to reduce the ensuing shortfalls.

New Capacity

To meet growing demand in the late 1960s and early 1970s, the Soviets expanded production of construction materials. By the late 1970s, however, this was no longer possible. Labor shortages hampered production, and investment allocations dwindled. The building of new construction materials enterprises was cut back so that, by 1981 and 1982, commissioning of new capacity was virtually nonexistent. Even though the industry was recognized by the leadership as important for economic expansion, it was not until late 1983 that this importance was translated into the commissioning of new capacity. In 1984 a considerable amount of new capacity was added, but new commissionings were still well below levels of the early 1970s (see table 5).

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Automation

With the decline in the growth of the labor pool and slow additions to new capacity, the Soviets began to look to automation as a means of expanding production through the substitution of machinery for labor. In addition, automation was seen as a way of assuring uniform product quality. Problems frequently arose, however, especially in the design of new plants. Enterprises were usually designed without detailed investigation of the specific types of equipment to be used or whether the equipment was to be fully automated, semiautomated, or not automated at all. As a result, additions to new capacity were often delayed.

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To correct these problems, the All-Union Scientific Research and Planning-Design Institute for the Automation of Construction Materials Industry Enterprises developed three types of automated systems: the automated control system of production processes concerned with accounting, planning, and optimizing production resources, especially applicable in the area of inventory control; the automated control system for technological processes for automation of conveyor-type production lines (not robotics, but rather computer-assisted automated control systems); and the automated technological complex designed to control all plant production operations.

The introduction of this new technology, however, is being held back by the Soviet system's bureaucratic inefficiencies and lack of appropriate incentives. Plant managers, for example, are reluctant to try any new production techniques because the time needed to install a new system, train workers in its operation, and then discover and correct defects substantially hinders the plant's ability to produce planned output. Management is also opposed to computerized inventory control, as it would reveal resource stockpiles used to ensure fulfillment of a subsequent plan, decrease the manager's "cheat margin," and lower the plant's chances to fulfill its production plan and the workers' chances to receive bonuses. Gorbachev may be hoping that some restructuring of the incentive system and performance indicators will overcome management's opposition to automation.

Conserving Construction Materials

Moscow obviously hoped that a successful economywide conservation effort would reduce the growth in demand for construction materials and thus allow the industry to get by with reduced investment. Although lipservice was paid to conservation as early as the Ninth Five-Year Plan (1971-75), it was not until the 1981-85 Plan that the conservation drive picked up momentum. Between 1980 and 1984, the Soviets adopted several resolutions, held conferences, and implemented programs in an effort to conserve.

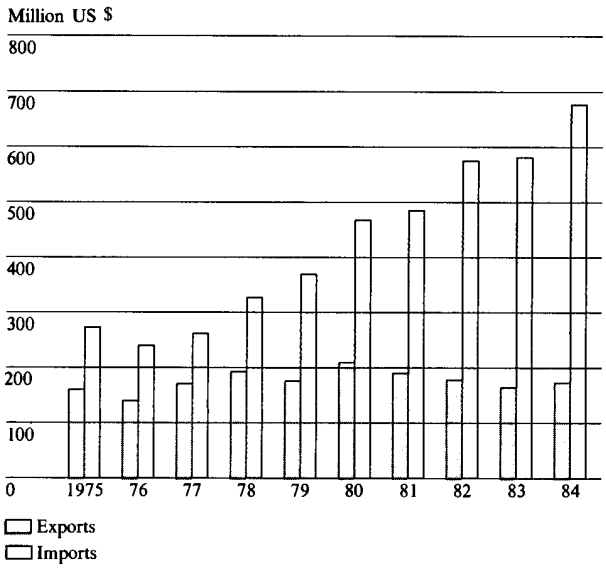
Two resolutions of the CPSU Central Committee in 1981 set forth both the problems necessitating conservation and ways to solve the problems. These resolutions were followed by an April 1982 All-Union Conference on the Conservation of Material Resources held in Moscow. This conference led directly to the November 1982 plenum of the CPSU Central Committee, which drew attention to the necessity for improving construction efficiency through measures for reducing the expenditure of fuel, raw materials, metal, and other products, as well as financial and labor resources. 25X1

In 1983, specific recommendations were adopted in a CPSU Central Committee resolution, which the construction materials industry coalesced into a three-pronged conservation strategy, including: 25X1

- The preferential manufacture of products that facilitate a decrease in the weight of buildings and structures and an increase in their heat insulation.
- The accelerated development and introduction of energy-saving technologies in the production of cement, ceramic products, glass, lime, and reinforced concrete.
- The conservation of raw materials within the construction materials industry through a reduction in the material intensiveness of manufactured products and maximum utilization of secondary resources, including wastes of other sectors of the economy. 25X1

Although the Soviets have implemented numerous conservation programs, there are still relatively large losses of material resources. Resolutions, conferences, and decrees—the traditional cure-alls of the Soviet bureaucracy—have had relatively little impact. Given the shortage of building materials, construction crews cannot make up for the material supplies they have either failed to receive initially or wasted in the process of construction. Inefficient shipment and use of construction materials along with inadequate storage facilities that lead to spoilage have thus contributed to the high value of unfinished construction, which in 1984 amounted to 78 percent of annual investment for the Soviet economy as a whole, and 87 percent of investment for the construction materials industry. As 25X1 25X1

Figure 4
USSR: Trade in Construction Materials, 1975-84



Source: *Vneshnyaya torgovlya v SSSR*, various years.

