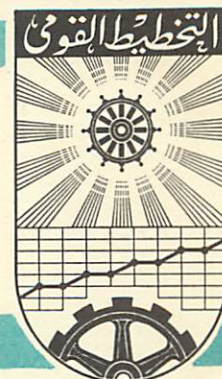


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THE METHODS OF DEVELOPING THE
BALANCE OF LABOUR RESOURCES OF
A COUNTRY FOR LONG RANGE PERIOD.
(ACCORDING TO THE U. S. S. R.
EXPERIENCE)

By

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MAIN PROBLEMS OF METHODS IN MAKING OUT THE
BALANCE OF LABOUR RESOURCES FOR LONG-RANGE
PERIODS
(ACCORDING TO THE EXPERIENCE OF THE SOVIET UNION)

BY
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THE MAIN PROBLEMS OF METHODS OF BALANCING LABOUR RESOURCES IN PERSPECTIVE PERIODS.

Aims and targets of labour resources balance:

The aim and target of country's labour resources balance for perspective period is rational using of all able to work population in continuously expanding social production and cultural construction.

Planning of national economy development for many years ahead makes it possible to work out in all detail the arrangements for the most effective and expedient using of labour resources of a country.

The program of development of a country's national economy for a long period offers a possibility to envisage great qualitative changes in the distribution and usage of social labour, being an expression of its future great increase in its efficiency and will serve as a powerful factor of country's economic development.

In case of planned economic and cultural development the state is able to take into consideration, timely and precisely, the needs of industry, construction and agriculture, as well as those of other branches of national economy, in manpower, to find the sources and prepare a necessary quantity of qualified workers and specialists and then distribute them among the branches of national economy and different regions of the country. Balanced distribution of work time among different branches of production is the most important economic law of planned distribution of country's economy and culture.

In the balance of labour resources for perspective periods the process of manpower reproduction on an enlarged scale finds its expression. The contents of this reproduction is a constant increase and perfection of the most important element of production forces (the manpower) with their production experience and work habits. In planned economy reproduction of manpower is, first of all, reproduction of skilled manpower on an enlarged scale and rapid raising of cultural and technical level of manpower. The degree of skill of the present manpower is always a prerequisite of the whole production. The tempo of increase and perfection of production depends greatly upon the level of workers' technical knowledge and the degree of their skill.

The nature of reproduction of population and health service finds its reflection in that of manpower.

In countries, where economy and culture develop on the basis of state plans, the law of manpower reproduction should be full employment of the whole able to work population, with socially useful work. In this connection reproduction of manpower on enlarged scale is one of the most important economical functions of state and is carried out as a planned process.

That is why the balance of manpower resources is the most important part of the whole state plan of economic and cultural development of country in perspective periods and should be tightly connected with all parts of plan: upsurge of industry; construction; transport; agriculture and other branches of economy, capital investments, national income work productivity, etc.

Manpower resources balance should contain the solution of the following problems:

1. Provision of all branches of national economy and cultural with manpower;
2. Rational employment of all able to work population, in different regions of country;
3. Redistribution of all present manpower resources among the branches of national economy, between the sphere of material production and the branches of popular service, as well as among different branches of production and different regions of the country;
4. Raising of the cultural and technical level of manpower in accordance with the requirements of technical progress.

Full employment of all able to work
population of country

It is generally known that each social structure requires, in order that it could exist and develop, a certain proportion in distribution of labour and the means of production among different branches of national economy.

In the countries, where social property for means of production corresponds to the public character of production, the necessary ratio (proportionality) in distribution of the means of production and manpower among the branches of national economy is realized through the unique state plans of economical development.

The plans of economic and cultural development are not of a suggestive but of directive character and are supported by state means through a system of arrangements in providing the plans with material, financial with and manpower resources. In these countries national economy develops continuously, in the line of ascent, with a high tempo, on the basis of proportions, set by the state. This proportionality assumes correct ratio between the present manpower sources of country and the need in them by the national economy and makes it possible to provide full employment of all able to work people.

Continuous upsurge of production, determined by a state plan makes regular the systematic increase of total number of workers, occupied in all branches of labour and excludes unemployment.

These theoretical theses were fully proved to be right by the practice of development of the national economy of the Soviet Union.

