

APPROVED FOR RELEASE: 2007/02/08: CIA-RDP82-00850R000300030011-3

8 SEPTEMBER 1980

(FOUO 14/80)

1 OF 1

FOR OFFICIAL USE ONLY

JPRS L/9291

8 September 1980

USSR Report

ECONOMIC AFFAIRS

(FOUO 14/80)

FBIS FOREIGN BROADCAST INFORMATION SERVICE

FOR OFFICIAL USE ONLY

NOTE

JPRS publications contain information primarily from foreign newspapers, periodicals and books, but also from news agency transmissions and broadcasts. Materials from foreign-language sources are translated; those from English-language sources are transcribed or reprinted, with the original phrasing and other characteristics retained.

Headlines, editorial reports, and material enclosed in brackets [] are supplied by JPRS. Processing indicators such as [Text] or [Excerpt] in the first line of each item, or following the last line of a brief, indicate how the original information was processed. Where no processing indicator is given, the information was summarized or extracted.

Unfamiliar names rendered phonetically or transliterated are enclosed in parentheses. Words or names preceded by a question mark and enclosed in parentheses were not clear in the original but have been supplied as appropriate in context. Other unattributed parenthetical notes within the body of an item originate with the source. Times within items are as given by source.

The contents of this publication in no way represent the policies, views or attitudes of the U.S. Government.

For further information on report content call (703) 351-2938 (economic); 3468 (political, sociological, military); 2726 (life sciences); 2725 (physical sciences).

COPYRIGHT LAWS AND REGULATIONS GOVERNING OWNERSHIP OF MATERIALS REPRODUCED HEREIN REQUIRE THAT DISSEMINATION OF THIS PUBLICATION BE RESTRICTED FOR OFFICIAL USE ONLY.

FOR OFFICIAL USE ONLY

JPRS L/9291

8 September 1980

USSR REPORT
ECONOMIC AFFAIRS
(FOUO 14/80)

CONTENTS

ECONOMIC POLICY, ORGANIZATION AND MANAGEMENT

Vikent'yev on Priority Development of Producer Goods (A. Vikent'yev; VOPROSY EKONOMIKI, Jul 80)	1
Selected Reports From USSR Academy of Sciences Session (VESTNIK AKADEMII NAUK SSSR, May 80)	13
Baybakov Views Eighties, by N. K. Baybakov Fedoseyev on Socioeconomic Development, by P. N. Fedoseyev	
Selected Reports From USSR Academy of Sciences Session (VESTNIK AKADEMII NAUK SSSR, May 80)	42
Kotel'nikov on Scientific-Technical Progress, by V. A. Kotel'nikov Marchuk on Siberia's Resources, by G. I. Marchuk Vonsovskiy Reviews Urals, by S. V. Vonsovskiy	

- a -

[III - US/R - 3 FOUO]

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

ECONOMIC POLICY, ORGANIZATION AND MANAGEMENT

VIKENT'YEV ON PRIORITY DEVELOPMENT OF PRODUCER GOODS

Moscow VOPROSY EKONOMIKI in Russian No 7, Jul 80 pp 17-26

[Article by A. Vikent'yev: "The Effect of the Law of Preferential Growth of the Production of Producer Goods Under Developed Socialism"]

[Text] The law of preferential growth of the production of producer goods plays an important part in the system of the economic laws of socialism. Its effect is characterized by certain singularities in all sectors of the economy. It is manifested most fully in industry. This is explained by the fact that all types of producer goods, including their decisive portion--implements of labor--are created here. An investigation of the law of preferential growth of the production of producer goods under the conditions of developed socialism is highly pertinent. Consideration of its requirements is important for the accomplishment of the tasks advanced in the CPSU Central Committee and USSR Council of Ministers decree "An Improvement in Planning and an Intensification of the Impact of the Economic Mechanism on an Increase in Production Efficiency and Work Quality."

The law of preferential growth of the production of producer goods operates in interconnection and interaction with all the economic laws of socialism. There is great significance in this law's relations with the basic economic law of socialism and the law of the planned, proportional development of the economy. The requirements of the law of preferential growth are vividly manifested in the most important economic proportion--between social production subdivisions I and II--and in the correlation between industry groups "A" and "B."

Observance of the optimum proportion between subdivision I and II serves as the basis of the entire system of proportionality in socialist economics. The formation of this proportion and, consequently, the mechanism of the effect of the law of preferential growth are determined by the operation of the basic economic law of socialism in the unity of its two aspects--the end and the means. For the fullest accomplishment of the end and, consequently, an increase in the people's living standard the achievement of the speediest rate of growth of the physical basis of this process--production of producer goods--is objectively necessary.

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

The preferential development of subdivision I is the objective basis of expanded reproduction on the basis of machine technology. Marxist-Leninist economic theory has shown that the expansion of production always presupposes the accumulation of additional producer goods, thanks to which it becomes possible to also increase the production of consumer goods. The latter are produced from the raw material produced in the sectors of subdivision I with the help of the machinery, machine tools and equipment created therein. Consequently, the development of subdivision II depends on subdivision I, which represents the industrial basis of all social production. All types of equipment are created in subdivision I and subsequently "spread" over the sectors of both subdivisions. For this reason the preferential growth of subdivision I is a most important regularity of expanded socialist reproduction.

The effect of the law of preferential growth of the production of producer goods under developed socialism is characterized by the data adduced below.¹

Table 1. Subdivisions I and II's Share of the Social Product (percentage of total)

	Actual Prices				Comparable Prices for 1972			
	1960	1965	1970	1973	1959	1966	1972	1973
Subdivision I	59.5	61	62	63.6	60.3	63.2	63.4	63.6
Subdivision II	40.5	39	38	36.4	39.7	36.8	36.6	36.4

The negligible difference in the indicators computed in actual and current prices testifies, we believe, to the absolute nature of the effect of the law of preferential growth of the production of producer goods. Yet certain economists believe that it manifests itself merely as a trend inasmuch as "different correlations could take shape between both subdivisions at all stages of the development of the socialist society depending on the specific conditions of the plan period."² Different issues are confused here.

The effect of the law of preferential growth of subdivision I signifies that it is realized always, regardless of the specific singularities of this period or the other of the development of the socialist society. Different quantitative correlations, on the other hand, between the subdivisions of social production do not disturb the absolute nature of the effect of the law as such but merely show the specifics of its manifestation in this time segment or the other.³

The 38th Lenin Collection appeared in 1974 and it published new material showing that V. I. Lenin fully recognized the effect of this law under socialism. Scientific planning of the economy has always proceeded from a consideration of the requirements of this law.

We believe that a distinction of two aspects in the operation of the law of the preferential growth of production of producer goods would contribute to an extension of its scientific analysis. The main aspect of the law reflects

FOR OFFICIAL USE ONLY

the development of technical progress and the formation on this basis of the optimum economic proportions promoting an increase in the people's living standard. The other aspect expresses the production of producer goods' quantitative preferential development of the production of consumer goods.

V. I. Lenin showed that the law of preferential growth of the production of producer goods is rooted in technical progress. "The entire meaning and entire significance of this law on the speediest increase in producer goods," he wrote, "is solely that the replacement of manual labor by machine labor--and the progress of technology in machine industry in general--demands the persistent development of production in the extraction of coal and iron--these real 'producer goods for the producer goods'."4

Lenin's formula--"the progress of technology in machine industry"--is an exceptionally precise and comprehensive definition of the deep-seated essence of the law of preferential growth. V. I. Lenin's proposition concerning this law's inseparable connection with the law of an increase in the organic composition of capital (the organic structure of social production under socialism) is extremely important here. But the growth of the organic composition of capital expresses in value form an increase in its technical composition. "This change in the technical structure of capital," K. Marx wrote, "and the increase in the mass of producer goods compared with the mass of manpower animating them is, in turn, reflected in the value structure of capital and an increase in the constant component of capital value at the expense of its variable component."5

Lenin's proposition concerning the interconnection of the said two economic laws is of great methodological significance for an analysis of the operation of the law of preferential growth in general and the singularities of its manifestation in developed socialism in particular. An increase in the organic composition of capital is expressed in the more rapid growth of the mass of producer goods relative to the mass of live labor employing these goods. F. Engels pointed to the increase in the overall mass of the value of the social product of the proportion of embodied labor compared with live labor. The growth of the organic composition signifies that there is a more rapid increase in society in the production of products of subdivision I compared with products of subdivision II, which are used for personal consumption.

Having revealed the need for the increasing preferential growth of subdivision I, V. I. Lenin provided a profound description of the inseparable connection of this phenomenon with the development of subdivision II. He emphasized that "it by no means follows" from the preferential growth of subdivision I "that the manufacture of producer goods may be developed entirely independently of the manufacture of consumer goods and beyond any connection with them."6

The law of preferential development operates, it stands to reason, in the unity of both its aspects. However, it needs to be taken into account here that not only the increasing preferential development of subdivision I but

FOR OFFICIAL USE ONLY

also its sectors' production of progressive, highly productive producer goods is of decisive significance for the socialist economy. Under the conditions of developed socialism this makes it possible, while maintaining the preferential growth of subdivision I, to relatively reduce the expenditure of social labor therein, correspondingly increasing it in subdivision II and in the nonproduction infrastructure.

A large number of factors influences the correlation of subdivisions I and II.

The acceleration of the growth of subdivision I is primarily influenced by the large-scale introduction of new equipment and its accelerated obsolescence, the increase in the organic structure of production and its capital- and materials-intensiveness and the increase in the industrial accumulation norm. An increase in the quality and working life of producer goods (which permits a relative reduction in the volume of their manufacture), an improvement in the use of production capital, a reduction in materials- and capital-intensiveness and a diminution in industrial accumulation with an increase in its efficiency are among the factors accelerating the growth of subdivision II.

The intensiveness of the effect of each factor is unequal at individual stages of the development of the socialist society. We believe that, as a whole, the effect of the factors eventuates in the direction of an acceleration of the growth of subdivision I. The data of Table 1 adduced above and also the indicators of the growth rate of industrial output and fixed capital testify to this.

Table 2
1978 as a percentage of 1940

Total industrial output	1,966
Including:	
Group "A"	2,716
Group "B"	1,012
Total fixed capital (including livestock)	1,113
Including:	
Production fixed capital	1,395
Nonproduction fixed capital	806

The advantages of socialism make it possible to achieve optimum proportionality between subdivisions I and II. But it is not achieved right away. By virtue of certain historical circumstances, at the early stages of the development of socialism subdivision I "worked" mainly for itself. Under these conditions a big discrepancy in the growth rates of both subdivisions and groups "A" and "B" was inevitable.

The following variants of the correlations of subdivision I and II and, within them, of groups "A" and "B" could take shape in individual time

FOR OFFICIAL USE ONLY

segments: the increasing preferential growth rate of subdivision I and group "A"; the equal growth rate of subdivisions I and II; and the increasing preferential growth rate of subdivision II and group "B." However, as a whole, the development of the economy is characterized by the increasing preferential growth rate of subdivision I. We shall illustrate this in the example of groups "A" and "B" (see Table 3).

Table 3

	Coefficient of increasing preferential increase of group "A" (calculated from average annual rates of increase)	
	Planned	Actual
First 5-Year Plan	1.63	2.42
Second 5-Year Plan	0.79	1.29
Third 5-Year Plan (3 peaceful years)	1.37*	1.52
Fifth 5-Year Plan	1.18	1.16
Sixth 5-Year Plan	1.13	1.32
Seventh 5-Year Plan	1.27**	1.5
Eighth 5-Year Plan	1.11	1.01
Ninth 5-Year Plan	0.96	1.21

*For the entire Third 5-Year Plan (1938-1942)

**For the 7-year period (1959-1965).

The increasing preferential growth rate of subdivision I serves as the optimum variant for planning the development of subdivisions I and II and groups "A" and "B" inasmuch as this corresponds, as a whole, to the requirements of the law of preferential growth. But it is important to stress that there is not nor can there be an identical optimum correlation of both subdivisions and groups "A" and "B" for all historical periods. The law of preferential growth does not indicate specific correlations of the rate of growth. These correlations take shape on each occasion with reference to the singularities of the definite stage of development of the socialist economy. The task of planning is to find for each stage the optimum quantitative correlations in accordance with Lenin's requirements of a concrete analysis of the concrete situation.

As can be seen from Table 3, the prewar 5-year plans (except the second) outline a sharp preferential growth rate of group "A." In reality it was even greater (including the period of the Second Five-Year Plan). But even under these conditions the operation of the law of preferential growth did not amount solely to the production of producer goods' quantitative preferential development over the production of consumer goods. This law's organic connection with technical progress was always manifested together with this. True, this was of a more or less latent nature, this being connected with the still insufficiently high technical level of production.

FOR OFFICIAL USE ONLY

The discrepancies and disproportions inherent in the early periods of socialist building are removed, the advantages of the planned socialist system of the economy are manifested more fully and the inner content of the law of the preferential growth of subdivision I is revealed more extensively under the conditions of developed socialism. There is also a change in the quantitative correlation of production in subdivisions I and II insofar as there is a rapprochement in their growth rates and those of groups "A" and "B." The equal and even increasing preferential growth of the production of consumer goods is planned in industry in certain cases. Thus L. I. Brezhnev observed at the CPSU Central Committee (1965) Plenum that the national economic plan for 1966 provided for a further rapprochement of the growth rate of both groups of the production of industrial products and the speedier development of the production of consumer goods. The law on the state plan of economic and social development in 1980 provides for an equal rate of increase in the products of groups "A" and "B" (4.5 percent).

The actual increases in the products of groups "A" and "B" in recent years have drawn considerably closer together, and in certain cases the growth of group "B" has been preferential. But if the increases in the products of both groups of industry are viewed over a long period, one is persuaded as to the increasing preferential development of group "A" (see Table 4).

The party's policy of an accelerated increase in the people's living standard, which determines its economic strategy under the conditions of developed socialism, presupposes a more profound turn of all social production than even toward the manufacture of consumer goods. As the 25th CPSU Congress observed, currently there is not a single sector of the economy which is not participating in the accomplishment of this task.

Table 4. Development of Industry Groups "A" and "B" in the Period 1968-1977

	Percentage of previous year					Percentage of 1940				
	1968	1969	1970	1971	1977	1968	1969	1970	1971	1977
Group "A"	108.3	107	108.3	107.8	105.8	1,371	1,467	1,589	1,713	2,585
Group "B"	108.5	107.3	108.9	107.7	105.2	560	601	654	705	972

The profound reorganization of social production in the direction of the accelerated growth of subdivision II is the result of the effect of those most important new objective processes which characterize the economy of the mature socialist society. It is primarily a question of the considerable increase in the country's economic improvement and of the increased efficiency of their use. The role of machine building, which is developing rapidly and in which a profound reorganization of the internal structure is under way, is particularly important here. Thus in the period 1940-1978 group "A" output increased by a factor of 27.2, and that of machine building by a factor of 89. There has been an appreciable change in the structure of the entire industrial product in this connection. In 1960 the proportion of light and food industry was far in excess of that of machine building,

FOR OFFICIAL USE ONLY

but since the end of the 1960's and the start of the 1970's machine building has occupied first place in industrial output. In 1978 the proportion of machine building and metal working in total industrial output constituted 26.8 percent compared with 16.7 percent in 1965.

As mentioned above, a number of factors influences the correlation of social production's subdivisions. But technical progress plays the main part in the effect of the law of preferential growth. In increasing the organic structure of production technical progress contributes to an increase in its efficiency also, which makes possible a rapprochement of the growth rates of subdivisions I and II and groups "A" and "B." The materials- and capital-intensiveness of production are the most important indicators of efficiency reflecting this process. Price-forming also exerts a big influence on the dynamics of materials-intensiveness. For this reason it is essential to compute material expenditure in both current and comparable prices.⁷

The socialist society is concerned for the resource- and material-conserving development of the economy. This makes corresponding demands of planning, which directs the entire course of expanded reproduction and the action of the entire economic mechanism. L. I. Brezhnev particularly noted the importance of economizing on fuel, energy and metal at the CPSU Central Committee November (1979) Plenum. "...At whatever pace we develop power engineering," he pointed out, "the conservation of heat and energy will remain a most important all-state task.... In the 11th Five-Year Plan the Gosplan and the appropriate ministries must insure a decisive turnabout toward metal quality and economies in order to satisfy the economy's requirements. There is no other way."

Economizing on material and all other resources contributes to the increasing preferential growth of the national income compared with the growth of the social product. The gradual transition to planning the growth rate of the production of sectors of industry in accordance with normative net output which is envisaged for the 11th Five-Year Plan also corresponds to this.

The increasing preferential growth of the national income compared with the gross social product is insured chiefly to the extent to which scientific-technical progress creates the conditions for a reduction in social production's materials-intensiveness. The social product had increased by a factor of 12.73 in 1978 compared with 1940, but derived national income had increased by a factor of 13.25. Computation of the structure of the social product in current prices shows an increase in the proportion of compensation (this proportion was 52.3 percent in 1970 and 56.68 percent in 1974) and in comparable prices a reduction (54.07 percent and 53.93 percent respectively).

The lessening of the extent of preferential development of subdivision I, that is, the rapprochement of the growth rates of subdivisions I and II, is contributing to optimization of the proportions in the development of the economy and acceleration in the rise in the people's living standard. The data adduced below testify to this.