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a result of the continuing shortages, what little investment the industry received had to go toward increased capacity for basic, rather than advanced, higher quality construction materials.

Foreign Trade

With lagging domestic output, the Soviet Union has been forced to increase imports of construction materials, especially since the mid-1970s (see figure 4). Soviet construction material imports are concentrated in the areas of insulation materials, linoleum, refractories, and wall materials. The value of insulation and wall material imports—$420 million in 1984—reflects the expansion of Soviet housing, especially in the Far East, far north, and the densely populated southern and southwestern portions of the country. The large value of refractory imports highlights continued problems in the cement sector and the steel industry. In 1984, refractory imports totaled $122 million or 83 percent of Soviet domestic requirements.

Since the mid-1970s, purchases from the developed West have constituted approximately one-third of all construction material imports. A large share of imports—57 percent—comes from Eastern Europe and North Korea. In 1985-86, the Soviets were scheduled to import cement from Ethiopia, North Korea, and Poland and insulation materials from CEMA countries. The Soviet Union imports insulation materials from the United States, Italy, and Japan and buys refractory materials from France. The United Kingdom supplies a variety of materials. Overall, hard currency imports of construction materials totaled $250 million in 1984. 25X1

Looking Ahead

The proportion of plastic materials, ceramics, and other advanced nonmetallic materials is still small in the overall volume of materials. [We must exploit] highly effective scientific and technological research developments, such as . . . highly effective types of polymer materials.

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Mikhail S. Gorbachev
at the June 1985 Science and Technology Conference

Although automation and conservation efforts have contributed somewhat to improved performance in recent years, the industry still has a long way to go. Gorbachev's emphasis on advanced materials in his economic agenda means that further action will have to be taken soon. Commissioning of new capacity during the 12th Five-Year Plan (1986-90) probably will remain relatively low given Gorbachev's emphasis on the machine-building sector and the substantial savings in construction materials envisioned from renovating existing facilities. Although Gorbachev recognizes the need to reduce shortages of construction materials, he probably hopes that his emphasis on renovation as opposed to new plant construction, along with an intensive, economywide campaign to conserve construction materials, will allow him to hold down the share of investment to the industry. 25X1

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He has also addressed problems within the industry itself. In his 11 June 1985 address to the Science and Technology Conference, Gorbachev chided the construction sector and the construction materials industry for the vast amount of unfinished construction. He emphasized the need to focus future work on plant modernization, a theme that has since been echoed in *Pravda* editorials. Whether he will be able to reduce demand is problematic. In any event, some new construction will be necessary to bring down the high level of unfinished construction in the industry and to add new facilities dedicated to the production of new, better quality construction materials that will be demanded by the construction sector, such as basalt plastics, glass ceramics, and polymeric materials.

Two major problems that thus require immediate attention are the inefficiency of construction materials production and the past insufficient allocation of investment to the industry. Gorbachev has taken a major step toward addressing the first problem; he selected a new Minister of the Construction Materials Industry, Sergey F. Voyenushkin, in July 1985. Voyenushkin was elevated from the post of RSFSR Minister of the Construction Materials Industry. The new minister has openly criticized the current system and has an established record of innovation. He is not in a position to address the fragmentation issue, however.

Short-Term Indicators

With the release of preliminary goals for the 1986-90 Five-Year Plan, we have some understanding of what the industry will be tasked with over the next five years, but little knowledge yet of the flow of investment to underwrite these tasks. Over the next year or so, indications that Moscow is moving aggressively to improve the performance of the construction materials industry would include:

- An increase in the investment allocated to the industry in the 1986-90 Five-Year Plan.
- Moves by Voyenushkin to replace ineffective managers throughout the industry as he did in the RSFSR.
- The widespread application of a system to ensure delivery of materials to construction sites in complete sets. This would alleviate excessive amounts of material supplies at construction sites, reduce losses of materials, and avoid work disruptions caused by inadequate supplies of specific materials.
- The formation of a "superministry" of construction materials, encompassing the material-related responsibilities of the 16 organizations currently having such responsibilities, or the absorption of the construction materials ministry into the State Committee for Construction Affairs.
- The signing of a major contract with a Western firm for the construction of a cement plant in Mogilev (Belorussia) or the renovation of the Novorossiysk plant—possibly with a US firm—which could lead to a contract for the renovation of a large portion of the cement industry. 25X1
- The signing of a contract with a West German or US firm to purchase a turnkey magnesite plant and two other plants to be located in the Magnitogorsk region for the manufacture of refractory brick for the steel industry. This would double Soviet refractory output and improve substantially the quality of brick produced. 25X1