In the Soviet Union the unemployment, which totalled several million of people in the period of restoration of the national economy which was destroyed during the first imperialistic and civil wars, was fully eliminated in 1930, in the course of the 1st 5-year plan, when the country began its industrialization.

What made it possible to eliminate unemployment and achieve full employment of population in the Soviet Union?

Full employment of population was achieved as the result of planned, proportional development of national economy with socialization of the means of production; provided that, the plans were considered as directives, as laws to be necessarily fulfilled. During the first 5-year plan(1929-1932) the number of workers and employees in the USSR increased more than twice, from 10.8 mln persons in 1928 to 22.6 mln. persons in 1932. This increase of the number of workers and employees was stipulated by a great upsurge of industry and construction. The volume of output of heavy industry in 1932 was three times as big as in the prewar period and twice as big as in 1928.

In the course of the first 5-year plan 6.7 milliard roubles (in comparable prices) were invested into development of national economy, what was 4 times as much as in the previous 10 years. During the first 5-years of development 1500 new big industrial enterprises were built and put into action. Ferrous metal industry, tractor, motor car, aircraft and chemical industries were built anew. As the result all machine-building increased 4.5 times as compared with 1928 and 10 times, as compared with pre-war period. At the same time new coal-metallurgical base was built in the eastern part of the Soviet Union. And in the same period reconstruction of agriculture took place.

Hence, during the first five years of development continuous upsurge of industry and agriculture in the USSR determined two main facts which radically improved the welfare standards of working people:

1. abolishment of unemployment and elimination of worries about the future among the workers;
2. participation of all poor peasants in collective farming and removing in this connection their impoverishment as well as of relative overpopulation in country.

Planned development of national economy in the USSR envisages on all stages high tempo of upsurge of production volumes, capital construction and culture of the country and on this basis full employment of all able to work population, which clarifies itself by an increase in the number of workers and employees.

As statistics show, in the period from 1940 to 1961 the volume of industrial production in the USSR increased 5.7 times and 7 times as much of state means spent upon development of national economy, as in 1918 - 1940.

In 1940-1961 32100 big state industrial enterprises were built, restored and commissioned. In connection with this high increase of industry and construction, as well as of other branches of economy and culture, the number of workers and employees in the national economy of the USSR increased in 1961 2.1 times, as compared with 1940. In industry the number of workers and employees increased by 12.5 mln. persons (from 11 mln. persons in 1940 to 23.5 mln. persons in 1961).

In construction the number of workers in 1961 increased by 3.4 times (as it was 5.3 mln persons in 1961, and 1.56 mln. persons in 1940).

Full employment of all able to work population, is stipulated by the fact that in accordance with state plans the number of working people in the national economy grows much quicker than the number of the whole population in the country. In the indicated years the population of the Soviet Union increased by 15% while the number of those working in national economy (agriculture excluded) was doubled.

Full employment of population is provided not only in the USSR, as a whole, but as well in every republic of the Union. If we take, for example, the Uzbek SSR; where as the result of planned development of national economy, the volume of industrial output increased from 1940 to 1961 4.5 times; provided that, the output of metal cutting machines increased 36 times, output of steel - 28 times, oil output - 15 times, electric energy output - 14 times, etc.

Upsurge of the republic's economy and culture lead to 24 times increase in the number of workers and employees which the population of the Uzbek SSR increased over these years only 1.4 times.

There is no, and may not be, any unemployment in the Uzbek SSR, as in the whole of the Soviet Union.

As a result of planned increase of social production and of total employment of population the welfare of the workers and of the whole population of the USSR has been improved.

In 1961 the real income of workers and employees (the wages minus the taxes, and plus the pensions, grants, free education, free medical treatment and other privileges at the account of the state) increased 2.1 times, as compared with 1940, and real income of peasants - 2.5 times. (counting per each worker).

In the USSR the task of planning organs is not only to provide full employment of all able to work people, (because this is already achieved), but adequate and effective usage of manpower resources.