7

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

Table 5

	Seventh 5- Year Plan	Eighth 5- Year Plan	Ninth 5- Year Plan	10th 5- Year Plan (planned)
Retail commodity turnover of state and cooperative trade (in comparable prices) ⁸	26	50	56	60
Payments and benefits from the social consumption funds (in the actual prices in effect) ⁸	14.6	22	26.2	26.9

A relatively small extent of the increasing preferential growth of subdivision I specifically determined in the plan is characteristic of the economy of developed socialism. A particularly important part here is played by the further optimization of the proportion between industry groups "A" and "B." While consistently pursuing the policy of the preferential development of group "A" the party is at the same time adopting all measures to accelerate the development of group "B" and bring its growth rate closer to that of the production of producer goods in industry.

Addressing the CPSU Central Committee November (1979) Plenum, L. I. Brezhnev said: "The volume of the production of consumer goods is, of course, growing. But the demands made on quality and assortment clearly outdistance what industry proposes.

"Recently the CPSU Central Committee and newspaper editorial offices have been receiving letters and complaints about interruptions in the trade in commodities which for some reason or other have come to be called 'odds and ends'.... This, comrades, is unforgiveable." For an increase in the production of consumer goods there is great significance in an improvement in the division of labor between the sectors of light and food industry producing these commodities and enterprises of heavy industry and local and cooperative industry.

The rapprochement of the development of subdivisions I and II and groups "A" and "B" affords no grounds, however, for concluding that there is a weakening of the effect of the law of preferential growth of the production of producer goods under the conditions of mature socialism. We believe that the effect of this law becomes, on the contrary, more intensive inasmuch as there is a strengthening of the principal feature of this law. Technical progress exerts an increasingly great influence on the mechanism of expanded reproduction. Precisely this and not the mere fact of the increasing preferential growth of subdivision I is its inner essence.

FOR OFFICIAL USE ONLY

Under developed socialism the formation both of a general national economic proportion (between subdivisions I and II) and of all other proportions as a whole occurs on a continuously rising technical basis. The deep-seated essence of the law of preferential growth, whose effect actively contributes to the combination of the advantages of the socialist system with the scientific-technical revolution, is revealed increasingly here. This makes possible the optimum combination of the accomplishment of two most important interconnected tasks--accelerating the building of communism's material-technical base in every possible way and enhancing the people's living standard on a far greater scale than ever before. An expression of this process is heavy industry's increasingly full satisfaction of subdivision II's producer good requirements and at the same time this sector's expansion of the production of consumer goods. This is vividly manifested in the change in the structure of group "B" (see Table 6; as a percentage of the total).

Table 6

	1970	1975	1978
Light industry output	28.8	27.0	27.8
Food and milling-groats industry output	48.6	46.8	44.9
Heavy industry sectors' output	22.6	26.2	27.3

The adduced figures show that the proportion of heavy industry output in group "B" is almost on a par with the proportion of light industry output.⁹

Particular mention should be made of the rapid growth of the production of cultural-social and household commodities, which are chiefly manufactured by heavy industry enterprises. Some R24.2 billion of these commodities were manufactured in 1978 compared with R13.7 billion in 1970. The plan for 1980 outlines a 10-percent growth in the production of these commodities with an overall increase in group "B" products of 4.5 percent.

The reorganization of the proportions between groups "A" and "B" and within the latter is also favorably influencing such a global national economic proportion as the correlation between accumulation and consumption in the national income. Acceleration of the growth rate of the consumption fund is of the greatest importance for an increase in the working people's living standard (group "B" accounts for approximately three-fourths of the consumption fund).

Under developed socialism optimum proportions take shape along the entire chain linking production and popular consumption: the satisfaction by subdivision I, particularly group "A," of the production requirements of group "B"--production of consumer goods--the working people's real income. The basis of the optimization of all these processes is the acceleration of scientific-technical progress. The balance that has now been achieved between subdivisions I and II is enabling us to successfully solve the problem of the further development of scientific-technical progress. Striking evidence of this is the development of Soviet cosmonautics, which marks not an

FOR OFFICIAL USE ONLY

isolated "breakthrough" to the pinnacles of science and technology but is the synthesized result of scientific-technical progress.

At the same time the development of subdivision I and, correspondingly, group "A" is attended by a number of difficulties. The USSR has a very powerful fuel-energy complex. However, the economy's requirements are not being fully satisfied. The task of a considerable improvement in the structure of the fuel-energy balance sheet by way of a reduction in the proportion of oil as the fuel for power stations, the extensive substitution of gas for mazut and the accelerated development of nuclear power engineering is very pertinent. Despite the volumes of the production of metal which have been reached, there is a shortage of it. This is caused primarily by the slow qualitative reorganization of metallurgy itself, the lagging in the introduction of new production processes in the metal-consuming sectors and inadequate savings of metal.

Not all problems have been solved in machine building. The economy's need for a number of modern machines is not being met fully. Many new machines' metal consumption is high, and the proportion of waste in metal working is great. To accelerate the development of machine building it is essential to not only assimilate more rapidly individual, highly efficient models of new equipment but also saturate entire sectors therewith. For this reason the new equipment assimilation and introduction quotas should be an organic part of all sections of the production and capital construction plan.

A considerable improvement in planning in machine building is essential. It is important within group "A" to plan the growth of the production of the implements of labor by calculating it directly according to a specially formulated classifier, in accordance with which group "A" output is divided into three parts: implements of labor, means of labor which are not implements of labor and subjects of labor.

Maintenance work is also in need of improvement. Currently it is scattered. Measures are being adopted in a number of sectors to increase the specialization and concentration of maintenance work. But these individual measures are not enough. We believe that it is essential to implement a unified maintenance policy on the scale of all industry and the entire economy.

The further strengthening of the balance within subdivision I is of great significance. The socialist society does not need just any increasing preferential development of subdivision I. The increasing preferential growth of subdivision I should contribute to the formation of proportions on a new technical basis. This presupposes an increase in the efficiency of subdivision I, primarily machine building. It is essential for this purpose to secure the increasing preferential growth of the manufacture of the implements of labor. Yet in the period 1971-1978 the volume of machine-building output increased 133 percent and the means of labor 107 percent. This correlation needs to be improved insofar as it is precisely the implements of labor which determine technical progress to the greatest extent.

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

The problems of the further development of subdivision I and of an improvement in its structure and, on this basis, of the entire economy are problems of securing the further progress of the USSR economy by way of the maximum utilization of intensive factors. The development of machine building on a new technical basis is the decisive condition of an increase in the degree of balance of subdivisions I and II, primarily groups "A" and "B," insuring, in turn, a strengthening of proportionality throughout the economy. Among other things, this factor forms the basis of the optimization of such an exceptionally important proportion as the correlation between industry and agriculture. The further upsurge of agriculture is a nationwide problem toward whose solution the party's agrarian policy is directed. A redistribution of accumulations in its favor is currently under way, and producer good supplies to the kolkhozes and sovkhozes are being increased.

L. I. Brezhnev emphasized the significance of the development of agricultural production's industrial base in the report at the CPSU Central Committee July (1978) Plenum. He made particular mention here of the need for the development of such specialized independent large-scale sectors as water resources and reclamation, machine building for animal husbandry and fodder production, rural construction and the mixed-feed and microbiological industry.

The balance of subdivisions I and II is also helping solve the problem of the further upsurge of transport, primarily railroad transport. Railroad transport has become a "bottleneck" in recent years in the development of the economy. As the CPSU Central Committee November (1979) Plenum observed, the plans for the shipment of most important freight (fuel, timber, grain) are being flagrantly disrupted. To eliminate this disproportion measures are being adopted to increase transport's supply with rolling stock and its productivity, mechanize handling operations and build new railroad tracks. Equipment supplies from group "A" sectors will play a decisive part in all these processes. The plan for 1980 provides for measures to increase the productivity of the engines and freightcars, their traffic speed and the weight of the trains. Additional capital investments have been allocated for this purpose.

Thus the achievement of the balance of subdivisions I and II is a most important result of the effect of the law of preferential growth of the production of producer goods which under the conditions of developed socialism is characterized by an essential modification contributing to the optimization of the entire mechanism of the proportionality of social production.

FOOTNOTES

1. Several other indicators of subdivision I and II's share with their calculation in actual prices are also adduced in literature (see, for example, "Planovyy balans narodnogo khozyaystva" [Planned Balance of the Economy], Izd-vo Ekonomika, 1977, p 267). But the difference in the corresponding indicators is negligible, which does not influence the

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

fundamental conclusions concerning the preferential growth of subdivision I. As G. Sorokin correctly observes, for an evaluation of the dynamics of the subdivisions' shares it is essential to compute the structure of the social product in current and constant prices (see VOPROSY EKONOMIKI No 1, 1979, p 35).

2. "Planned Balance of the National Economy," p 187.
3. In this respect the law of preferential growth is in no way different from other economic laws, from the law of value, for example. After all, as Marx noted, the possibility of its deviation from a value is contained in the mere form of the price. But this does not mean that the law of value is realized as a trend. Lenin's description of a law in general as a lasting, permanent interconnection of phenomena is fully applicable to the law of preferential growth of the production of producer goods.
4. V. I. Lenin, "Poln. sobr. soch." [Complete Works], vol 1, p 100.
5. K. Marx and F. Engels, "Soch." [Works], vol 23, p 636.
6. V. I. Lenin, "Complete Works," vol 4, p 48.
7. Certain economists believe that employing comparable prices here is the equivalent of telling the time by a stopped clock. There is no analogy here. Comparable prices make it possible to analyze the structure of the social product according to physical volume. Current prices, on the other hand, are also necessary for they afford an opportunity of establishing this structure's connection with the real proportions of the production of a given period.
8. Absolute increase in billions of rubles.
9. It is a question of that part of light industry output which is for personal consumption (clothing, footwear, knitwear and others). The other part (yarn and so forth) is for industrial processing and is therefore included in group "A."

COPYRIGHT: Izdatel'stvo "Pravda", "Voprosy ekonomiki", 1980

8850

CSO: 1820

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

ECONOMIC POLICY, ORGANIZATION AND MANAGEMENT

SELECTED REPORTS FROM USSR ACADEMY OF SCIENCES SESSION

UDC 338.98

Baybakov Views Eighties

Moscow VESTNIK AKADEMII NAUK SSSR in Russian No 5, May 80 pp 13-22

[Paper delivered by N. K. Baybakov, deputy chairman of the USSR Council of Ministers and chairman of USSR Gosplan: "On Improvement of the Planning and Management of the Economy"]

[Text] The decree of the CPSU Central Committee and USSR Council of Ministers entitled "On Improving Planning and Strengthening the Influence of the Economic Mechanism on Increasing Production Efficiency and Work Quality," adopted in July 1979, is postulated on the main directions for improvement of management of the economy in the present stage as defined by the 25th party congress and subsequent plenums of the CPSU Central Committee and on the provisions of the new Soviet Constitution. The decree summarizes the results of a number of major experiments carried out both at individual enterprises and also on the scale of particular industries and regions of the country concerning improvement of the planning, concentration and specialization of production and the use of economic instruments and incentives. The decree calls for a number of timely measures aimed at improving the planning and management of the economy by virtue of their further centralization, along with development of democratic principles. These measures should direct all managerial and planning activities toward raising production efficiency and the quality of performance, toward attainment of high final results from the standpoint of the national economy, and toward fuller satisfaction of the growing social and personal needs of the Soviet people.

At the November (1979) Plenum of the CPSU Central Committee a long speech was delivered by Comrade L. I. Brezhnev, general secretary of our party's central committee and chairman of the Presidium of the USSR Supreme Soviet. He furnished a profound and truly scientific analysis of development of the country's economic system, defined in clear terms the tasks confronting the party and people in the current period and the future, pointed once again

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

to the need to raise the level of management in the broadest sense of the word and stressed that restructuring the economic mechanism is a major economic and political task. Speaking about progress in fulfillment of the plan of the 10th Five-Year Plan, about the draft of the state plan for economic and social development of the USSR in 1980 and about the 11th Five-Year Plan, L. I. Brezhnev pointed out that steady growth of the economy and a rise in the prosperity of the Soviet people can no longer be guaranteed on the basis of the tendencies and factors of extensive development that have formed in the past. The only correct and reliable course is to determinedly switch the entire economy onto the track of intensive development and toward raising efficiency and quality. At the November (1979) Plenum of the CPSU Central Committee L. I. Brezhnev noted that there is no alternative to this course, and it must be unswervingly followed in the 11th Five-Year Plan.

It is accordingly necessary that application of scientific-technical achievements to production be provided for in plans and guaranteed in practice, that the organizational and material-technical prerequisites be created for increasing rates of economic development and the growth of labor productivity and that a substantial saving on raw materials, supplies and fuel-and-energy resources be achieved in all parts of the economy. There is convincing evidence of the importance of all this in the fact that now that we have a huge production potential, now when metal and fuel are being produced in considerably larger amounts, and when we have an army of skilled workers, engineering and technical personnel and scientists numbering many millions, we are feeling an acute shortage of a number of physical resources, a shortage of manpower, as well as a shortage of production capacities in certain sectors and regions of the country.

In this connection we should bear in mind that the coming decade of the eighties has a number of peculiarities which make the work of shaping a multiannual plan in that period considerably more difficult. I will enumerate the most important of these peculiarities.

First, there is the greater complexity of the demographic situation. The growth of labor resources in the eighties will be one-fourth as large. This necessitates the drafting and adoption of effective measures both for improved utilization of labor resources and also for optimum location of the productive forces, and, above all, for creation of better organizational, technical and economic conditions for the steady rise of labor productivity.

Second, there is the further enhancement of the role of Siberia, the North and the Far East as a source of energy resources and most raw materials for development of the country's economy and operations in foreign trade. This circumstance involves augmenting the state's expenditures to extract all those resources and transport them to points of consumption. The most expedient ways of solving this very serious problem have yet to be found.

14

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

Third, there is the worsening of the mining-geological conditions for extraction of raw materials and fuel, which is necessitating ever higher outlays for simple reproduction, that is, to maintain the level of production already attained.

Even now these tendencies in economic development are causing difficulties in balancing plans of production and capital construction and in building up the necessary reserves to ensure the requisite stability of plans and steadiness in the growth of production. These difficulties are appreciably compounded by the attachment of certain ministries, departments and managers in the economy to extensive methods and to feeble use of intensive methods of economic management, so that as a result the rates and absolute size of the growth of the national income and the output of industry and agriculture for 4 years of the present 5-year period will be less than we intended. To a considerable extent this situation is explained by the fact that we have been unable to achieve an abrupt change of direction in raising the efficiency of social production.

Labor productivity in our industry has risen 14.2 percent over the last 4 years, as against the intended 21.8 percent. Because targets for raising labor productivity have not been fulfilled in industry, the country was deprived of approximately 33 billion rubles of output over that period. In construction and in transportation, rail transportation particularly, there is a large lag behind the targets of the 5-year period in the domain of labor productivity. Nor is the situation good with utilization of fixed capital: in the years of the 5-year period which have passed the actual drop of the output-capital ratio in industry was greater than called for in the plan. Nonfulfillment of planning targets for economizing on physical resources is chronic. We are expending 1.5-2-fold more physical resources per unit of finished output than the advanced capitalist countries.

That is why it is so urgently necessary to raise the level of planning work at all levels of management and to enhance the effectiveness of the economic mechanism so that they meet the present-day requirements of the country's economic and social development by virtue of higher production efficiency and quality of performance and the most effective utilization of all the factors of economic development.

Higher efficiency is expected to offset the effect of adverse factors and to create conditions for dynamic economic development.

In coming years a decisive change of direction needs to be accomplished toward more efficient conduct of economic activity, and in this area, as noted in the July (1979) decree of the CPSU Central Committee and USSR Council of Ministers, the state plan has paramount significance as an important instrument for carrying out the party's economic policy.

Much attention is paid in the decree adopted by the party and government to improving the planning system and planning methods and to a substantial

FOR OFFICIAL USE ONLY

enhancement of the role of the 5-year plan in ensuring proportionate and balanced economic growth and also optimum combination of the sectoral and regional aspects of the economy's development. It is very important to guarantee through planning that effective use is made of everything already created and that will be available to the national economy in coming years.

Only improvement of multiannual planning, improvement of the proportions of the national economy and the amounts and composition of capital investments, and optimum location of the productive forces over the regions of the country make it possible to accomplish major economic and scientific-technical maneuvers toward optimum distribution--and in the necessary cases even redistribution--of resources among sectors and industries and economic regions and to effectively solve the major problems of the national economy.

The 5-year plan must truly become the work program governing the activity of every enterprise, association and ministry and must become the basis for establishing long-term relations and conclusion of contracts, for adoption of the system of stable economic norms and standards, and for making economic incentives more effective. This will make it possible to evaluate fulfillment of the 5-year plan on a cumulative basis from the beginning of the 5-year period and to evaluate fulfillment of the annual plan on a cumulative basis from the beginning of the year. This kind of evaluation will have great importance in intensifying the motivation and responsibility of ministries and enterprises for fulfillment of assignments for each year of the 5-year period and the assignments of the 5-year plan as a whole.

Enhancement of the organizing function of the targets of the 5-year plan makes it feasible to draft annual plans of associations and assignments from below, which will help to increase the effectiveness of socialist competition in the form of counterplans.