Long-Term Requirements 25X1

Areas that will require long-term attention include completion of unfinished construction within the construction materials industry and improvement of the system of reports and monitoring controls over the expenditure of material resources. Increased materials conservation and expanded automation will also be necessary. 25X1

Conservation in the general economy will make a long-term contribution by releasing scarce types of primary raw materials and supplies, increasing material resources, and reducing pollution of the environment by waste products. Specific measures probably will include the assignment of specific tasks for saving material resources both for the five-year plan and

Sergey Fedorovich Voyenushkin

Age: 56
Member of the Communist Party since 1951
Graduate of the Karelian-Finnish State University (Candidate of Economic Sciences)

Voyenushkin has been in the construction materials industry since 1958 and has held a variety of increasingly responsible posts:

1958-65 *Deputy chief, then chief of the Administration of the Construction Materials Industry on the Karelian and Northwest National Economic Councils*

1965-70 *Deputy chief, then chief of the construction materials industry's Main Administration of the Nonmetallic Ores Industry*

1970-75 *Chief of the Planning and Economic Administration, USSR Ministry of the Construction Materials Industry*

1975-79 *First Deputy Minister of the RSFSR Ministry of the Construction Materials Industry*

1979-85 *Minister of the RSFSR Ministry of the Construction Materials Industry*

1985- *Minister of the Construction Materials Industry.* 25X1

Voyenushkin has published numerous articles in the Soviet press and technical journals, many of which reveal his innovative tendencies:

- *"Computed Net Production as an Index of Economic Activity of an Enterprise"* (Voprosy ekonomiki, *December 1976)*
- *"Construction in the RSFSR"* (Pravda, *7 January 1978)*
- *"Effective Management of the Economy and its Aspects in the Construction Materials Industry"* (Pravda, *16 April 1979)*
- *Discussion of the RSFSR State Plan and Budget for 1981 (Leninskoye znamya, 21 November 1980)*
- *"Subsidiary Enterprises Advanced; Developmental Problems Noted"* (Sovetskaya Rossiya, 4 June 1982)
- *"Development of the Glass and Ceramic Industries"* (Steklo i keramika, June 1982) 25X1

In his former position as RSFSR Minister of the Construction Materials Industry, Voyenushkin has demonstrated a willingness to deal with problems:

- *He dismissed personnel in a construction plant for failure to meet construction deadlines and schedules in 1982.*
- *He dismissed personnel at another facility in connection with complaints of defective equipment in 1983.*
- *Under his leadership, the Ministry exceeded plan targets for increased labor productivity and cost reductions in 1984.* 25X1

each individual year, the expansion of the production and introduction of lightweight structural elements and materials with high tensile strength, and the increased utilization of industrial waste products.

Accelerated automation is a key to continuing growth of the construction materials industry and could lead to a substantial increase in the efficiency of production: higher productivity of labor, greater and more uniform output, and reduced consumption of energy and raw materials. This will require a number of expensive measures over the long term, especially the 25X1

mechanization and automation of basic and auxiliary production processes through the widespread introduction of computers.

Perspectives

Gorbachev will be hard pressed to reconcile his needs to boost investment in machine building, meet the investment needs of energy and agriculture, and increase investment in the construction materials industry. He will also find it difficult to deemphasize new construction as much as he would like and get the economywide conservation he is counting on.

If investment in construction materials is not increased in the 12th Five-Year Plan period, additional new capacities will be slow to materialize, and the inefficiencies associated with an aged capital stock will continue. Sharply rising costs could exacerbate this problem. The construction materials industry will have few resources to use for mechanizing the numerous labor-intensive production processes that currently prevail. For example, according to press reports, about half of the workers in the cement sector are still employed in manual and auxiliary tasks. Planners, who hope to raise labor productivity through introduction of new high-efficiency machinery, increased mechanization and automation, and better social and cultural facilities at production enterprises, will find it increasingly difficult to modernize because all these improvements depend on higher rates of growth of capital investment.

The industry's efforts to improve its raw materials supply position appreciably will also be affected by the performance of other industrial sectors. The plan to use more metal wastes and fly ash instead of rock products, for example, may be hampered by continued slow growth in the metals and coal industries and by transportation constraints. If fuel and power supplies cannot be made more reliable, production of construction materials will continue to falter.

In sum, unless investment in the industry is increased substantially to develop new sources of raw materials, commission new production capacity, renovate old plants, and increase output of processing equipment, continuing construction materials shortfalls will seriously hamper Gorbachev's modernization and consumer welfare efforts. Specifically, new housing starts will slow, capital renovation will be delayed, and the planned increases in the production of advanced and higher quality construction materials will not be realized.

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