Rapid tempo of social production development, envisaged by the 20-year plan, is stipulated by a great increase in the number of people, working in national economy. But possibilities of increase in the number of workers are limited by the peculiarities of population reproduction. In 20-year period (1960-1980) the manpower resources of the Soviet Union will increase by slightly more than 30%. At the same time employment in national economy should increase approximately by 40%. This means that in 20-year period the need of national economy in manpower will grow quicker than the manpower resources. It should also be pointed out that increase in employment will take place in conditions of considerable reduction of working hours per day and per week. This will make it necessary to draw into national economy additional manpower, approximately equal in number to the number of workers occupied in industry at present.

This means that the tasks of rational and effective usage of manpower in future period will grow into social-economic problems. And it is very difficult to solve these problems, because their solution requires consideration of a whole complex of processes, connected with each other. These processes deal with redistribution of man power among different branches and kinds of employment: from agriculture - into other branches of economy and, ahead of all, into industry; from home work and private farming bywork - into social production; a wider application of female labour in social production; further educating of able to work people; reduction of employment in the sphere of administrative - managing and clerical work, better using of working hours, etc.

METHODS OF MAN POWER RESOURCES CALCULATION

Reproduction of country's population consists of a constant replacement of passing away generations with new ones, in constant renovation of population composition. And only on the basis of population reproduction on enlarged scale expanded reproduction of manpower is possible. Quick and stable increase in country's population is, hence, a premise of manpower resources, reproduction on enlarged scale.

The Soviet Union has a high increase of population, which is the result of systematic increase in people's welfare and improvement of medical service, which make it possible to keep the birth-rate high and constantly decrease the death-rate, especially of children.

In 1960 the death-rate of all population was 2.5 times as low as in 1940 and the death-rate of children 5 times as low. The death-rate of population decreased also in the Republics of Central Asia, where during the life of one generation an end was put to underdevelopment, poverty, diseases and high death-rate. For instance, in 1960 in the Uzbek SSR the death-rate of population was twice as low as in 1940 and death-rate of children - 4 times as low.

When compiling plans of national economy development, and especially for the future periods, it is very important to take into consideration the increase in country's population, which is of great significance in connection with two following main problems:

- 1- determination of the rate of increase in the absolute volume of the output of industry and agriculture and facilities for population increase in the volume of output of industry and agriculture per capita as well as increase in people's welfare.
- 2- Determination of increase in rate and number of country's labour resources for the future period, year after year.

The volume of production output per capita in many country depends upon two main factors:

- 1- the quantity of population in a country and the rate of its increase ;
- 2- the achieved level of production of consumers' goods of material value and the tempo of its increase.

In its turn, the absolute volume of production of consumers' goods of material value depends upon the total number of workers, occupied in the sphere of material production, and upon labour productivity of this part of population.

The Soviet Union is interested in increasing its labour resources. With the aim of further reduction of death-rate of population soviet medical science and public health service are working at finding out new means of preventing and overcoming such diseases as cancer, virous, heart-vascular and other dangerous illnesses as well as laying theoretical foundation and taking practical steps to prolong the life of people and their ability to work.

The labour (manpower) resources include : population of working age-men from 16 to 59, inclusively, and women from 16 to 54, inclusively, except the invalids not able to work of the 1st and 2nd groups, as well as persons able to work age, but who do not work since they receive pensions on favourable terms e.g. those who were employed in such industries as coal-mining, chemistry, etc. (men 50-59 and women of 45-54, inclusively).

The population of working age is determined for the future years on the basis of demographic calculations of increase in the whole population of the country.

The demographic calculations should indicate the number of people of all ages and for every year of the planned period, both, for rural and urban population as well as for different districts of the country, provided that, migration of population among countries and among different districts as well as between city and village should be taken into consideration.

The number of unable to work invalids of working age, both in cities and rural districts, is determined for the perspective periods with consideration of their actual number and specific weight to the whole population in previous years as well as with consideration of planned increase in the living standards of population and improvement of working conditions, which will help to reduce the number of disabled people of working age.

Manpower resources also include older people than those of working age and juveniles below 16, who actually work in state, co-operative enterprises and offices, as well as in agriculture and in private sector. The number of above mentioned people is determined for the perspective periods with consideration of their actual participation in material production and the auxiliary branches in previous years and with consideration of planned social and economic changes, which will lead to relative decrease or increase of the number of people in the mentioned groups of labour resources.