The new procedure for drafting 5-year and annual plans and expansion of the rights of associations and enterprises to use the saving on the wage fund and also economic incentive funds are a most important means of developing economic initiative and a further step in development of democratic principles in the management of production.

It is indispensable to the improvement of planning to step up development of the system of scientifically sound technical-and-economic norms and standards pertaining to jobs and operations, expenditures of labor, raw materials, supplies and fuel-energy resources, and to the utilization of production capacities so as to take into account a rise in the shift coefficient of the operation of equipment and specific capital investments. Adoption of progressive standards governing utilization of production capacities will have particularly great importance in that system. One can see from the example of just the chemical industry how we utilize them today. In recent years production capacities for the manufacture of such highly important products as manufactured fertilizers, sulfuric acid, synthetic fibers and filament, plastics, and so on, are being utilized within

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

the range of 83-95 percent. This underutilization of capacity for final output results to a considerable degree from nonfulfillment of the assignment of the 5-year plan for activation of production capacities to manufacture raw materials and intermediate products, which has brought about serious disproportions within the industry. Moreover, the state of affairs in this industry is deteriorating from year to year.

The question of the internal consistency of plans was put in no uncertain terms at the 25th CPSU Congress. In the July (1979) decree of the CPSU Central Committee and USSR Council of Ministers provision is made for drafting within the 5-year plan balances of physical and labor resources and of production capacities, a financial balance and a balance of personal money income and expenditures. This adds to the responsibility of USSR Gosplan, USSR Gosstab and ministries and departments for the internal consistency of plans pertaining to output. All of this presupposes a thorough revamping of the work of compiling balances and plans, of distributing physical resources and of devising a progressive and scientifically sound system of norms and standards.

Unfortunately, the question of creating a single system of technical-and-economic norms and standards has not yet been fully resolved, nor has an effective organizational form been found for administering this most important task. To be specific, it is very important to find methods whereby norms and standards will appropriately register the benefit from application of new technology, new manufacturing methods and other similar measures, so that it is evident what scientific-technical progress is yielding in terms of specific reduction of inputs of labor, materials and financial resources. But we must, of course, first achieve that progress of technology and manufacturing methods for anything to be reflected in the norms, standards and efficiency indicators.

It is quite clear that without good progressive norms and standards reflecting the advances of science and technology and success in organization of management, of work and of production as a whole it is not possible to draft plans nor their very important component--the balances--at the level of present-day requirements.

This decree of the CPSU Central Committee and USSR Council of Ministers states that one of the principal tasks of planning authorities is to ensure integrated solution of economic and social problems and concentration of energies and resources on fulfillment of the most important nationwide programs. USSR Gosplan has accordingly been assigned a specific and crucial job--to draft special-purpose comprehensive programs as a very important component of multiannual state plans.

Three groups of such programs, which are to be drafted together with the drafts of multiannual plans, have been defined. These are social and economic programs, scientific-technical programs and programs for development of particular regions and regional industrial complexes. To a certain

FOR OFFICIAL USE ONLY

extent this is a new job for Gosplan, since this is the first time the task has been set of drafting such programs as a system within the present planning system and by the dates set for compiling national economic plans. This requires of planning authorities an approach that is not standard, but creative. In solving any particular problem we must above all have a clear idea of what we want to achieve and by what date, and only then decide what means and methods are necessary to full attainment of the goal that has been set regardless of departmental subordination of the organizational component that will carry it out.

Priority has been given to five programs. These are the programs for conservation of metal, fuel conservation, construction of the BAM [Baykal-Amur Main Rail Line] and economic development of the BAM zone, reduction of manual labor and increased production of new consumer goods. It is important to ensure a very straightforward organization of the work on these programs from the very first step. And I would like to note the following. A certain amount of spadework has already been done on the first four programs, and a considerable effort is under way. As for the fifth program--consumer goods, here, as they say, we are still at the level of formulating the problem. The idea is to work out a package of measures that will ensure the creation and production of new industrial consumer goods related to meeting the needs of the public for worthwhile rest and leisure and to equipping and furnishing dwellings and making work easier in the household and private farming. It is not a matter of increasing the production of traditional goods, but of creating a range of new goods that meet the high demands of the Soviet people.

It is up to the Presidium of the USSR Academy of Sciences to join Gosplan in defining procedure for systematic participation of scientific organizations and scientific councils of the USSR Academy of Sciences in drafting and carrying out the major special-purpose programs of the national economy.

We gain quite a bit of experience in drafting scientific-technical programs in the plan for the 10th Five-Year Plan. But we must bear in mind that the decree calls for the technical ideas to be developed within the framework of the program to be brought to the stage of series production, whereas up to now fulfillment of scientific-technical progress has ended with the production model and first full-scale run.

The decree which has been adopted pays particular attention to improving the planning of science and technology and to enhancing science's role in raising production efficiency.

We have achieved considerable success in development of science and technology under the leadership of the CPSU Central Committee and Soviet Government. The major advances of Soviet sciences are well known in using the energy of the atomic nucleus, in creating rocket, space and aviation equipment, in creation of man-made crystals, in development of radioelectronics,

FOR OFFICIAL USE ONLY

and in expanding the country's mineral and raw materials base. Research in the fields of theoretical and applied mathematics and efforts to refine computer hardware and software and the like will undergo further development.

Effective performance of the whole range of very important tasks confronting the national economy in the increasingly complicated context of its management requires effective aid from the scientists of the USSR Academy of Sciences, the academies of the republics and sectors, and all scientific research organizations. We have the capability for this. The Soviet Union is first in many fields of science and technology. We have created large scientific research and design organizations. In just the last 8 years the number of scientists in the country has increased 1.4-fold and has surpassed 1.3 million; moreover, the number of doctors of science has increased 55 percent and the number of candidates of science 65 percent. Expenditures for science over that period increased 65 percent (while the national income increased 46 percent) and amounted to 19.3 billion rubles in 1978, or 4.5 percent of the country's national income.

At the same time we cannot but note that the state of affairs in development and especially the application of new technology and manufacturing methods in the economy is not meeting the demands of life. There is unjustified parallelism in the activity of scientific research institutes, work is not uncommonly done on second-rate topics, and this makes it more difficult to concentrate energies and resources on the most important lines of development of science and scientific-technical progress.

Many USSR ministries are not fulfilling plans for development of science and technology, nor are they furnishing the necessary spadework for creation of new machines and equipment and also new manufacturing processes which have the greatest impact on the saving of live labor, higher efficiency in use of raw materials and fuel, and improvement of product quality. In the 4 years of the 5-year plan the plan approved for scientific-technical progress will be fulfilled at a level of 80-85 percent. In civilian machinebuilding--the leading industry accounting for technical progress in the national economy, the number of new models of machines, equipment, apparatus and instruments created is dropping. Whereas in 1975, according to figures of the USSR Central Statistical Administration, 4,170 different items were created, the figure in 1976 was 3,795, in 1977 it was 3,477. and in 1978 it was 3,500.

The products manufactured by machinebuilding are being renewed at a slower pace. The relative share of products first put into production in the USSR in the total volume of commodity output has dropped from 4.3 percent in 1970 to 3 percent in 1977 and 2.5 percent in 1978. In the development of new machines and equipment due attention is not being paid to improvement of their quality characteristics, nor to reduction of materials intensiveness and energy intensiveness. With respect to these indicators they fall short of the best world exemplars in a number of cases. Because insufficient attention is paid to the problems of scientific-technical progress

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

and because of shortcomings in the organization of work average annual growth rates of labor productivity in the industrial sector, stated in per-worker terms, have dropped to 3.4 percent in the first 4 years as against the 4.7 percent called for in the current 5-year plan and 6 percent in the Ninth Five-Year Plan. As we have already said, matters are still worse with fulfillment of assignments for the rise of labor productivity in construction and transportation.

It is, of course, not possible to explain this situation entirely in terms of shortcomings in the work of ministries and departments, the USSR Academy of Sciences and their scientific research organizations. In large part this is related to the low level of work being done within USSR Gosplan to speed up application of scientific-technical advances in the economy, to plan the development of science, to carry out scientific research and to monitor its performance. The problems of speeding up scientific-technical progress have not yet been emphasized in the activity of sectoral and summary divisions of Gosplan; sometimes when they are shaping multiannual and annual plans they do not have the necessary working contacts with the scientific research organizations of the Academy of Sciences and ministries and departments.

It is particularly clear to us workers of USSR Gosplan who are shaping the main lines of the USSR's economic and social development up to 1990 that without a radical improvement of affairs in the field of scientific-technical progress it will not be possible to perform those large tasks which the party and government are setting. At the same time we see the enormous potential for growth of our economy and for raising the standard of living of the people by speeding up scientific-technical progress.

Gosplan attributes great importance to a close union of planning and science through fuller use of the advances of science and technology in the drafting of national economic plans. We have a high opinion of the important work done by the USSR Academy of Sciences to compose the Comprehensive Program of Scientific-Technical Progress and Its Socioeconomic Consequences up to the Year 2000. Most sections of USSR Gosplan feel that the main lines for prospective development of the sectors of the economy outlined in that program coincide with their own projections, and for that reason these materials are being used in defining the main lines of the country's economic and social development up to the year 1990. But a number of proposals are in need of additional substantiation. This specifically applies to development of the fuel and energy complex, to the optimum size of capacities in the chemical and petrochemical industries and to certain other sectors. We must also note that the proposals of the scientific commissions of the USSR Academy of Sciences and the USSR State Committee for Science and Technology (GKNT) have not been stated in sufficiently concrete terms. Nor have dates and possible scales of application of the results of scientific research been indicated, and no assessment is made of the economic efficiency of advances in science and technology. For a number of sectors (the coal industry and certain others) there is no estimate of the technical level up to the end of the forecasting period.

FOR OFFICIAL USE ONLY

I will give an example. The GKNT Commission for Retooling the Country's Productive Plant and Development of Machinebuilding (director--A. I. Tselikov, member of the academy) recommends as one of the main lines of development of machinebuilding expanded use of detailing (rolling) mills, of which there are today more than 60 in our industry. Gosplan has a high opinion of the results of work to use this method in manufacturing pins for conveyors used in livestock-raising operations, railroad car axles and a number of other parts. But the commission's recommendations do not state where or on what scale this highly effective equipment could be applied, nor the kind of saving of labor, metal and capital investments it would yield.

There is a need to speed up the drafting of specific proposals for determination of the main lines of future scientific-technical progress in our country, including substantiation of the technical-and-economic indicators for development of particular production operations and industries. There is also a need to speed up the drafting of procedural guidelines for preparation of the Comprehensive Program of Scientific-Technical Progress.

USSR Gosplan, which attributes great importance to scientific-technical progress, regularly examines the proposals of scientists and specialists concerning new manufacturing processes and proposed technologies, selecting and acknowledging in its drafting of state plans those proposals which are on the largest scale, that is, those whose realization could make it possible to substantially raise production efficiency. In this connection I would like to present certain information which is of considerable interest.

We are all quite aware of the importance of developing the country's fuel and energy complex. The proportions in which the various fuels are used will determine the effectiveness of developing the entire fuel and energy complex and consequently the development of the national economy as a whole. That is why it is so important to concentrate on development of nuclear power and also the gas industry, and finally the petroleum industry, in order to obtain motor fuel and raw materials for the chemical industry. There are very many specific problems in this area which I would like to call upon scientists to solve. I will dwell upon one important and large-scale measure which is being carried out at the present time on recommendation of the Ukrainian Academy of Sciences.

It has to do with introducing into the economy multiply pipe which withstands pressures up to 120 atmospheres or higher and makes it possible to pump approximately twice as much gas as the same diameter pipe we have at the present time. Construction of gas pipelines of multiply pipe for a pressure raised only to 100 atmospheres would make it possible to obtain 45-47 billion cubic meters of commercial gas as against 30 billion cubic meters at a pressure of 75 atmospheres and at the same time to considerably reduce capital investments. B. Ye. Paton, member of the academy, has been paying very close attention to this problem, and we are doing everything to promote its solution.

FOR OFFICIAL USE ONLY

The testing of the new pipe under experimental conditions has shown that it is very promising from the standpoint of increasing gas delivery from the eastern regions to the Center and beyond--to the western borders of the Soviet Union. It affords the possibility of pumping 180 billion cubic meters of gas a year from Western Siberia and of reducing by one-third the number of gas pipelines required for this purpose. This measure will make it possible to save not millions, but billions of rubles.

A plant is already being built to manufacture the new pipe, and the first gas pipeline using it will be laid in the 11th Five-Year Plan.

We should also note the very worthwhile work being done by VNIImetmash [All-Union Scientific Research, Planning and Design Institute of Metallurgical Machinery] under the direction of A. I. Tselikov, member of the academy. As a result of that work a proposal has been submitted to Gosplan for production of contact-welded thin-wall pipe. Adoption of this proposal will yield a large economic benefit in industry and agriculture. We are grateful to Aleksandr Ivanovich for the work he and his team have done. A decision has been made to build a plant to manufacture thin-wall pipe, which will make it possible to save 600,000 tons of metal per year. The plant is already in operation and is yielding the state a good return.

The Institute of Chemical Physics of the USSR Academy of Sciences has also done quite a bit to render assistance to the economy. I have had occasion to visit this institute and become acquainted with research to create new filled polymer materials. This work is very promising. The institute's staff, under the direction of N. S. Yenikolopov, member of the academy, is now working energetically with people from industry to organize industrial production of pipe from these materials.

If the production of this pipe is increased to 1.5 million tons and the production of thermal insulating materials up to 10 million cubic meters per year, the consumption of petrochemical raw materials and also consumption of petroleum fuel for energy purposes could be reduced by 12-13 million tons of petroleum per year, which would mean a saving of at least 2-2.5 billion rubles on capital outlays. Moreover, it would reduce by 6-7 million tons per year the need for steel pipe, which increases the economic benefit still more.

We would like to see this work in the Academy of Sciences put under special supervision, while we for our part will provide aid to the relevant organizations in building these installations. The first pilot plant for manufacture of pipe from plastic materials with various fillers will be put into operation in 1980 at the Mytishchi Stroyperlit Combine.

Much work is being done in the field of powder metallurgy. The manufacture of parts by this method makes it possible to double labor productivity at the least and reduce capital investments to one-third.

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

In speaking about large-scale technical measures, we cannot pass over the question of using nuclear reactors to obtain not only power, but also heat. Every such nuclear boiler installation is capable of heating a city with a population up to 400,000, thereby saving the national economy about 800,000 tons of standard fuel per year. In the national economic plans for the 11th and 12th 5-year periods we intend to provide for the manufacture of as many installations as we will be able to erect with the capabilities of our machinebuilding enterprises. There are very high guarantees that the nuclear boiler installations will establish themselves not only in our own country, but also in the other socialist countries.

All of this demonstrates that many development projects being conducted in scientific organizations can and must be made available to the national economy. That is why Gosplan has made a practice of hearing in its expanded sessions the reports of scientific organizations and of making decisions concerning them. To be specific, last year the problems of introducing multiply pipe into the national economy and of combating losses of agricultural products were discussed in a session of Gosplan.

Not long ago we discussed projects of the Siberian Department of the USSR Academy of Sciences. Papers were presented by G. I. Marchuk, member of the academy, and directors of those institutes of the department which have scientific developments that might be applied in practice at present or in the near future. We have examined many projects, and some of them need to be mentioned here, since they require the close attention of a number of organizations, above all the ministries to which a number of developments will be turned over.

More than 20 years ago scientists of the USSR Academy of Sciences developed the growth substance gibberellin, which has a great future in the economy. That is, experiments using gibberellin over the last several years show amazing results. In Samarkandskaya Oblast spraying gibberellin in microscopic doses (25 grams per hectare in a water solution) during the flowering period of grapes made it possible to increase the yield at least 1.5-fold in 3 years. Use of gibberellin in Moldavia is yielding extremely good results. The increase in the yield of tomatoes on plots treated with the preparation was 150-200 quintals per hectare over the 3-year period, that is, 50-70 percent. The Moldavian comrades are asking to be allocated 1.5 tons of the preparation, but the plant is producing only 80 kg per year. The question, of course, arises why the practical application of gibberellin is going very slowly, and at times has been forgotten altogether, when there are these extremely interesting results?

A broad road needs to be opened to the new preparation, and we need to use it to obtain higher yields than those which can be obtained under other equal conditions.

Without touching upon other aspects of the activity of the Siberian Department of the Academy of Sciences, I will note that along with the projects I

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

have mentioned, much attention should be paid to the radiation devices built in the institutes of the department for combating grain losses and to improve the strength and thermal characteristics of plastics. The same applies to the new catalysts developed in the laboratory of G. K. Borekov, member of the academy, in the Catalysis Institute of the Siberian Department of the USSR Academy of Sciences. They are very promising and deserve the most serious attention from the Ministry of Chemical Industry and the Ministry of Petroleum Refining and Petrochemical Industry.

Many new things have been done in the field of machinebuilding.

The All-Union Scientific Research and Project Planning and Design Institute of Electric Welding Equipment, collaborating with the Izhorskiy Plant in Leningrad, has succeeded in organizing prior plasma treatment of cutting tools, which has made it possible to increase the cutting rate 4-5-fold. As a result billets weighing as much as 50 tons, which previously took an entire month to be machined on custom-made machine tools, are now machined in considerably shorter periods of time because there is less need for the custom-made machine tools. If we really tackle the job of applying plasma treatment of metal in the 11th Five-Year Plan, this will yield a considerable economic benefit.