National manpower resources should be determined for cities and for country side. For this purpose it is necessary to take into consideration both, natural birth rate and migration of working population between cities and country side. Migration of working population is determined on the basis of data for the past years and an account of a change in factors, which will influence this movement during the planned period.

The main methodical question for determination of migration of population between cities and country side is planned distribution of productive forces in the future planned periods among different districts of the country, increase in manpower requirements of new and existing industrial enterprises and construction sites, as well as of organizations and offices, serving the people and also comparing of additional need in manpower

with natural increase of working population. It is necessary to take into consideration also the increase of urban population in connection with possible change of rural districts into urban ones. The limits of such increase are determined on the basis of statistic data obtained for a number of previous years concerning planned development of industry and construction in places, considered to be rural at present.

Calculations of migration of working population should include also calls to military service and discharges from Army, admittance of students from other districts to higher and secondary special educational institutions, in technical and professional schools, or departure of people for studies into other districts; arrival and departure of graduates from higher and secondary special educational institutions or technical and professional schools, in correspondence with national plan for employment of specialises.

Calculations of migration of population include excess manpower resources in one district and shortage of manpower resources in other districts, and on this basis planned redistribution of manpower from country into cities and among different districts by organized engaging of workers, moving of families, social call-ups of young people, etc.

Hence, manpower resources of a country consist of :

- a- population of working age, able to work.
- b- working people of older age than the working one
- c- working juveniles below 16.

Determination of manpower resources in cities and villages as well as different districts of a country is done with detailed counting of population migration.

The described methods of manpower resources determination are applied while working out short-, medium - and long-term plans.

DISTRIBUTION OF LABOUR RESOURCES
AMONG BRANCHES OF NATIONAL ECONOMY

Distribution of labour resources according to kind of employment is done in compliance with requirements of manpower in certain branches of national economy.

Requirements of manpower in national economy for every planned period depends on two factors:

- 1- Estimated growth of industrial and agricultural output, capital construction, transport and communication, increase of commodity circulation volume, expansion of care of public health, education, and other branches of national economy.
- 2- Increase in productivity of labour.

The continuous development of industrial and agricultural output outlined by the national plan might be ensured on account of two sources:

- 1- Increase in number of employed workers.
- 2- Increase in productivity of labour.

The main methods for determining requirements of manpower in every branch of economy and culture is that of determining the necessary number of workers and employees for planned periods. It is necessary to determine also the resources at the expense of which the output volume will go up. Increase in productivity of labour is determined by the consumption efficiency of live and materialised labour, i.e. by the gross output produced on the average by one worker and calculated in the same units as the output volume.

In industry the labour productivity plan is determined as the output of one worker (industrial personnel) in wholesale prices fixed by the government. Besides, for some branches (e.g., coal & oil industries, and others) a labour productivity index is fixed in natural volume units. In building industry the labour productivity plan is determined by the output of one worker engaged in building & mounting operations; in various branches of transport - in ton - kilometres for one worker engaged in operation of transportation means in loading-unloading works - in ton-operations for one worker engaged in loading & unloading operations. In trade and public catering productivity of labour is expressed by commodity circulation (in monetary units) for one working person; in agriculture - by gross output in comparative prices for a farm hand.

The labour productivity level is stipulated by a number of factors. The most important and decisive of them is technical and power efficiency

of equipment calculated per one person of industrial manpower and rise in technical level of workers.

In the USSR the possibility of output increase on account of growth of number of workers is limited by increase of able to work population. In order to ensure continuous development of output, and on this basis, systematic growth of well-being welfare of workers it is necessary to provide rapid growth of productivity of labour. This determines the great importance of productivity of labour for development of production at every stage of planning.

During the first Five Year Plan on account of labour productivity increase there was obtained 51% of the whole growth of industrial output, during the second Five Year Plan - 79%, during wartime and the fourth Five Year Plan - 69%, in the fifth Five Year Plan - 68%, and during 1956-1961 on account of labour productivity growth 70% of industrial output increase has been obtained.

In twenty years in the USSR it was planned to carry out an unprecedented in its scale economic and social problem. Real profits per capita for the first ten years should increase by 2 folds, and for 20 years - more than by 3.5 folds. Consumption volume per capita in clothes and foot-wear will approximately increase by 3.5 folds, items of improving living conditions - by 5.5 folds.

During the first 10 years all the strata of the population of the Soviet Union will be sufficiently provided with goods.

Industrial output volume in the Soviet Union will increase 2.5 times during the first 10 years, and by 1980 - more than 6 times as compared with 1960.

In the perspective period the main source of the industrial output volume increase will be growth of productivity of labour. During 20 years productivity of labour in industry will increase 4-4.5 times. On account of this it is planned to obtain more than 9/10 of industrial output increase.

Planned tempo of labour productivity increase will go along with considerable shortening of working hours. In the USSR in 1960 there was already fixed a 7-hour working day for all workers and employees, and a 6-hour working day for key trades in coal & mining industries (for workers working underground). As a result of this the average length of the working day for industrial workers comprised 6.93 hours for March 31, 1961, the average length of the working week in industry was reduced to 40 hours. In the period up to 1970 it is planned to fix a 6-hour working day or a 35-hour working week. Workers engaged in underground jobs & at enterprises with harmful conditions of work will be transformed for a 5-hour working day, or 30-hour working week. It is also planned to prolong leave

of absence on account of the state; in 1970 for all workers and employees it will be increased up to 3 weeks, and further on - up to 1 month.

Great importance of labour productivity rise might be well illustrated by the following example. If productivity of labour were not increased and were left at its present level, then for fulfilling the planned output volumes industry would have required more than 140 million of workers, but under the condition of planned labour productivity increase it will be necessary to increase within 20 years the number of those working in industry approximately by 1.5 times, this factor is taken into consideration for distribution of labour resources.

The perspective plan sets up a task of providing the population with plenty of food products, and industry - with raw materials.

In connection with this it is estimated to increase approximately by 3.5 times the general volume of agricultural gross output during 20 years. It is planned to increase production of grain more than twice, meat - about 4-fold, wool - three fold, cotton - more than 2.5 times.

Growth of agricultural products will be achieved only on account of labour productivity growth which will be increased for this period not less than 5-6 times. It means that the number of those working in agriculture will be reduced approximately by 40 %. For the 20-year period the number of agricultural workers will approximately be reduced by a quantity by which the demand of industry in workers for the same period will increase. Specific volume of employment of the population in agriculture will be reduced considerably. By 1980 the share of agricultural workers among those engaged in national economy will be reduced up to 15 % against 40% at present, and 80 % in 1928.

From the above-stated it follows that in the perspective period all branches of national economy might be provided with manpower at the expense of high rate of increase of labour productivity.

The principal method of determining the rate of increase in labour productivity during the long-range plan period consists in the evaluation of the amount of effect of planned technical progress in national economy on the results of labour, which will develop into three main directions: First - by the line of technical progress in means of production. On basis of development of machine - building industry (output of which for the 20-year period will increase 10-11 fold) there will be carried out overall mechanization of labour in industry, agriculture, construction, transport, and other branches. Complex and overall automation will be realized in wide scale; electronics, radio-engineering, computers will be also widely applied,

Second - by creating of unprecedented power economy. It is known that there is a direct connection between the development of electric power and growth of labour productivity. In 1960 in the USSR consumption of electricity by every worker in industry was 3 times as much as compared with 1940, and productivity of labour for the same period increased 2.9 fold. For the 20-year period it is planned to increase "electroarmament" of labour in industry 8-9 fold, and in agriculture even this figure will be exceeded. Annual production of electric power in 1980 will come up to 2700 - 3000 billion kilowatt-hours, or 9-10 as much as compared with 1960.

Third - by expansion and improving of labour means, i.e. raw materials, fuel and materials. Plastics, synthetic and other chemical materials, semi-conductors, light alloys, etc, will be widely used.