Much work has also been done to create such new types of transportation as pulp lines, container pipelines, magnetic cushion transport, etc. A decision has been made to commence construction of a pulp line from the Kuzbass to Novosibirsk over a distance of 250 km in order to deliver coal directly to a power plant. Later this pulp line will be extended to the Urals and will make it possible to deliver 25 million tons of coal for the Perm' Power Station, which has a capacity of 4-5 million kwh. The saving on the basis of imputed costs will be 2.5 billion rubles over rail transport.

I have given all these examples in order to demonstrate that USSR Gosplan is at present trying to do everything possible so that maximum advantage is taken of the advances of science and technology in the interests of the national economy. Quite a few new problems are arising in the light of all this, problems which in our view need individual examination and adoption of appropriate decisions.

It must be said that the organization of the scientific-production associations, in which science is combined with production, is yielding the greatest benefit from the standpoint of speeding up practical application of the developments proposed by the scientists.

Production facilities need to be built in the institutes of the USSR Academy of Sciences so as to ensure the fastest work on technical problems and the speediest application of the results of scientific research.

I would like to express the hope that today's session of the General Assembly of the USSR Academy of Sciences will furnish effective aid in drafting

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

those plans for the socioeconomic development of our country which are indispensable to the further dynamic development of the national economy and a rise in the prosperity of the Soviet people.

COPYRIGHT: Izdatel'stvo "Nauka," "Vestnik Akademii nauk SSSR," 1980

UDC 300.455

Fedoseyev on Socioeconomic Development

Moscow VESTNIK AKADEMII NAUK SSSR in Russian No 5, May 80 pp 23-36

[Paper delivered by P. N. Fedoseyev, member and vice president of the USSR Academy of Sciences: "Theoretical Problems of Socioeconomic Development in the Present Stage"]

[Text] In his address at the November (1979) Plenum of the CPSU Central Committee Leonid Il'ich Brezhnev emphasized that in solving the urgent tasks facing the national economy the party is putting great hopes on the effective aid of our scientists--especially those of the USSR Academy of Sciences, the republic and sectoral academies, and all scientific research institutes.

The entire organization of Soviet science and scientific research must become more vigorous and effective.

Optimum interaction between scientific-technical progress and socioeconomic development have paramount importance in the continued strong upsurge of the national economy. To a considerable extent the solving of economic and social problems depends on how effectively the advances of science and technology are applied to speeding up the rise of labor productivity and the growth of the entire economy. The rates of scientific-technical progress are in turn determined not only by its internal logic, but to a decisive degree by socioeconomic conditions.

This interaction is vividly manifested in the Comprehensive Program of Scientific-Technical Progress which is being drafted by order of the governing bodies by the USSR Academy of Sciences, the USSR State Committee for Science and Technology and USSR Gosstroy.

The problem of the proportions and rates of socialist production has become the key problem of economic and social development. The planned development of the socialist economy in conformity with the Marxist-Leninist theory of reproduction makes it possible to consciously regulate and adjust structural changes in the economy to conform to different historical stages.

In all the stages of the construction of socialism the questions of structural policy have been a topic of constant attention by the party and

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

government. The point of departure of the party has been and is that "... the rates of economic growth and the potential for capital formation necessary to economic development and to raising the prosperity of the people depend in large part on proper solution of structural problems."*

In the first years of the construction of socialism the problem of improving the structure of the national economy was solved unambiguously--to the advantage of accelerated development of heavy industry. The large-scale economic maneuver, which required that a strain be put on all the resources and energies of the people, made it possible in the shortest historical time to put the national economy on the footing of an up-to-date industry and to accomplish radical changes in the structure of the economy. Whereas in the initial period of the construction of socialism the predominant portion of the national income was produced in agriculture, now more than 60 percent of the national income is produced in the sphere of industry and construction.

The country has taken on an up-to-date industrial appearance, a network of power stations has covered it, new cities and industrial centers have been built, and large new production and regional complexes have taken shape. Comparisons with the most advanced capitalist country--the United States--can give an idea of the immense and rapid growth of the country's industrial might. Whereas once our country's steel smelting represented one-seventh of that of the United States, it now surpasses it by more than 20 percent. We mined half as much coal, but now 11 percent more. The level of petroleum production was one-seventh, but now it is 36 percent more than in the United States. Cement production was one-eighth of the United States level, and now it exceeds it by 65 percent. Our country produces 2.3-fold more tractors than the United States.

Particularly substantial changes have occurred in the structure of heavy industry thanks to the accelerated growth of the machinebuilding complex and the fuel and power industry. Between 1940 and 1978 the output of machinebuilding and metal manufacturing increased 63-fold, and the generation of electric power increased 25-fold. This made it possible to guarantee multiple growth of the capital-worker and power-worker ratios. Between 1940 and 1978 the power per worker increased almost sevenfold in the industrial sector and more than 14-fold in agriculture.

As a result of progressive processes in the economy, the material and technical base appropriate to advanced socialism was built. A certain change in national economic proportions toward a higher share of resources allocated to consumer needs became possible on that basis. Whereas the share of the national income allocated to the consumption fund in 1970 (on the basis of a calculation in current prices) was 70.5 percent, in 1978 it was 73.7 percent. The growth of the consumption fund represented 64 percent of

* "Materialy XXIV s"yezda KPSS" [Materials of the 25th CPSU Congress], Moscow, 1971, p 58.

FOR OFFICIAL USE ONLY

the total size of the absolute growth of the national income in the period of the Eighth Five-Year Plan, and more than 80 percent in the period of the ninth and the first 3 years of the 10th Five-Year Plan.

A definite convergence of the growth rates of production of Groups A and B and also a substantial increase in the share of products of heavy industry in the output of consumer goods have been constructive.

The results of the party's consistent policy of a substantial redistribution of accumulation to the advantage of the agricultural sector of the economy have been vividly manifested in recent years. Whereas before the beginning of the Ninth Five-Year Plan the growth rates of fixed productive capital of agriculture were lagging behind the same average indicator for the national economy, they have exceeded that indicator in recent years.

Substantial shifts have taken place in the social composition of society. The size of the working class has grown sevenfold with the growth of industry. The needs of scientific-technical progress, of education and of health care have resulted in a huge numerical growth of the intelligentsia. The number of workers employed predominantly at mental labor has increased from 3 million in 1926 to 27.5 million, that is, 12.5-fold.

The size of the farm population has decreased substantially. In the years of Soviet power the share of the urban population has increased from 18 to 62 percent, and its absolute growth has been 135.9 million persons.

At the same time the scale of a number of social problems has grown, especially such problems as housing and food. It is sufficient to say that the growth of the USSR's urban population alone is equal to the entire present population of the cities of England, France, Italy, Sweden and Denmark to give an idea of the scale of housing construction to meet the greater needs for housing in the cities.... Though housing in the amount of 3,300 million square meters of floor space has been built in the USSR, the need for well-equipped housing has not yet been fully met by any means.

The food problem is being posed in a new way. Though the growth output of agriculture has increased 3.6-fold, providing uninterrupted supply of high-quality food to the public remains one of the most important problems. We must take into account that the share of the population employed in agriculture dropped from 75 to 21 percent between 1913 and 1978. Whereas in the past one farmworker had to produce for two persons, now he has to produce for 11, which has necessitated a sharp increase in the capital-worker ratio and labor productivity in agriculture. And it is natural that the CPSU Central Committee is paying particular attention to the reinforcement and further development of the material and technical base of agriculture and to its more effective utilization.

Thus the shifts that have taken place in the structure of the economy have radically altered the character of production, have become the basis for

FOR OFFICIAL USE ONLY

strengthening the social unity of society, and have broadened the scale and possibilities for solving current and future socioeconomic problems.

At the same time the present structure of the economy does not fully meet the requirements of economic strategy and social welfare policy in the present stage, and this has become a matter of constant concern of the party and government.

While there has been a sizable growth of machinebuilding, it must be said that it is lagging to some extent behind the needs of the economy, especially in solving the problem of cutting back on manual labor with low productivity. The production of energy is lagging behind the larger tasks of raising the power-worker ratio and of meeting the needs of the population for social, cultural and consumer services.

The tasks of technical improvement of production necessitate accelerated development of those industries which predetermine the destinies of technical progress. But by contrast with the past period, rapid growth rates of new technology and manufacturing equipment must be accomplished without slowing down the growth rates of industries producing consumer goods.

The problem of the relationship between the growth rates of these two departments of social production in the present stage, if we translate it into the language of economic practice, consists of meeting the growing needs for means of production on an intensive rather than extensive basis. This problem has become acute because production of uneconomical means of production has resulted in the continuous rise of specific inputs of initial products to manufacture the products for final consumption, and that means a decline of economic efficiency. The growth rates of the Soviet economy are actually being limited more and more by the growth rates of the extractive industries.

In 1977 capital investments in the USSR per unit national income were nearly 1.5-fold greater than in the United States, the amount of steel was almost 1.9-fold greater, the amount of electric power 1.2-fold greater, the amount of petroleum twofold, and the amount of cement 1.8-fold greater. Per unit of agricultural output the USSR produces 1.4-fold more manufactured fertilizers and 2.6-fold more tractors than the United States.*

The predominance of extensive factors of growth and of the high materials intensiveness of production is one of the principal reasons for the lower growth rates and drop in qualitative indicators of economic development.

The drop in the growth rates of the national income is occurring simultaneously with a substantial growth in the volume of fixed productive capital and physical working capital employed in the national economy, which is especially noticeable when we compare the incremental magnitudes of these

* PLANOVoyE KHOZYAYSTVO, No 2, 1979, p 42.

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

indicators. Whereas the growth of the national income employed and of fixed productive capital was 1:2 in the period of the Eighth Five-Year Plan, in the ninth it was 1:3.4, and in the first 3 years of the 10th--even 1:4.2. This shows that the output-capital ratio is dropping.

Though in the last three 5-year periods there has been a certain convergence of growth rates of the first and second departments of the economy, because of dropping production efficiency the gap is widening between the growth of production and the rise of consumption. This disproportion is the principal cause of the ever larger imbalance between personal income and the commodities to cover it.

The experience of recent years has demonstrated that a growth increase in the volume of production of fuel, raw materials, and supplies, which appears the simplest and most accessible method of providing producer goods to the national economy, will in actuality tend to aggravate the shortage. The reason is that the extractive industries are the most capital-intensive and labor-intensive industries. Their expansion requires large amounts of energy, machinery, machines and materials. A greater load is put on transportation.

Thus the national economy finds itself in the face of a very complicated problem. The needs for producer goods are growing, but attempts to meet them on an extensive basis are not yielding the requisite benefit. The shortage of rolled metal products is growing, in spite of the sizable growth of steel production. There is a great strain on the fuel and energy balance though there is a constant growth in the volume of fuel production.

All this confirms the urgency of the proposition expressed by L. I. Brezhnev back at the 24th party congress that extensive factors of growth have become exhausted, that everything must be done to enhance the role of intensive factors.

The difficulties of a strategic change of direction toward the intensive mode of development lie in the fact that current needs put pressure on future undertakings. An effective new system of machines and improved manufacturing processes may emerge in a few years, but raw materials, fuel and energy are needed today.

The principal task of scientific development work and the art of planning now lie in restructuring the economy on the run, so to speak. Having resolved to put its reliance on the faster retooling and intensification of production and on conservation of energy, fuel, metal and all types of raw materials, the party deems it necessary at the same time to guarantee the further development of the fuel and raw materials base and metallurgy, as well as that of other industries. The general course of raising efficiency and the quality of performance and of introducing intensive methods of economic development should in this context determine the prospects for the rates and proportions of socialist reproduction and corresponding changes in proportions among and within sectors and industries.

FOR OFFICIAL USE ONLY

It would, of course, be simplest to postpone the planning and commencement of the radical change of direction in planning from one year to the next, from the current 5-year period to the new one on the pretext that all proportions and resources are already "bound up." But this would only amount to postponing the problems which have come to a head and would make them more complicated.

That is why we are now talking about developing and immediately carrying out a new conception of economic growth in which decisive emphasis is put on intensive development.

But what do we mean by intensification?

An unambiguous idea of the nature and criteria of the intensive type of growth has not yet taken shape in science or in economic practice. Not uncommonly the term "intensification" is used to refer to any growth of output by virtue of additional investments in fixed productive capital, regardless of the relationship between the funds invested and the end result. For example, raising the productivity of live labor, achieved by virtue of increasing the capital-worker ratio, is often interpreted as a factor of intensification even when the saving on live labor does not cover the outlays to equip it, that is, when the total costs per unit of the finished product are rising. On that basis it is thought that a growth of the national income achieved without increasing the labor force is an expression of the intensification of production, though this growth is achieved at the price of overexpenditure of past labor, that is, at the price of labor expenditures to create the means of production.

In actuality intensification of the economy is manifested not only in reduction of expenditures of live labor combined with a rise in the capital-worker ratio, but it also presupposes a simultaneous reduction of capital intensiveness and materials intensiveness of production. Following the methodology of K. Marx, we can speak of intensification of the production process only in the case when the gross product increases not by virtue of expansion of the "field of production," but primarily by virtue of application of efficient instruments of labor.

Taking into account that a drop in the costs of machines per unit of their productivity, which is equivalent to reduction of the capital intensiveness of production, Marx explicitly pointed out that under the conditions of technical progress "... there is no need whatsoever for this to be accompanied by an absolute growth in the scale of functioning capital values."*

The opinion can sometimes be heard that a rise in capital intensiveness is an unavoidable concomitant of technical progress. This notion runs counter to the principles of Marxist theory and historical experience.

* K. Marx and F. Engels, "Sochineniya" [Works], Vol 24, p 400.

FOR OFFICIAL USE ONLY

Marx indeed noted in "Das Kapital" that "... with the progress of science and technology the old machines, tools and devices come to be replaced by those which are more efficient and /comparatively cheaper/ [italics] in view of their output."* This proposition has been confirmed by the 100-year history of development of material production.

In the present stage technical improvement of production and rapid rates of economic growth are possible only if the rates of development of new industries--electric power, electronics, the most efficient types of machine-building, instrumentmaking and other industries which predetermine the destinies of technical progress--exceed the average considerably. As for the traditional industries--extraction and processing of the primary products of nature, production of building materials--the needs of the economy for the products of these industries can and must be met by reducing their specific rates of consumption.

As we know, at the present time the share of past, embodied labor exceeds 60 percent of the gross social product, and in the manufacturing industries it runs to 80 percent or higher. It is important, then, to reduce the materials intensiveness and capital intensiveness of the product for other reasons than just improving the current cost-accounting indicators of production. It is equally important that reduction of specific inputs of fuel, raw materials, and supplies and raising the output-capital ratio represent the most effective way of optimizing proportions and of enhancing the role of intensive growth factors, and at the same time is a realistic way of overcoming the shortage of manpower.

Under present conditions reduction of materials intensiveness of output should become one of the criteria for evaluating the scientific-technical level of production in any industry and at every enterprise.

Comrade L. I. Brezhnev has noted: "... saving on raw materials by improving production in the manufacturing industry is far more beneficial than augmenting production of the raw material by the same amount. Reduction of the materials intensiveness of the country's output by just 1 percent is equivalent to adding 3-4 billion rubles of growth to the national income.**

In the past the orientation toward reduction of materials intensiveness was hampered because enterprise and industry performance was assessed in terms of gross volumes of output, a large portion of which consisted of raw materials, supplies and intermediate products used in production and obtained from outside. The new economic mechanism, adopted in the decree of the CPSU Central Committee and USSR Council of Ministers dated 12 July 1979, eliminates this adverse factor in cost accounting.

* K. Marx and F. Engels, "Sochineniya," Vol 23, p 401.

** L. I. Brezhnev, "Voprosy upravleniya ekonomikoy razvitogo sotsialisticheskogo obshchestva" [Problems in Managing the Economy of an Advanced Socialist Society], Moscow, 1976, p 297.

FOR OFFICIAL USE ONLY

Given a situation in which the possibilities for economic growth through extensive factors (above all by virtue of additional manpower) are greatly reduced, the proportionality and balance of the national economy must ensure comprehensive intensification of production and, above all, a faster rise of labor productivity.

The principal directions for improving the proportionality of social production are clearly defined in the decisions of the party. They consist of improving proportions between consumption and accumulation in the national economy, of guaranteeing mutual alignment of all the components of the agroindustrial complex, of further development of such industries as fuel and power, metallurgy, and machinebuilding, of improving the operation of transportation and the production and social infrastructure, and of reorienting capital investments in scientific-technical progress toward fuller utilization of existing potential so as to direct them toward augmenting production of consumer goods.

It is obvious, however, that raising the level of conscious and planned management of the proportions of social production necessitates not only prompt correction of the discrepancies that have been discovered, but above all creation of conditions that make it possible to anticipate and prevent the emergence of new disproportions. At present economic theory and planning practice have not been coping with it successfully enough.

This raises a major national economic task for the science of economics--to guarantee improved reliability and realism in the linkage among the proportions of social reproduction in plans for the country's economic social development.