For the 20-year period in the USSR there will take place redistribution of labour resources not only among branches of national economy but among branches of industry as well. First of all, industry, - the leading and decisive branch of social production, - will be provided with manpower. Growth of employment in industry will lead to rapid increase of efficiency of the entire social labour. But in industry itself there will take place qualitative improvements in employment of the population. In the general perspective there particularly will be increased in the share of workers of metallurgy, machine building and chemical industries. Along with this, the percentage of those employed in mining branches will be reduced mainly as a result of changes in the fuel balance of the country, and increase of productivity of labour in coal industry in which a great number of people is employed now. Among those employed in industry the share of workers of light and food-stuffs industries will decrease, though their absolute number will increase. It is necessary to point out that these branches satisfy completely needs of the population in consumers' goods. Employment of labour resources in production of goods for improving living conditions (different machines and mechanisms making easier domestic labour, electric instruments, furniture, radio-technical articles, and so forth) will be greatly increased.

Building industry attains great importance in the period of the general perspective. Over 20 years capital investments will equal to 2 trillion roubles, that will exceed almost 8 fold capital investments for previous 20 years. But with wide spread application of industrial methods of work in construction, there will be no need for great increase in manpower.

Great changes will take place in redistribution of labour resources between the material sphere of production and service sphere. At present in the USSR the main part of labour resources is used in material production. In 1961 in branches of material production (including cargo

transport, production serving communication, trade, private subsidiary farm work) there were employed 82.1% of all manpower employed in national economy, and 17.9% - in service branches, of these - 11.9% in public education and medical service.

A peculiar trend of redistribution of labour resources in the general perspective between the spheres of production will be quicker reduction of those employed in material production and increase of their number in service sphere. During 20 years the number of manpower in service (non-production) sphere will increase almost 3 fold. As a result, the share of those employed in service sphere will increase up to 1/3 of all employed in national economy, against 17.0% in 1960.

The rate of increase of those employed in the service sphere is not arbitrary, it is determined by objective reasons. The level and rate of growth of social labour productivity are the principal reasons. Another important factor is the level of economic development of the country, amount of accumulated national wealth. Another important premise for growth of employment in the service sphere is quantity and grade of qualification of the population.

Nowadays the Soviet Union, making fundamental changes in technical base of production, has achieved such heights in development which allow, along with providing the population with necessary material security, to carry out in unprecedented scale its service with all kinds of goods for improving living conditions. A material basis for expansion of employment in the service sphere will be the growth of social labour productivity and increase of national revenue which for 20 years will increase almost 5 fold.

A considerable increase of the number of the employed in the service sphere is called forth, first of all, by the planned level of national education and cultural construction. Great consumption of labour for the first 10 years will be required by compulsory secondary and polytechnical 11-year education for all children of school age. The state expenditures for popular education by 1980 will increase 14.1 fold as compared with 1960. It is planned to construct (for the 1961 - 1980 period) a great number of school buildings, approximately for 40 million pupils. The number of the employed higher and secondary special educational institutions will increase considerably. Such a high level of popular education is determined by the requirements of technical progress of national economy. It will create a strong basis for development of the cultural and technical level of the people on the whole and will ensure elimination of considerable difference between mental and manual workers. The sphere of application of labour will also be extended in cultural-educational establishments and in art.

Number of workers in the medical service system, and at enterprises of physical culture will grow at high rate. By 1980 the number of doctors

will increase twice as compared with 1960. For every 10 thousand of residents there will be about 29 doctors against 19 at the end of 1960. The requirement in other personnel of medical service and physical culture will be still higher. Such expansion of employment in this sphere of application of labour will allow for reducing sick rate of the population considerably. The main part will be played by prophylaxis and prevention of diseases. A great number of personnel will be required for convalescent and rest houses, tourist camps, stadiums, etc., which will increase on a large scale. For the 20-year period the total number of medical service and physical culture workers will increase more than 3 fold. This will serve the task of prolongation of man's life and his ability to work.

In the general perspective period the improvement of care of cultural and living conditions attains an utmost importance. The housing fund of the country will be greatly increased, the passengers transport will grow by many times, the enterprises of material - living service of the population will develop in a large scale. In connection with this the number of workers in the above-indicated branches will be considerably increased as well.

In the perspective period science will attain a wide-scale development. With increase of importance of science in social development, employment in this sphere of man's activity will grow at high rate. In 1960 at scientific establishments were employed 1763 thousand persons contrasted with 361 thousand in 1940, or 5 times as much. The part of science in the perspective period will increase. The network of scientific establishments will develop on a large scale, thus increase in number of scientific workers will be at a higher rate than in other branches of the service sphere.