Improved development of the methods of the special-purpose program in planning is taking on particular importance for the restructuring of proportions determined by the objective necessity of intensification of production. Use of these methods makes it possible to put on a scientific basis the entire system of measures necessary to attain the goals set in multianual plans, to correlate these measures in time, to "link" them with the necessary resources, to discover the more immediate and remote consequences of these measures, and to designate those responsible for performance of the program as a whole and also for performance of its individual components and stages. The planning methods associated with the special-purpose program constitute one of the effective forms of planned management, a form that is helping to subordinate current management to solution of the problems of the long-range development of social production.

Yet at the same time concrete theoretical development of the programs of planning with special-purpose programs is needed. After all, socialist planning has always been purposefully aimed at key problems and has envisaged such programs on a grand scale as the plan for electrification of the country, the building of heavy industry (in particular the second and third coal-and-metallurgy centers and the enterprises of the Kursk Magnetic Anomaly), development of virgin land, transformation of the Central Nonchernozem

FOR OFFICIAL USE ONLY

Zone, construction of the BAM [Baykal-Amur Main Rail Line], and so on. Now, when the country's economy has attained huge proportions, and the scale of planning has grown tremendously, it has become an objective and, one might say, vital necessity to expand the planning methods associated with the special-purpose program thanks to the use of computers. The job, of course, consists not only of increasing the number of programs, but of a qualitative change in the approach to planning. But this necessitates a thorough revamping of the methodology and methods of planning and management.

The guiding principle in the conduct of economic activity has been and remains Lenin's idea of the single state economic plan. Which means that the plan cannot be an arithmetic sum of individual and separate programs. To sum up individual programs would not be socialist planning, but what is called programming, a practice that is more and more widespread in the West in government regulation of the economy. In socialist economic practice special-purpose programs must arise out of the needs of planned development of the economy and must be components of a single state plan.

The problem of balance in development of the entire national economy is becoming very important as the practice of planning with special-purpose programs becomes more widespread. We know that the problem of combining the assignment of priorities with overall balance has always been an acute one. Now the problem of balance is taking on still more urgent importance. The accomplishment of large-scale programs as a rule requires large capital investments over long periods of time, and the return from them is forthcoming only several years later. It is clear that overloading the plan with costly programs could make it more difficult to achieve overall balance and could slow down economic growth. Marx in his time cautioned that proper distribution of investments among projects with long-term and short-term rates of economic turnover must be one of the main principles of planning under socialism.

Utilizing the opportunities and advantages of planning by means of special-purpose programs depends not only on the level of soundness of the special-purpose programs themselves, but also on their close linkage and synchronization with all the sections of the national economic plan.

If that linkage is not accomplished thoroughly enough, then use of the method of the special-purpose program could be a vehicle for voluntarism in planning and could have adverse consequences. That is why the problem of correlating programs with all the sections of the plan for economic and social development is taking on particular importance. It is important at the same time to ensure optimum selection of the programs to be included in the plan and also to identify, when they are being compiled, the intermediate goals and intermediate stages of their accomplishment, which will also make it easier to link these programs with other sections of the plan.

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

The comprehensive special-purpose program is supposed to subordinate the activity of the many organizations achieving its fulfillment to a single goal. That is why success depends largely on refinement of the forms and methods of managing the performance of programs and above all on identifying the bodies which are to coordinate the work and bear the entire extent of responsibility for the end results. Sound scientific recommendations are also necessary in this area. At the 25th CPSU Congress Comrade L. I. Brezhnev remarked: "It is important that in every case specific agencies and specific people bear the entire extent of responsibility and coordinate all efforts within the framework of the particular program."*

In connection with development of socialist economic integration closer linkage of the comprehensive programs of our state plan with the long-range special-purpose cooperative programs of the fraternal countries is indispensable both on a bilateral basis and also on a multilateral basis within the CEMA framework.

The participation of scientists in developing the methods and in shaping and carrying out the comprehensive special-purpose national economic programs stands among the main directions for development of scientific research and for bolstering its practical return.

Particular attention should be paid to the following problems, which need thorough scientific treatment. First of all, proportionality and balance will be ensured only if all planning decisions are taken strictly within the limits of the financial resources envisaged in the plan, which reflect in summary form the sum total of productive resources for distribution and use. That makes it necessary to perfect the methods of drafting the multi-annual financial plan and of linking it to all the planned proportions of reproduction. Second, there is a need for thorough study of the objectively necessary relations in proportions and rates of development of the individual intersector blocks and branches of the national economic complex so as to take into account experience in the development of our country and other industrially advanced countries. Discovery of normative relations which take into account the specific conditions for development of production and can be used in planning and in monitoring the soundness of the proportionality envisaged in plans ought to be the practical outcome of that research. Third, there is a need to develop a system of economic indicators that makes it possible to detect disproportions in the earliest stages of their occurrence and to take prompt measures so that they can be nipped in the bud. Finally, scientific comparison of the different major directions of scientific-technical progress, of utilization of capital investments, and of the development of proportionality is in need of more thorough work. For instance, at the present time particular attention should be paid to the so-called infrastructural direction in development of proportionality, which involves accelerated expansion of the production and social infrastructure.

* "Materialy XXV s"yezda KPSS," Moscow, 1976, p 61.

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

It is evident from what we have said that solving the problem of maintaining and improving planned proportionality depends to a considerable extent on the level of economic analysis of the condition and the development of our economy and on discovering new possibilities and potential for intensive growth of production.

A large potential for economizing on one-time outlays and current costs lies in improving the efficiency of methods of developing new regions. It is the fault of the current predominant method of putting new economic resources into economic circulation that the rates and scale of investment of resources in regions for new industrial development greatly exceed the rates and scale of the growth of output.

It is no secret that departmental divergence in development of the productive forces, especially in regions of new industrial development--Siberia and the Far East--gives rise to many unproductive costs and has an adverse effect on the indicators of production efficiency at the scale of the entire country. A survey of certain newly built enterprises in the eastern regions shows that although they are located in the immediate vicinity of economical natural resources, their efficiency proves to be considerably below that of similar enterprises located far from sources of fuel and raw materials. The main reason for this is the high specific one-time outlays. It is usually assumed that an increase of outlays for capital construction is a consequence of the remoteness of the eastern regions from lines of communication and also of the harshness of the climate. And there is, of course, a certain truth in this. But it is equally important that in organizing construction each department is on its own not only in building the principal production facility, but also carries out the entire set of operations to equip the area and to build the production and nonproductive infrastructure independently and without cooperation with other departments. The low efficiency of the one-time outlays and current costs and difficulties of staffing the production operations with steady personnel are detracting from rates of development of the productive forces in the eastern regions. It is thereby becoming more difficult to solve the problem of furnishing fuel and raw materials to the economy of the country and the commonwealth of socialist countries.

These adverse tendencies can be overcome only if the organizational and economic conditions for development of production facilities in regions of new industrial development are improved.

Development of the rights and initiative of local government agencies and administrative authorities in managing the economy within the area of their jurisdiction and overcoming departmental barriers will make it possible not only to develop the economy of the union republics and economic regions more harmoniously, but it will also strengthen relations among them, which will result in a further social solidarity of our people.

FOR OFFICIAL USE ONLY

There is still reason to point up the potential that exists in the area of intensification. It is above all a question of the need to sharply reduce the share of minerals left in the ground when they are extracted. "Remainders" of this kind exceed 40-50 percent or more of the total volume of balance-sheet reserves.

For the extractive industry as a whole, assuming total extraction of minerals of more than 6.5 billion tons, the size of total losses is 2.5 billion tons, including 500 million tons, worth 5-7 billion rubles, that could be eliminated at the present level of technology. Even now science has proposed many new methods of comprehensive use of resources which need to be introduced.

Timely and regular renewal of productive plant is an exceedingly important potential for raising the return on capital in the manufacturing industry. The accumulation of outdated and worn-out capital assets in various industries stands in the way of improvement of economic indicators, is tying up sizable labor resources, requires disproportionate outlays for repair, and the repair is often done at a low technical level. At the same time renewal of the technology used yields rapid and effective results.

Radical structural improvement and a higher technical level of machinebuilding and of its products have become an urgent problem. The fragmented nature of machinebuilding needs to be overcome; because of it 45 percent of all the country's metalworking equipment and at least 5 million workers are employed in large and small machine shops of plants in other industries where they are used mainly to repair equipment and gear or to build non-standard equipment and gear, which is usually primitive. According to figures of economists, the level of labor productivity in these shops is 20 percent lower than in specialized machinebuilding enterprises, and the output-capital ratio is 25 percent lower.

There has long been a need for more thorough specialization, industrial cooperation and concentration of machinebuilding and for adoption of warranty servicing and repair of all types of production equipment.

It would be wise to give a separate place to a factor like the use time of equipment, which is now so very important. The cost of equipment is rising steadily, and in that context its use on one shift and only 5 days a week (as is often encountered at many enterprises) is becoming an outright waste. It is evident that more specific justification is required and the question should be raised of organizing the planning of production and work, the workday and the workweek so as to yield the maximum possible use of fixed productive capital. The operation of machine tools with program control, for example, for only a few hours a day cannot be allowed. There is no society so rich that it can afford that.

Strengthening the internal consistency of the economy is a principal condition for ensuring the regular pace of production, on which efficient

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

utilization of labor and all other resources ultimately depends. At many enterprises as much as 50 or even 75 percent of the entire monthly output is produced in the last 10 days. The reason for this is that the size of the work force at enterprises is determined on the basis of those last 10 days of the month, which means that highly inefficient employment of labor is envisaged in advance, or overtime work is used, which also makes the product more expensive.

Worktime losses within the shift are still large. According to the data of time studies of the workday conducted at a number of enterprises in different industries, the average time the worker spends performing the assignment of his shift constitutes only 50-70 percent of the time he is on the job.

Everything needs to be done to speed up the transition to progressive forms of organization of work, team methods above all, so that maximum use is made of labor resources and productive capital. As a rule the transition to team forms of organization of work makes it possible to raise labor productivity 8-20 percent and to reduce personnel turnover between one-third and one-half.

Important potential for raising the output-capital ratio lies in faster assimilation of new capital. Addition of new capital constitutes a formidable figure every year, running as high as 10-12 percent of the total volume of existing capital. On the basis of allowances now in effect, the period for attainment of rated capacity runs from 1 to 3 years from one grouping to another. The actual period for attainment of rated capacity exceeds the standards 1.5-2-fold. According to the available computations, the short-fall of output at new enterprises in the first years of their operation is 45 percent or more. This in turn tends to sharply reduce the output-capital ratio and to lower rates of economic growth.

The sluggishness of thinking in terms of the categories of extensive growth is manifested at the present time even in the organization of scientific research and in the planning and financing of scientific institutions. In recent years the number of scientists has increased approximately tenfold, but the amount of equipment furnished them (what we might call the capital-scientist ratio) has lagged greatly, and this is an obstacle to the necessary improvement of the effectiveness of the work done by scientific institutions. This unfortunately applies above all to basic science.

In connection with preparation of the session which was recently held, commissions of the USSR Supreme Soviet recommended that the USSR Academy of Sciences join USSR Gosplan and the USSR State Committee for Science and Technology in drafting a comprehensive system of measures to speed up scientific-technical progress. It is important that these measures make provision for organizing basic scientific research in every possible way.

FOR OFFICIAL USE ONLY

A unified system of economic and social planning, encompassing not only the production process, but indeed all aspects of social life, has been established in advanced socialist society.

The content of social relations is enriched as socialist production becomes more socialized. The concentration, centralization and specialization of production, together with the growth of intersector relations in the national economy, is having a direct impact toward developing socialist industrial cooperation and presupposes development of the most effective forms of involving the workers in management and consequently of enhancing the role of work collectives and public organizations in performing the socioeconomic tasks that confront the entire society.

The natural process of the development of socialist production relations is manifested in the major social shifts taking place in the direction of convergence of the two forms of socialist ownership and establishment of the complete social homogeneity of our society.

Unfortunately scientific institutions have not yet provided precise instruments for determining the quantitative and qualitative parameters of many social phenomena taking place in our society. There is no need to prove that without such measuring rods it is difficult to detect the real tendencies in social development and to influence them in a planned way.

Of course, this does not mean that the indicators of social development which are now established in planning practice (improvement of worker qualifications and occupational skills, the rise of the general educational and cultural level of the population, improving of housing conditions and cultural and consumer services, improvement of medical services, and much else) do not reflect those processes which are being carried out in a planned way in society as a whole (in republics, oblasts and krays, in cities and rural areas, in different sectors, and so on). But it is obvious that the task consists above all of representing all these indicators in an interrelated way, and the main thing, as pointed out in the decree of the CPSU Central Committee and USSR Council of Ministers adopted 12 July 1979, is that it consists of the requisite "... linkage with the assignments for development of production, for capital construction and for making them more efficient."*

The role of social factors, which are to be reflected more and more fully in the system of planning, is evident if we take as an example a social problem of such a large scale as overcoming essential differences between mental and physical labor. One of the decisive prerequisites of solving that problem, as we know, consists of overcoming the remnants of the old division of labor, above all of eliminating heavy manual labor, which still has a relatively sizable share of the sum total of social labor in our economy. We can compute the economic benefit from replacing manual labor

* PRAVDA, 29 July 1979.

FOR OFFICIAL USE ONLY

by machine labor with a greater or lesser degree of confidence. But after all, the social effect of changes in labor, which is a decisive sphere of social activity, one that determines changes in all other spheres, has equal importance.

Another exceedingly important task which needs to be performed effectively in our society is the gradual elimination of essential differences between urban and rural areas. As everyone knows, the decisions of the July (1978) Plenum of the CPSU Central Committee provided an elaborate program in this respect. It envisages major steps to increase the real income of farmworkers, to organize construction of housing and consumer-service facilities, to develop cultural services to farmworkers, to improve their general educational and vocational and technical training, and other measures to improve living and working conditions in rural areas.

An important aspect of this process is transforming farmwork into a variety of industrial labor on the basis of major shifts in material and technical supply to farmwork and improvement of the socialized form of agricultural production in the direction of agroindustrial integration.

Establishment of quantitative and qualitative criteria in accomplishing social changes in an advanced socialist society would make it possible to work out a more concrete and purposive program of social development in each stage. The main thing is that we would be able to accomplish considerable progress in the purposive management of these processes.

All of this requires that we examine socioeconomic processes in movement, in their development, and reveal their interaction with maximum completeness. This also applies to the problem of the relationship between production and consumption and, to be specific, the task of developing and inculcating the truly sensible needs of the people.

In recent years the flow of literature on this problem has been growing. But these writings do not provide a convincing answer to the most urgent question for the theory and practice of social management: What are the criteria of reasonable needs and how are they to be formed in socialist society?

Under present conditions, now that the scale of the conduct of economic activity has grown tremendously and now that the network of economic interconnection has become more and more complicated, dense and ramified, such aspects of productive activity as work discipline, a sense of organization, order and the smooth pace of the work process have gained tremendously in importance. These elements of workmanship and workplace adequacy are now becoming a permanent condition for successful economic development. Conversely, an absence of scientific management, work efforts that do not entail responsibility, idleness of machines and equipment, and late and short deliveries inevitably undermine work discipline. Such phenomena as excessively high personnel turnover, low work discipline, shirking, drunkenness,

FOR OFFICIAL USE ONLY

imposed idleness of manpower, which alternate with crash efforts which are equally unjustified, seem to nourish and support one another.

The main thing is that now we need an immediate solution--and that solution is to increase the requirements (at all levels) concerning the condition of work discipline and state discipline. The need has arisen to provide theoretical justification of the rights, tasks and duties of production collectives in the sphere of relations related to work discipline.

As L. I. Brezhnev noted in his address at the November (1979) Plenum of the CPSU Central Committee, "... a socialist economy is unthinkable without reinforcement of the principle of centralization. At the same time, in both politics and the economy we need a centralism that is democratic, one that opens up broad room for initiative from below--the initiative of kolkhozes and sovkhoses, enterprises and associations, and local organizations. This arises not only from our outlook, but indeed ever from economic necessity."* L. I. Brezhnev's speech emphasized the need to expand the rights of work collectives in combating violations of work discipline, sloppiness and laxity. The drafting of organizational and legal measures that will guarantee the growing role of work collectives in managing production is an important task of our economists, sociologists and legal scholars.

Not uncommonly we note in scientific writings devoted to the problems of labor a jumping ahead, the drawing of premature conclusions to the effect that even under present conditions labor should be transformed into the first vital need of the overwhelming majority (if not all) of the Soviet people.

Yet this is still a large social problem. There is still a category of people who work any old way or altogether avoid socially useful work. The reinforcement of socialist work discipline has been and remains an exceedingly important task. There are also important psychological aspects here. We need to study the principles of mental regulation of work activity, the problems of vocational guidance, selection and training, and various problems in creating a wholesome and normal psychological atmosphere in work collectives.

The improvement of planning and management unfailingly presupposes further development of socialist competition, which is in turn an important factor for making the entire economic mechanism more effective.

The new procedure for compiling the annual plan from below--from production associations (enterprises)--has become fundamentally important. It is here that expansion of the rights and initiative of work collectives is to be manifested to the greatest degree, especially in the form of adoption of counterplans. At the same time this gives rise to the need for more thorough substantiation of obligations assumed in the organization of

* PRAVDA, 20 November 1979

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

competition and for more thorough work on the economic foundations of the counterplans. Integration of competition and cost accounting should become a most important condition for the stimulation of work collectives in their endeavor for end results, for product quality.

In the years of the 9th and 10th 5-year plans the sphere of competition among related enterprises, organizations and production operations was expanded. This competition is an effective form for closer unification of scientific and design organizations with industry and agriculture and for utilization of the initiative of the masses in the struggle to apply the advances of science to production.

The November (1979) Plenum of the CPSU Central Committee appealed for a broad scale of socialist competition on behalf of a worthy celebration of the 110th anniversary of the birth of V. I. Lenin and for successful completion of the 5-year period, so that 1980 becomes a year of shockwork, a year of work in the Leninist way. There is no doubt that Soviet scientists will make a solid creative contribution to the constructive activity of the Soviet people and to the building of communist society.

COPYRIGHT: Izdatel'stvo "Nauka," "Vestnik Akademii nauk SSSR," 1980

7045
CSO: 1820

FOR OFFICIAL USE ONLY

ECONOMIC POLICY, ORGANIZATION AND MANAGEMENT

UDC 62.001.6

SELECTED REPORTS FROM USSR ACADEMY OF SCIENCES SESSION

Kotel'nikov on Scientific-Technical Progress

Moscow VESTNIK AKADEMII NAUK SSSR in Russian No 5, May 80 pp 37-43

[Paper delivered by V. A. Kotel'nikov, member and vice president of the USSR Academy of Sciences]

[Text] The decree of the CPSU Central Committee and USSR Council of Ministers dated 12 July 1979 and entitled "On Improving Planning and Strengthening the Influence of the Economic Mechanism on Increasing Production Efficiency and Work Quality," the decree which has already been spoken about today, calls for establishing the following procedure in compiling multiannual plans of the country's economic and social development:

a) the USSR Academy of Sciences, the USSR State Committee for Science and Technology, and USSR Gosstroy are to draft the 20-Year Comprehensive Program of Scientific-Technical Progress (by 5-year periods) and to submit this program to the USSR Council of Ministers and USSR Gosplan no later than 2 years before each successive 5-year period; every 5 years the necessary revisions will be made in the comprehensive program, and it will be compiled for a new 5-year period;

b) on the basis of the long-range socioeconomic tasks defined by the party and by the Comprehensive Program of Scientific-Technical Progress USSR Gosplan shall join USSR ministries and departments and the councils of ministers of union republics in preparing the draft of the Main Lines of USSR Economic and Social Development over the 10-year period (by 5-year segments).

Thus the comprehensive program, which will project the country's development 20 years in advance is to become the basis for further long-range planning and for compiling 5-year plans.

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

Is there a need for such a long period of time as 20 years? Absolutely. If we want to correctly plan the strategy governing utilization of our natural resources, then we, of course, need to glimpse the country's development not just over 5, nor just 10, but over at least 20 years.

And then the industrial sector must be developed and large-scale industrial enterprises built so as to take into account long-range prospects, since these enterprises will be operating many years after construction is completed. Transportation facilities, railroads, courts and highways also serve for many decades, and, of course, we need to foresee what will be happening in that period if we are to plan their construction correctly.

The problems of land-use planning, reclamation, construction of cities, location of the productive forces throughout the country, and the training of personnel--all these problems require a long-range evaluation of future development.

If we are to plan properly over a 20-year period, we also need to outline our society's social development so as to take into account the needs of the population which will arise in that time and to make provision for appropriate measures.

In working out alternatives for the country's long-range development, we must, of course, also make approximate economic computations that make it possible to ensure a balanced economic development and to adhere to optimum proportions.

In long-range planning it is especially necessary to take into account the future progress of science and technology. In such a period many new things will arise in technology, new manufacturing processes will emerge, and production conditions will change. It is therefore very important to have good forecasts of technical development and forecasts of the progress of science, which are supposed to provide that technical development.

One great difficulty here is the need to prepare not only a qualitative forecast of development, but also a quantitative forecast; this is indispensable in order to correctly evaluate the effectiveness of the specific measures and to plan economic development in quantitative terms.

N. K. Baybakov has stated here that in a number of cases the necessary economic indicators were absent from the Comprehensive Program of Scientific-Technical Progress. The reason is that at present we are not always able to evaluate the benefit of a particular economic measure until it has been sufficiently tried out in practice. We obviously need to work on developing methods of making such an assessment, even methods based on statistical probability, so that our technical forecasts might be totaled up more completely in economic terms.

FOR OFFICIAL USE ONLY

Aside from a long-range idea of the country's development, the comprehensive program should also provide recommendations for compiling plans covering the next 5-year period. That is why it is to contain proposals of scientists and specialists on those technical and scientific measures which should be carried out in the very next years in order to ensure the fastest economic development and to make provisions for solving problems which will arise as the economy develops further.

The comprehensive program was drafted for the first time under a 1972 decree of the CPSU Central Committee and USSR Council of Ministers. This was a variant of the program covering the period 1976-1990, and it was used in compiling the 10th Five-Year Plan.

At the 25th congress of our party it was stated in the report address that "work on the program must be continued--it constitutes an organic component of current and long-range planning, it provides reference points we need to be familiar with if we are to guard the economy effectively."

The Academy of Sciences, the State Committee for Science and Technology and USSR Gosstroy was then ordered in February 1979 to complete the work on the comprehensive program this time covering the period up to the year 2000.

In the course of that work corrections were made in the program up to the year 1990, which had already been compiled, and the period covered by the program was extended by 10 years. By contrast with the first variant of the comprehensive program, staff members of Gosplan took an active part in its drafting; they participated in the discussion both of the program as a whole and also of its sections, which unquestionably enhanced the quality of the material. This program is now being used by Gosplan and ministries in compiling the Main Lines of Economic and Social Development of the USSR Over the Period 1980-1990.

I, of course, cannot present the content of the comprehensive program up to the year 2000 in detail at this point--my report on the comprehensive program in the Presidium of the Academy of Sciences and the collegium of the State Committee for Science and Technology took 2 hours. I will only try to describe its contents very briefly with illustrations.

Machinebuilding. This section is being drafted by a commission headed by A. I. Tselikov, member of the academy. Machinebuilding is to ensure the technical level and basis for improvement of our national economy and for raising labor productivity in the coming period.

This section of the comprehensive program contains the following major measures.

First--the specialization of plants. We now have specialized plants in the ball-bearing industry and certain others. It has been proposed that this be extended more broadly, that specialized plants be created for production

44

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

of gear wheels, worm gears, hydraulic drive, and so on. As shown by calculations and experience, this should greatly raise labor productivity and the quality of the products produced.

The second major measure which is to be carried out is the automation of production, the manufacture of industrial robots. As has already been said here today, our machinebuilding plants are operating little more than one shift, and their equipment is being used inefficiently. Robots and automation should make it possible for the plants to operate around the clock, to greatly raise labor productivity and to make better use of those limited human resources that will be available in the future.

Third, the comprehensive program calls for creation of pilot facilities and shops in scientific-research institutes and in industry. This will undoubtedly make it possible to apply new advances of science and technology to production more rapidly.

Measures are envisaged to ensure mechanization of labor. According to the calculations which were made, if the necessary measures are carried out, by the year 2000 this will free 20-25 million persons from manual labor. Of course, this is not so simple, since it is necessary to develop and organize the production of the necessary mechanisms and to prepare work stations and train the personnel so that they can work with those mechanisms. We have already been talking about this for many years now, but still the number of our workers employed at manual labor has not decreased.

An important task in machinebuilding is to increase the reliability and life of machines. Our potential in this area is very large.

Another major problem which needs to be solved is the organization of repairs by manufacturers. At present we are losing a very great deal on repairs, since they are frequently done incompetently and primitively. Repairs by manufacturers, on the model of what is now being set up for repairing the Zhiguli automobiles, will unquestionably yield a large national economic benefit.

A large problem for machinebuilding is the problem of conserving on metal. This has already been mentioned here. This economy is to take place by producing metal that is qualitatively better, that has better strength characteristics, in an assortment that is satisfactory to production. By replacing metal with plastics, by changing the designs of machines, making those designs more lightweight, and by changing manufacturing methods. As has already been remarked today, a great deal of metal is now going into shavings and other waste.

The question of metal conservation in machinebuilding is a complicated and comprehensive problem--we need to change even the design of productive machines and to set up production of new types of metals and plastics, to prepare equipment for processing them and to do all of this in a

FOR OFFICIAL USE ONLY

synchronized and coordinated way, so that we do not have large losses in the process of restructuring.

A calculation shows that the development of machinebuilding envisaged in the program will make it possible to more than double labor productivity in the national economy by the year 2000.

A large task facing the country is a very substantial expansion of the scale of production and use of electronic computers of all types. I will not enumerate in detail on this occasion what they will provide in the most diverse sectors of the economy: in production, in project planning, in management, in scientific work--this is well known. The forecasts which we have made and comparisons with other countries demonstrate that the program that now exists for development of electronic computers will not provide the necessary development of our national economy, and we need to compile it again in the very near future, ensuring more rapid development in the field of electronic machines. The unused potential here is large.

The measures which have been outlined in the comprehensive program in the field of construction (this portion of the comprehensive program was compiled by Gosstroy under the supervision of N. N. Kachalov) should make it possible to greatly improve indicators in this sector. It has been shown that by the year 1990 it is possible to reduce average construction time to five-ninths of what it is by the year 1990 and to five-twelfths of what it is by the year 2000 thanks to technical innovations and improvement in planning and the organization of work.

Important measures are envisaged for materials. The division of the program on ferrous metals was compiled under the supervision of B. Ye. Paton, member of the academy. It points out that ferrous metals will remain a basic structural material. But the amount of ferrous metals produced is not to increase greatly; by the year 2000 this increase will be on the order of several tens of percentage points, but the quality of the metal produced and its assortment are to undergo important changes.

Powder metallurgy will have great importance.

A large increase in the output of nonferrous metals is proposed, since development of many industries depends on them. The section on nonferrous metals was compiled under supervision of A. F. Belov, member of the academy.

An entire series of measures to protect metals against corrosion is envisaged. A. P. Aleksandrov has already spoken about the importance of this in his introductory speech. The section on this topic was prepared under supervision of Ya. M. Kolotyrkin, member of the academy.

The question of plastics. Measures to increase their output need to be taken over the next several years. In many cases they are more effective and cheaper than metals. But this is not a simple matter. This measure

FOR OFFICIAL USE ONLY

needs to be planned thoroughly. The program contains a specific section devoted to plastics, which was compiled under the supervision of S. M. Tikhomirov.

The section on wood materials was prepared under supervision of N. P. Anuchin, member of VASKhNIL [All-Union Order of Lenin Academy of Agricultural Sciences imeni V. I. Lenin].

We have large timber reserves. This is one of our valuable resources. Unlike other raw material resources, timber resources are renewable. But at present we are using them very inefficiently. The output we obtain from each cubic meter of timber felled is only a fraction of what is produced at advanced enterprises abroad.

If we are to set up this industry efficiently, we need to improve the quality of forest-harvesting machines. Timber has to be processed without losses, which up-to-date technology makes possible.

On fuel and energy. This section was compiled by the Council for the Fuel and Energy Complex, which has been working under the supervision of A. P. Aleksandrov, member of the academy. It outlines the following measures. Increasing the use of cheap Siberian coal and atomic fuel and reduction of the use of residual fuel oil to generate electric power. Rapid development of nuclear power production in the European part of the USSR and in the North. A larger share for electric power. More rapid development of surface deposits of petroleum and gas, increased refining of petroleum and gas for chemistry and a corresponding reduction of their consumption as fuels. Development of economical methods of processing cheap coal to make gas and liquid fuel. We have reserves of this kind of coal to last hundreds of years, whereas petroleum reserves are considerably smaller. Development of energy-intensive production facilities mainly in Siberia, where there are fuel reserves.

And another question without which it is difficult to solve the energy problem is the drafting and accomplishment of a set of energy conservation measures, especially through use of processes that use less energy. Our scientific research organizations face large tasks in this area.

On the agroindustrial complex. This covers agriculture itself, the supply of fertilizers and machines to agriculture, and the processing of farm products. This section was compiled under the supervision of Ye. N. Mishustin, member of the academy, and V. P. Mozhin, corresponding member of VASKhNIL.

We have a great deal of unused potential in the agroindustrial complex. One such reserve whose use is called for by the comprehensive program is reduction of the losses which we have in almost all branches of agriculture, losses which result from poor use of equipment, losses related to improper use of fertilizers, and losses in storage, processing and shipment of farm products. Calculations show that the outlays necessary to reduce losses

FOR OFFICIAL USE ONLY

are considerably smaller than the losses which would be required to obtain the same volume of output by expanding production.

Another aspect of the potential is utilizing more productive animals and better plant varieties. Without sizable outlays this strategy could augment the growth of production of agricultural products 15-20 percent.

Third--better use of land already developed and reclaimed by allocating to it the necessary machines, fertilizers and other materials on a priority basis.

In order to supply manpower to the agroindustrial complex it has been recommended that the size of the work force in agriculture itself be reduced, but that the work force be enlarged in those branches of the complex which supply agriculture and which process its products.

It is also recommended that there be a certain redistribution of capital investments in the complex by increasing the share going to building enterprises for supplying agriculture and for processing its products.

Calculations show that implementing these measures will make it possible to meet the country's needs for farm products at minimum cost, without increasing the area planted or the number of livestock, thanks to their more efficient utilization.

The comprehensive program also examines the problems of the country's water supply, which even now are putting us at times in a difficult situation and in future must absolutely be taken into account; the problems of transportation, which has become a bottleneck in a number of cases and which needs to be developed so as to take into account prospects for development of the economy; and problems of communications, where there is a very great deal to be done.

Attention is paid to the development of science. It is assumed that the following policy is necessary in this area: there does not need to be such a large increase in the number of those working in scientific institutions as took place in previous 5-year periods. If we compare our number of scientists at present, say, with the United States, it is approximately the same as there. The program calls for a 1.5-2-percent annual increase in the number of scientists. On the other hand a great increase in the support of scientific work is envisaged in order to raise labor productivity in this sector. Rapid expansion of instrumentmaking is provided for. In quantitative terms, whatever capital investments are needed for this purpose. By comparison with other expenditures they are relatively small, but they should make it possible for our science to take advanced positions.

Provision has been made for identifying priority lines in the development of science. Here we take into account that our country accounts for only 20 percent of the total number of scientific developments in the world,

FOR OFFICIAL USE ONLY

and, of course, we cannot occupy the most advanced positions everywhere and move forward equally in all fields of science. For that reason we obviously need this kind of policy: in developing all sciences, we must pay particular attention to those which are decisive to the country's development. Along the decisive lines we should take the most advanced positions. We know quite well that as soon as it appears that we do not occupy advanced positions in some decisive line of development, the question is immediately raised in the capitalist countries of curtailing exchange of information along those lines so as to hold back our growth. We have seen this repeatedly.

I will not enumerate all the decisive lines of development. One of the principal ones, it would seem, is fuel and energy, whose development is impossible without the contribution of science; and then electronics, which determines the development of the computerization of management, the rise of labor productivity and quality of performance, and a number of other areas.

The program examines the problems of personnel training. These problems are very important to us, and at present they are developing somewhat chaotically. The distribution by specialties of our personnel undergoing training differs greatly from that of other countries, and no one can explain whether this is right or not. This question needs to be thoroughly analyzed.

The retraining of personnel is a very important question which faces us. Calculations have shown that in the eighties approximately 2-3 million persons will be changing their specialty every year. The reason for this lies in the requirements of technical progress. It is indispensable that these personnel be retrained so that they can work productively at new jobs.

The measures I have been speaking about have been evaluated in economic terms in the program both on the basis of their benefit and also on the basis of the outlays which must be made to accomplish them. We have striven to adjust them to one another and to obtain the necessary balance. Otherwise, of course, these proposals would be unrealistic.

A number of proposals to improve management of the economy have been formulated in the comprehensive program, because otherwise the progress which technology and science could provide cannot be realized. Many of the proposals have already been incorporated in the decree of the CPSU Central Committee and USSR Council of Ministers which we are discussing today, but yet not all of them, and we need to continue work on their development and their translation into legislative enactments.

In addition to the topics we have already enumerated, the comprehensive program has also taken up the questions of urban construction, utilization of natural resources, environmental protection, problems in development of light industry and the food industry, health care, the overall problems of

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

economic development, improvement of production relations, the social composition of the population and the way of life. Consideration was given to regional problems, which have very great importance to our country: our population is growing mainly in Central Asia, energy resources are in Siberia, but industry is mainly located in the European part. The problems of international relations were also taken up.

Many measures proposed in the comprehensive program are not altogether new in every respect and have been already proposed earlier. The comprehensive program brings them together, organizes them into a system, correlates and links them to one another and to the capabilities offered in the national economy.

L. I. Brezhnev's remarkable speech at the last plenum of the CPSU Central Committee mentions a number of propositions which are contained in the comprehensive program.

In accordance with the July (1979) decree of the CPSU Central Committee and USSR Council of Ministers, the Comprehensive Program of Scientific-Technical Progress is now becoming an inseparable part of multiannual plans of the economic and social development of the Soviet Union. This puts great responsibility on the Academy of Sciences, the State Committee for Science and Technology and all other participants in the drafting of the comprehensive program. That is why adequate organizational and material conditions should be created for the systematic and competent drafting and revision of the program. Up to now this work has been done mainly on a voluntary basis and in a number of cases has not been included in the plans of scientific research institutes. We have had 27 commissions at work, and more than 2,000 leading scientists and specialists participated in their proceedings. The Presidium of the Academy of Sciences and the leadership of the State Committee for Science and Technology, with the collaboration of Gosplan, Gosstroy and other interested departments, are at present jointly drafting appropriate measures which will make it possible to do the future work in a more organized and competent fashion. These measures include, first, the creation, aside from the Forecasting Council which already exists in the Academy of Sciences and State Committee for Science and Technology, a specialized scientific organization which is to coordinate and stand behind all the work on the comprehensive program, and it is also to act on its own in doing the necessary work on the general problems of the national economy. Proposals to this effect have been included in the draft of the decree.

Then it is necessary to include in the plans of a number of scientific research institutes for the next 5-year period a number of long-range forecasting projects which are indispensable to substantiating the measures of the comprehensive program.

And third, something that needs to be done in the future is to ensure that republic academies of sciences participate extensively in drafting the

FOR OFFICIAL USE ONLY

comprehensive program along with personnel of scientific research organizations of the system of republic gosplans. The regional aspects of scientific-technical progress cannot be taken fully enough into account without that kind of effort.

In conclusion I would like to call upon our scientists to participate even more extensively in work on the Comprehensive Program of Scientific-Technical Progress, which is very important to our country and which is to be the basis for the scientifically sound development of our country in the future.

COPYRIGHT: Izdatel'stvo "Nauka," "Vestnik Akademii nauk SSSR," 1980

UDC 001.83(571)

Marchuk on Siberia's Resources

Moscow VESTNIK AKADEMII NAUK SSSR in Russian No 5, May 80 pp 44-49

[Paper delivered by G. I. Marchuk, member and vice president of the USSR Academy of Sciences and president of its Siberian Department: "Scientific Program for Comprehensive Development of Siberia's Resources"]

[Text] The Siberian Department has been working on the problems of developing Siberia's natural resources since practically the first years of its existence. This research has been especially intense since the decree of the CPSU Central Committee on the activity of the Siberian Department, which pointed up the need to intensify work on comprehensive and efficient utilization of the natural resources of Siberia and on development of its productive forces.

The decision of the Politburo of the CPSU Central Committee, the Presidium of the Supreme Soviet and the USSR Council of Ministers on the results of L. I. Brezhnev's trip to the regions of Siberia and the Far East emphasized the role of the country's eastern regions in augmenting the extraction of coal, petroleum and gas and takes note of the need for fuller use of the region's energy resources to develop the aluminum, petrochemical and other industries.

The Presidium of the Siberian Department of the USSR Academy of Sciences has prepared a scientific report entitled "Economic and Social Problems of Development of Siberia's Productive Forces Over the Period to the Year 1990." The report also furnishes an analysis and evaluation of the raw materials base for development of Siberia's productive forces and materials of the Comprehensive Program of Scientific-Technical Progress and Its Socioeconomic Consequences up to the Year 1990. The report relies on the results of research done over many years by the institutes of the SO AN SSSR [Siberian Department of the USSR Academy of Sciences], and ministries and departments. The Institute of the Economics and Organization of Industrial Production synthesized the materials of the report. This is probably the

FOR OFFICIAL USE ONLY

most important document of a comprehensive nature written in the Siberian Department. It has been taken up in the Presidium of the USSR Academy of Sciences and has received approval and support; its discussion in a session of the Presidium of the RSFSR Council of Ministers is being proposed. We hope that the figures and conclusions in the report will become points of origin or multiannual planning of Siberia's development.

The calculations of our economists on the basis of an interregional and intersector mathematical-economic optimization model showed that to maintain optimum rates of development of the country Siberia must develop at faster rates; moreover, the "Siberian" rates must be approximately 30 percent higher than those for the nation as a whole. If Siberia's rates of development are lower, then the country's development will slow down because of a shortage of resources, and if they are higher--an inactivation of capital will occur. Among other things, the role of mathematical models has proven to be exceptional in this area: mere common sense cannot provide a quantitative assessment of such indicators as rates of economic growth.

An All-Union Conference on Development of Siberia's Productive Forces will be held at the Academic Campus in Novosibirsk in June 1980 by decision of the Presidium of the USSR Academy of Sciences. The conference's principal purpose is to discuss the comprehensive report on Siberia's economic and social development. Interrelated and coordinated recommendations on the problems of Siberia's development in the 11th Five-Year Plan and beyond are to be worked out. The decree of the CPSU Central Committee and USSR Council of Ministers on improvement of planning places particular responsibility on us for working out those recommendations in a thoroughly scientific way.

Every major national economic project under the conditions of Siberia represents a huge complex of new tasks for science and technology. The objective conditions for development of the northern territories necessitate fundamentally new approaches and solutions possible only if there is an essential intensification of basic research. (Incidentally, in recent years SO AN SSSR has been assigning 70 percent of its resources to development of basic research, and has been spending 30 percent on applied projects, which have been yielding a large benefit to the national economy.) Gradual transition to the principle of the special-purpose program in planning, organization and management is becoming the basic line of policy in the questions of guidance of basic and applied research in the department. This is the effective way for basic science to have a direct impact on the development of production, a method of shortening the time required for the results of research to reach the national economy and to improve the efficiency of investments in science.

The long-range program entitled "Siberia," which is aimed at solving the scientific problems of comprehensive development of natural resources and at building the largest national economic complexes, is pivotal to the activity of the Siberian Department in the 11th and 12th 5-year plans. It

FOR OFFICIAL USE ONLY

incorporates more than 30 regional programs, which have to do with solving resource and raw materials problems, with the strategy for location and development of regional industrial complexes, with solving problems of particular complexity, environmental protection for one, with the BAM [Baykal-Amur Main Rail Line] and "Baykal" programs, and certain others. Fifty institutions of the SO AN SSSR and about 200 institutions of other departments have been participating in work on the comprehensive program.

The program entitled "Siberia" has helped to properly determine the place of basic research in developing Siberia's science and has made it possible to find principles for management of the development of that research. Each of the subprograms included in it has been conceived from the standpoint of the basic scientific problems that lie at its basis, and these problems are being distributed among the various scientific centers of Siberia, which is helping to develop those centers.

Projects on problems of the fuel and energy complex are being conducted with particular intensity. At the present time the faster-than-average development of the fuel and power industries is becoming Siberia's main problem. In the 10th Five-Year Plan nearly the entire growth of petroleum production in the country will be achieved in Siberia, along with 90 percent of the growth in gas production and 80 percent of the growth of coal production. The complicated and interrelated set of scientific problems related to the fuel and power complex is being researched on an ongoing basis in the institutes of the department, which are working jointly with organizations of the various sectors and industries.

More complete study and development of the resources of petroleum, condensate and gas of Western Siberia and a correct estimate of geological reserves constitute an exceedingly important task for scientists and practical experts. Siberian geologists and geophysicists are effectively developing their exploration, increasing the scale and elaborateness of their explorations for petroleum and gas in Western Siberia.

Scientists of the Siberian Department, in close collaboration with geologists and geophysicists of the geology ministries of the USSR and the RSFSR and other departments have demonstrated that reserves of petroleum and gas can be augmented both by intensification of production in old fields and by discovery of pools of a new type in known petroleum and gas provinces, as well as by exploring new fields.

Large-scale projects require new methods of prospecting petroleum and gas fields. The Siberian Department has developed and proposed new vibroseismic methods of prospecting, which are oriented toward studying large areas and great depths. An important feature of these methods is the use of a two-dimensional system of observation on the surface with a large number of observation points and wave-excitation points. Drafts of an organizational system for projects using the method of large-scale [ob'yemnaya] dynamic seismic prospecting have been prepared in the department.

FOR OFFICIAL USE ONLY

Under present conditions the importance of Siberian reserves of bituminous coal has been increasing greatly. Jointly with the Ministry of Coal Industry the Siberian Department has formulated scientific programs for problems of the Kuzbass and KATEK [Kuybyshev Plant of Automotive and Tractor Electrical Equipment and Carburetors]. Methods of geomechanical substantiation and optimization of new flow charts for underground coal mining in the Kuzbass have been worked out and delivered to industry. Computer programs that make it possible to calculate optimum stripping and development patterns and the parameters of cuts have been developed for the project planning of open-cut coal mines. This is raising the labor productivity of project planners 5-6-fold and is reducing outlays for capital construction and operating costs.

Development of the Kansk-Achinsk brown-coal basin has begun in the current 5-year period. The proposed creation of open-cut coal mines here which would be unique in their productivity and the building of thermal electric power plants of high unit capacity alongside them confronts science with the acute problem of utilizing the waste from the burning of the coal as well as the problem of preventing air pollution. Recently a program for obtaining liquid fuel from the Kansk-Achinsk coals has begun to develop vigorously. The decision of the Presidium of the USSR Academy of Sciences to set up the Institute of Chemistry and Chemical Technology of the SO AN SSSR is a specific step toward development of the academy's research in that direction.

Development and efficient use of Siberia's hydropower resources as a rule require the building of TPK's [regional industrial complex]. This is demonstrated by experience in shaping the new power-and-industrial complexes: Bratek, Ust'-Ilimsk and Sayan. Scientific research on the various problems of the TPK's has been ongoing in the Siberian Department for more than 10 years now. The department's economists have done a great deal of work jointly with the Commission for Study of the Productive Forces and Natural Resources of the Presidium of the USSR Academy of Sciences to determine the prospects for development of TPK's in the Angara-Yenisey region. Research is being done on supplemental development of new aluminum complexes, energy-intensive chemical production operations and a number of other industries in Siberia in the 11th Five-Year Plan.

Under the impact of scientific-technical progress the problem of developing nonferrous metallurgy has recently joined the group of most important economic problems. Within the framework of scientific-technical programs for the nonferrous metals the department's scientists are conducting interdisciplinary research on the problems of the Noril'sk Mining and Metallurgical Combine, the Udokan copper deposit, and the Gorevskoye and Ozernoye polymetallic deposits. The Noril'sk Combine has been given recommendations on selection of schemes for stripping deep levels of the Oktyabr'skiy and Taymyrskiy mines, where the conditions of mining engineering are problematical. The mining specialists have developed a system of mining machines whose application at the mines of Noril'sk is making it possible to create

54

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

a new method of mining the ore in which labor productivity is 2-3-fold higher.

Discovery of a large deposit of potassium salt in northern Irkutskaya Oblast this year is an important result of the joint projects of the Siberian Department of the USSR Academy of Sciences and the USSR Ministry of Geology to develop the mineral resources of the country's eastern regions. I would like to emphasize especially that the idea of the existence of such deposits was scientifically substantiated more than 10 years ago by A. L. Yan-shin, member of the academy.

The comprehensive scientific program for biological resources of agricultural production is aimed above all at raising highly productive new varieties of plants and new breeds of animals, at raising their productivity and resistance to adverse factors, and at creating new technologies in the growing of plants and in animal husbandry. By combining new genetic methods of controlling genetic mutation with conventional methods of selection and hybridization, the department's biologists, together with selection experts of VASKhNIL [All-Union Order of Lenin Academy of Agriculture imeni V. I. Lenin] have obtained a number of highly productive varieties and hybrids of wheat, rice, soybeans and sugar beets.

The large-scale interdepartmental program DIAS [expansion unknown] is being carried out. The testing of 105 wheat hybrids in accordance with a single program at various geographic points in Siberia and Kazakhstan has made it possible to set up a data bank and analyze with computers the dominant genetic characteristics of the productivity of each of the hybrids. This work is an exceedingly important step toward creating controlled selection. At the present time an atlas of the dominant characteristics of all wheat varieties is being prepared; it will be offered for use to selection experts of Siberia. We hope that it will substantially improve the use of varieties adapted to Siberian conditions.

Biologists regard use of the gene pool of native Siberian breeds and also of wild animals as an important potential for obtaining highly productive and resistant new animal breeds. But unfortunately this gene pool is disappearing. Unless care is taken to preserve it, in a short time a gene complex that has come about historically will disappear, and it will be difficult for us to carry on the work. That is why a large genetic center similar to the center at Askaniya-Nova is being set up in the foothills of the Altay. Its activity will make it possible not only to preserve the unique gene pool of Siberia, but also to create new animal species.

Finally, A. P. Aleksandrov is right that today we need to substantially intensify the work of studying the pattern of use of Siberia's land resources. But in doing this work we cannot do without the integrative efforts of all the biologists of the Academy of Sciences.

FOR OFFICIAL USE ONLY

The program of the Baykal-Amur Main Rail Line is the largest-scale national economic program within Siberia, and Siberian scientists have been involved in carrying it out from the very beginning. An extensive and comprehensive report has been prepared on the problems of the rail line, and three nationwide conferences have been held in recent years. On the basis of the network model of BAM construction, which was worked out by our economists and mathematicians, calculations have been made of alternative solutions for completion of various sections of the line and for distribution of capital investments among sections. These calculations are being used by the Commission of the USSR Council of Ministers for Construction of the BAM. Proposals have been made for holding construction workers within the BAM zone.

Serious attention needs to be paid to the problems of optimum development and location of Siberian machinebuilding. The reference point in solving this problem is predominant development of machinebuilding industries related to development of Siberia's productive forces. This is a fundamental issue in the future strategy of Siberia's development. Resolving it will mean a sizable saving on transportation costs and will make it possible to reduce cross hauls and to bring manufacturing plants closer to consumers. Scientists of the Siberian Department have already made relevant recommendations.

We need to say something separately about deliveries of models of equipment specifically designed for northern conditions. At the present time only 3 percent of the machines and machinery are being delivered to the North in such versions. According to the data of a survey of trucks, bulldozers and other machines and machinery conducted by the Yakutsk Affiliate of the Siberian Department of the USSR Academy of Sciences, in the trucking industry alone losses because of the unsuitability of metal for operation at low temperatures and the inadequate assortment of replacement parts run to impressive figures. The situation is also similar in other branches of our industrial sector.

Policy in the field of transportation equipment has particular importance in Siberia. Exploration for more efficient deposits is taking geologists into areas with increasingly extreme conditions, where transportation problems are becoming decisive. But very few cross-country vehicles are being manufactured, and such economical types of transport as pneumatic container and hydraulic transport are hardly being developed in Siberia at all. The special conditions of environmental protection necessitate creation of air-cushion transport.

The expanded session of USSR Gosplan has heard the report presented by RSFSR Gosplan on development of Siberia's productive forces and the recommendations of the Siberian Department of the Academy of Sciences on industrial application of the results of large-scale scientific developments, above all in Siberia and the Far East. This was an important event for academy science as a whole. The institutes of the Siberian Department

FOR OFFICIAL USE ONLY

prepared 20 technical-and-economic reports for consideration in that session; they set forth the basic principles of new development projects, described experience in their practical application, and furnished recommendations for their further use in the national economy.

In the years of the 9th and 10th 5-year plans as a whole, the Siberian Department delivered to ministries and departments the results of more than 900 large-scale scientific developments. I will briefly discuss the characteristics of some of them. As a result of joint work done by scientists of the Mining Institute and specialists of the Kuznetsk Metallurgical Combine of the USSR Ministry of Ferrous Metallurgy a new technology was created for underground working of large iron ore deposits. Its application at the Tashtagol mine raised labor productivity 2.5-fold and improved working conditions. This technology has been made the basis of the design of new high-productivity underground mines in the Kuzbass, the Urals and Kri-voy Rog.

A fundamentally new technology for applying metal to through holes in the production of printed circuit boards, eliminating the stage of chemical copper coating, has been created at the Institute of Physicochemical Bases of Working of Mineral Raw Materials of the Siberian Department. The new process makes it possible to save on many expensive materials and has reduced the cost of the process to a fraction of what it was. It is now being introduced in a number of sectors of the economy.

Under present conditions it is very urgent to create catalytic heat generators and to introduce manufacturing processes based on them. The Catalysis Institute has proposed a development aimed at comprehensive solution of the principal problems in combustion of various fuels, at increasing the efficiency of utilization of the fuel's potential energy and at sharp reduction of toxic emissions into the atmosphere. With the support of Gosplan it will be possible to put fundamentally new catalytic generators into production quickly, especially for small-size units suitable for household appliances.

It has now become obvious as never before that ensuring high rates of development of the productive forces and solving the large-scale new problems of economic development of the regions of Siberia urgently necessitate thorough scientific analysis and preparation of long-range government decisions. The entire program for comprehensive development of Siberia's productive forces will ultimately be based on the advances of the basic fields of science: mathematics, physics, chemistry, biology, the earth sciences and the social sciences. Certainly I will make no mistake if I say that the program entitled "Siberia" is a kind of summary expression of the Siberian Department's activity. It has taken the scientists of the Siberian Department 20 years to develop basic research before a program of such great significance became possible.

FOR OFFICIAL USE ONLY

The decrees of the Central Committee of the Communist Party and the USSR Council of Ministers and also the November (1979) Plenum of the party's Central Committee compel us to look in a new way at our work and to make it still more purposive and socially significant.

COPYRIGHT: Izdatel'stvo "Nauka," "Vestnik Akademii nauk SSSR," 1980

UDC 001.83(470.5)

Vonsovskiy Reviews Urals

Moscow VESTNIK AKADEMII NAUK SSSR in Russian No 5, May 80 pp 58-64

[Paper delivered by S. V. Vonsovskiy, member of the academy and chairman of the Presidium of the Ural Scientific Center of the USSR Academy of Sciences: "Comprehensive Development of the Productive Forces of the Urals"]

[Text] In my statement I will discuss the principal problems facing science in the Urals and the comprehensive programs for development of our economic region which have been drafted by the Ural Scientific Center of the USSR Academy of Sciences.

In recent years scientists of the UNTs [Ural Scientific Center] have conducted a number of basic research projects in the fields of mathematics and mechanical engineering, solid physics and chemistry, high-temperature electrochemistry, the theory of population ecology, the study of materials, and the theory of metallurgical processes; a great deal of work has been done on geological and geophysical study of the Ural geological province and on problems of increasing the efficiency of social production and optimum location of the productive forces of the Urals.

While increasing the effectiveness and scientific level of research, the staffs of the scientific institutions of the Ural Scientific Center of the USSR Academy of Sciences has striven to combine harmoniously the performance of basic research with expansion of relations between science and production, and they have directed their efforts toward work on the major national economic problems of the Urals. The orientation toward a substantial practical end result and toward use of effective forms of cooperation on behalf of the speediest application of developments to production have considerably increased the return from academy science in the Urals. In the Ninth Five-Year Plan the economic benefit from utilizing the results of scientific research amounted to 44.3 million rubles solely on the basis of direct application, and over the last 3 years it has been threefold as great--150 million rubles.

The center has considerably expanded its relations with sectors and industries. Today it has relations based on long-term contract-programs with seven ministries, including the USSR Ministry of Nonferrous Metallurgy, the RSFSR Ministry of Geology, and the RSFSR Ministry of Higher and Secondary

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

Specialized Education. These programs define the main lines of development of long-range cooperation between institutes of the UNTs and enterprises of the relevant sectors and industries.

The contract with the RSFSR Ministry of Geology has made it possible to coordinate the activity of seven regional geological administrations, five institutes of the academy, and a number of VUZ's and scientific research institutes of specific sectors and industries. The contract with the USSR Ministry of Nonferrous Metallurgy, in which the industry side is represented by 25 enterprises and scientific organizations, affords the possibility of applying the results of joint development projects both with the participation of scientific research institutes of particular sectors and industries and also on the basis of direct relations between the institutes of the academy and industrial enterprises. The following fresh example illustrates how effective this latter type of relation is.

On the initiative of A. P. Aleksandrov, president of the USSR Academy of Sciences, the Institute of the Physics of Metals of the UNTs was given responsibility for developing a specific magnetic system to stop the flow of the roving when the thread breaks in a spinning frame (the absence of such a device is one of the most essential shortcomings in present-day spinning technology, causing machines to break, large losses of yarn, and high expenditures of physical labor by spinning frame tenders). Under a contract between UNTs and the RSFSR Ministry of Textile Industry a great deal of work has been done, work in which the participants were the Institute of the Physics of Metals, the Yakovlevo Flax Combine, and the special design bureau for textile machinebuilding. Special magnetic systems were developed and built in which magnets with very high energy, developed previously in the Institute of the Physics of Metals, were used. These systems have been installed on the combine's spinning frames.

Experiments and then extensive industrial trials have shown the high efficiency and reliability of the devices which were developed. During 1979 the institute manufactured about 30,000 of the magnetic systems, which were delivered to the Yakovlevo Flax Combine to be installed on the spinning frames already in operation. Once these devices had been put into operation, labor productivity of frame tenders increased 30 percent, and, according to assurances of the combine's management, this increase will approach 100 percent in time. The saving on the raw material is more than 10 percent. The annual economic benefit on the scale of the combine is more than 1 million rubles, the payoff period for the magnetic devices is 7 months. Equally important is the social benefit--the work of the spinning frame tenders has become much easier. An urgent need has arisen to disseminate this method throughout the USSR's entire textile industry.

The July (1979) decree of the CPSU Central Committee and USSR Council of Ministers has once again emphasized the need to concentrate energies and resources on drafting and implementing the most important nationwide technical, economic and social programs as well as programs for development of specific regions and regional industrial complexes.

FOR OFFICIAL USE ONLY

The UNTs of the USSR Academy of Sciences has worked out a long-range program aimed at comprehensive and efficient use of the natural resources of the Urals. This program is the result of a large-scale study embodied in the forecast-report of the UNTs entitled "Development of the Productive Forces of the Ural Economic Region Over the Period up to 1990-2000 (and Neighboring Regions)." It reflects the principal scientific results of the research done by Ural scientists and summarizes proposals for development of the productive forces of the Urals.

In the forecasting period the Ural economic region must develop as before as an important national economic complex comprising the fuel-and-energy industries and raw materials industries, industries producing the means of production and consumer goods, and also an advanced agriculture. As shown by the scientific research, the future economic development of the Urals depends to a considerable degree on solving a number of major practical problems. They include, for example, improvement of the base of the raw materials industries and development of fuel-and-power and water resources. To be specific, the Urals are experiencing an acute shortage of solid fuel. There is a need, then, to work on the question of the possibility of delivering high-quality coking coal from the Pechora Basin here.

One of the most important scientific problems in our economic and social development is the problem of the reproduction and regional use of labor resources. For the Urals this is an especially ramified and complicated problem. For instance, whereas in the period from 1966 to 1970 the country's population increased 5.2 percent, the population of the Urals dropped more than 0.5 percent. And this trend is persisting.

The further rise in the efficiency of all branches of social production should also be included among the urgent scientific and practical problems.

On each of the problems in the report mentioned an economic analysis is given, and a rationale is presented on the main lines of development, the priority problems and the order of the stages in solving them.

The most substantial contribution to summary of the materials of the report and to substantiation of the proposals for the economic and cultural development of the Urals was made by the Economics Institute of the UNTs of the USSR Academy of Sciences, under the supervision of its director M. A. Sergeyev, corresponding member of the USSR Academy of Sciences.

The All-Union Scientific-Practical Conference on Development of the Productive Forces of the Urals, which was held in Sverdlovsk 21-23 November 1979 by the UNTs, the Commission for Study of the Productive Forces and Natural Resources of the Presidium of the USSR Academy of Sciences, the Council for the Study of the Productive Forces of USSR Gosplan, and the Central Economic Scientific Research Institute of RSFSR Gosplan was an important landmark in scientific substantiation of the economic and social problems of the Ural region and in drafting the program entitled "The Urals."

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

What are the principal problems reflected in the program entitled "The Urals?"

First of all we should discuss the problem of intensification of industrial production in the Urals: the reconstruction of existing enterprises, industrial parks and settlements. In the Ural region this problem is perhaps more acute than in other regions of the country, since the Urals have been developing as an industrial region for more than 250 years. Old plants with outdated equipment stand alongside modern giants of industry, and old cities and settlements of the urban type stand alongside up-to-date industrial centers.

This circumstance makes it one of the most important lines of scientific-technical progress in the Urals to develop basic and applied research and development here related to creation of fundamentally new technological processes for comprehensive reconstruction of enterprises, including mechanization and automation. The solution of the social problems of the future Ural region is also closely bound up with the reconstruction.

The problem of supplying mineral resources to the industry of the Urals is another leading component of our regional programs. Mining has been intensive here for more than 2.5 centuries. Manufacturing capacities have been growing uninterruptedly, but the mining of ores is declining. For instance, between 1965 and 1975 pig iron production increased 1.5-fold, while the mining of commercial ore dropped 5 percent. At the present time the metallurgical enterprises of the Urals are mainly operating with raw materials brought in from outside. The comprehensive scientific research program of the UNTs entitled "Mineral Resources of the Urals" calls for large-scale joint geological-and-geophysical and economic research aimed at making explorations more effective and at augmenting reserves of the ores of ferrous and nonferrous metals and other minerals in the Urals. A geological-and-economic evaluation of the mineral raw materials base of the Urals will be the basis for development of the mining industry and for defining the main lines of geological prospecting up to the year 2000. Geophysicists of the center are developing the scientific foundations and technical means for detecting deposits at depths of more than 1 km, since the ore deposits of the Urals have been worked only from the surface or to a depth not exceeding 500 meters.

Particular attention is paid in the program entitled "Mineral Resources of the Urals" to industrial development of the minerals of the Northern Urals, a little-developed region that is quite close to the industrial part of the Urals and has diverse natural resources. In recent years the amount of research work done by the UNTs and other scientific institutions of the region for the North has increased sharply and will increase still more. The center's geophysicists have found there very large anomalies that promise to yield rich deposits of iron ore if their metalliferous nature is confirmed. Geologists have discovered a very important barite deposit (Khoyvinskoye). We deem it advisable to raise the question of setting up an

FOR OFFICIAL USE ONLY

Arctic regional industrial complex to work the coking and power-plant coals of Vorkuta, the iron ore of the Shchuchinskiy Syncline, to develop the water resources of the Ob', and so on.

The scientists of the UNTs feel that the resources of this enormous region are a new glory of the Urals equal to the glory of the ore reserves of the Central and Southern Urals. A program entitled "The North," which calls for planned economic development of the Northern Urals, has been drawn up accordingly.

As before the Urals are still an extremely rich source of minerals, including iron ore. But these are complex ores, along with iron they contain other components as well, components which on the one hand make the ore more valuable, but on the other make it more complicated to use with traditional methods. Billions of tons of iron-titanium ores of the Medvedevskoye and Kopanskoye deposits are lying untouched since none of the present technologies makes it feasible to process them. Only the titanium-magnetites of the Kachkanarskiy type are being used, but in this process several hundreds of thousands of tons of titanium are annually being lost with the tailings and slag.

Resilient departmental barriers still stand in the way of combined processing of mineralogical raw materials. For instance, the ores of the Vysokogorskiy mine, which is under jurisdiction of the USSR Ministry of Ferrous Metallurgy, contains a great deal of copper. It could be extracted at the same time, which would be cheaper than extracting it at existing enterprises in the nonferrous metallurgical industry. But they dump it on the waste heap. The owners themselves do not extract the copper from the tailings.

During the existence of the Severoural'skiy Bauxite Mine many tens of millions of tons of iron have been mined along with the bauxites. Where is it? In the slurries from the production of alumina. Yet the iron content is as high as in commercial ores.

Workers in industrial enterprises understand perfectly: it is unprofitable to confine oneself to extracting the principal components from ores when there are large losses of accompanying components. They are in favor of waste-free production. But they need for that purpose manufacturing processes that have been competently worked out, finished designs and appropriations to carry them out. Perhaps the necessary development work has not been done? Yes, it has. At the Metallurgic Institute of the UNTs of the USSR Academy of Sciences alone more than 10 new processes have been developed along with apparatus for virtually complete processing of ores without waste. But all of this requires pilot and full-scale trials. The enterprises do not have pilot facilities, and the ministries are in no hurry to build them.

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

We know the opinion of party and soviet workers of the Urals: they all concur in the opinion that the solving of problems is held back by inertia, sometimes even by deep-seated resistance of ministries to attempts to organize integrated production operations of intersector importance. But the composition of the ores of the Urals is such that they do not fit into the framework of any one industry; their processing must be approached from extradepartmental positions. The way out should be found by boldly transforming enterprises processing multicomponent raw materials into intersector waste-free complexes. In the Urals this applies to the overwhelming majority of plants in nonferrous and ferrous metallurgy. Ministries responsible for their scientific-technical progress must energetically promote this so they do not divide the output into "their own" and "the other fellow's," so that they display true state concern about the processing of the raw materials.

In all of this a large role belongs to USSR Gosplan and the USSR State Committee for Science and Technology. There has long been a need to plan development of all production facilities necessary for full waste-free utilization of raw materials for the enterprises processing multicomponent ores. It is also very important to give economic motivation to collectives for obtaining a larger number of the elements and for increasing the degree of their extraction. It is extremely desirable to speed up development of experimental facilities for pilot and full-scale trial of the recommendations of the scientists.

An accounting needs to be made of the reserves of the Urals. And if that accounting is sound and production fully conforms to it, it will unfailingly yield great benefit both to enterprises and also the state.

The Urals has become a region of large-scale machinebuilding. That is why we are paying a great deal of attention to the overall problems of its development. The program entitled "Machinebuilding of the Urals," which was drafted in the UNTs, is aimed at optimizing the process of creation of single-unit pieces of machinery, machines and integrated sets of machines for the leading sectors and industries of the country's economy. An example of a large-scale scientific-technical problem being solved jointly within the framework of this program is the development of a fundamentally new metallurgical production line in which smelting, teeming and rolling of the metal are combined. The Division of Machinebuilding, which was recently set up in the UNTs and which is headed by G. L. Khimich, corresponding member of the USSR Academy of Sciences, was the organizer of this work. Scientists of the Metallurgy Institute, the Institute of the Physics of Metals, the Institute of Mathematics and Mechanical Engineering, as well as specialists of a number of metallurgical and machinebuilding enterprises were involved in solving the problem. The idea that is the basis of the new metallurgical complex is radically altering the present technology and promises a huge economic benefit on the scale of the entire country. It is sufficient to say that the yield of usable rolled products increases 1.5-fold. We need serious help in reinforcing this machinebuilding unit, which is at present the only one in the system of the USSR Academy of Sciences.

-
FOR OFFICIAL USE ONLY

At present, unfortunately, there are not many such examples of academy science participating from the very beginning in solving a major practical problem shoulder-to-shoulder with the production specialists. I think I will not start an argument if I say that the initiative here should in large part come from the industrial specialists. It is the responsibility of enterprise directors to have a detailed knowledge of the situation in their industry and to react quickly to the demands of the economy.

This requirement of technical progress has still not become an organic necessity for many enterprises. It is obvious that the economic mechanism is still not effective enough from the standpoint of industrial assimilation of scientific-technical innovations, and therefore the destiny of innovative work frequently depends on the personal attributes of the business executive, on his willingness or reluctance to take upon himself "unnecessary" troubles. Unfortunately, this is not a rare phenomenon. Here is a typical example. In contact with practical metallurgical experts we intended to tackle the solution of a number of problems of powder metallurgy and to develop a technology for production of iron without a blast furnace at the Alapayevo Metallurgical Combine. To that end we proposed that a pilot scientific-technical production operation be set up at the enterprise. But unfortunately we did not win support from the directors of the association Uralchermet. Not that they rejected it. No, the importance of the problem aroused no doubt on their part, and they were all in favor as far as words go. It was just that no sort of practical steps ensued. Yet the Alapayevo Metallurgical Combine is in acute need of renewal--the participation of the scientists in this work would undoubtedly be of great benefit. And the UNTs would itself then have a good scientific-production facility.

Enormous attention has been paid in the program entitled "The Urals" to the problems of use, conservation and reproduction of natural resources. For instance, the comprehensive scientific research program entitled "The Urals--The Biosphere" is devoted to the drafting of the ecological foundations of rational natural resource conservation in the Urals and is one of the most important regional research programs. The results of projects done under the program have great importance both to fulfillment of other programs devoted to the problems of the Ural region and also to the drafting of plans and preparation of forecasts of development of the productive forces of the Ural economic region.

A study of natural resource conservation in the Urals is of tremendous interest both from the scientific standpoint (since we are dealing with a complicated and unique combination of natural conditions and human actions) as well as from the practical standpoint, since the Urals is one of the country's principal industrial regions. The high level of urbanization and concentration of industry, the high degree of use of natural resources, the environmental pollution, and the net loss of able-bodied population through migration make studies of nature, the environment and natural resource conservation in the Urals especially urgent, not only because of their bearing on the regional problems of the Urals, but also in the framework of the interaction of man and the biosphere as a whole.

64

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

Unfortunately, there is not the time for me to discuss a number of other programs drafted by the scientists of the Urals, such as "New Materials," "The Physics and Chemistry of the Condensed State of Matter," "The Physico-chemistry of the Surface," "The Material and Intellectual Culture of the Urals," and so on. The latter, incidentally, is a joint program of the UNTs and the RSFSR Ministry of Higher and Secondary Specialized Education, with which we recently concluded a general contract on joint scientific research and training of personnel.

It is obvious that effective fulfillment of such a large-scale program as the program entitled "The Urals," depends to a decisive degree on fulfillment of an entire set of measures envisaged in recent decrees of the party and government concerning further improvement of planning and management. To be specific, we also need new forms for coordinating the actions of all ministries and departments and an optimum combination of sectoral and regional management so as to preclude departmental divergence.

Another question concerns the status of the coordinating council, which heads the program. At the present time this council is a prestigious public body. This in itself is a great deal, but it is still manifestly inadequate for supervision of such a complicated and large-scale matter. The council should be granted all the necessary rights, including the right to manage finances. Thought must be given to the sources of financing there might be and to the manner in which resources are to be pooled. There is an absolute necessity of finding possibilities of overcoming departmental barriers on this issue as well. After all, those operational forms contain the key to the future.

In conclusion I would like to emphasize once again that no science exists "in pure form" today, there is no science for the sake of science, nor can there be. Scientific work is closely intertwined with organizational work. And developing science means improving all the mechanisms of its relations with practice, with production. This is in fact the principle that determines the entire activity of the Ural Scientific Center of the USSR Academy of Sciences.

COPYRIGHT: Izdatel'stvo "Nauka," "Vestnik Akademii nauk SSSR," 1980

7045
CSO: 1820

END

FOR OFFICIAL USE ONLY