But redistribution of labour will take place in the service sphere as well.

Targets of rational and proper utilization of labour force in social economy will give rise to its redistribution from the sphere of administrative-control & office activities to other branches of national economy. Wide mechanization of control operation system will increase its efficiency and will lead to disengaging of a great number of specialists and to their employment in other spheres of application of social labour.

The process of increase of the number of able to work population engaged at studies is also reflected in distribution of labour resources. It is a natural process called by the requirements of production and to the level of general-educational & special training of workers.

In connection with a transition from compulsory 8-year education to compulsory 11-year education, and with further extension of training specialists at higher & secondary special educational institutions the number and share of able to work population busy at studies will increase. This will result in increase of their skill, and in the end, - in increase of efficiency of social labour.

Principal methods of determining requirement of labour resources of service sphere branches is determining of volumes of works and labour consumption norms.

The number of medical service specialists is determined by the planned number of hospital beds, number of places in nurseries and kindergartens, maternity houses and other medical institutions, and by established norms of medical personnel and other medical attendants. Staff norms of service are fixed by the following positions: doctors' middle medical personnel, junior medical personnel, and other attending personnel.

The number of education staff, higher and secondary special educational institutions, vocational-technical schools, boarding schools, etc., is fixed in accordance with estimated growth of number of trainees, number of educational institutions, classes, chairs, laboratories, curricula, and planned norms of service. Calculations of number of specialists are made for teachers, professor - ship staff, teaching assistants, administrative-economical personnel, and productive training masters.

By the same method the number of specialists in other branches of the service sphere is determined.

From the above-enumerated factors one can easily see that a considerable redistribution of labour resources of the country among branches of material production and service sphere will take place a great quantity of working hands will be disengaged from agriculture and management staff. But in spite of this, in order to satisfy needs of all branches of economy with manpower besides increase of able-to-work population there will be needed additional resources of manpower. These additional resources will be the manpower occupied in domestic and private subsidiary farming at present.

INVOLVING OF ABLE-TO-WORK POPULATION
FROM DOMESTIC & INDIVIDUAL SUBSIDIARY
OCCUPATIONS INTO SOCIAL PRODUCTION

An important condition of rational utilization of labour resources of the country in social nationalized economy is the redistribution of these resources from domestic & individual subsidiary occupations into the national production sphere and social-cultural construction. Domestic and individual subsidiary occupations at present involve a considerable part of labour resources. In 1959 these occupations involved about 23 million persons. High consumption of time for keeping individual subsidiary farming, and domestic economy, in particular, is stipulated by predominance of manual labour, in this connection labour in this sphere is of low efficiency. The planned development of agriculture for the 20-year period will result in elimination of individual subsidiary farming, and the population engaged in it will be involved in social nationalized production of other branches of national economy.

The planned development of social forms of material-cultural service will allow to considerably reduce consumption of labour in domestic economy. It is planned to completely ensure needs of the population in establishments for bringing-up the rising generation; more than half of all food products will be distributed through the system of public catering, above 60% of the population will be provided with centralized gas-supply, cheap domestic machines will be widely applied. It is estimated that by 1980, in connection with development of the complete set of conditions reducing consumption of labour in domestic economy, each family will take 3 fold less time than nowadays for servicing all its needs. Overwhelming majority of cares of domestic economy will rely on women. The reduction of time for domestic economy will give a possibility, first of all, to involve non-working women in active social useful work, and to reduce the general labour load of working women.

High rate of increase in the number of workers and employees will allow not only to provide young people, who become able to-work; with jobs in the chosen trade, but it will also create favourable conditions for further involving of women, engaged in domestic economy, in social production. This will also be favoured by the planned reduction of the working day and week.

Wide involving of women in social production is a developing process. The number of women engaged in all branches of national economy comprised 48% in 1959. The increase of number of women engaged in mental work is particularly quick. For the period from 1939 till 1959 the number of women engaged in manual work increased only by 1%, and the number of those engaged in mental work increased by 21%, and the absolute number of women engaged in mental work in national economy increased from 4.6 mln. (in 1939) to 11.1 mln. (in 1959), i.e. it was increased 2.4 fold. In 1961 among all those engaged in national economy there were: 86% of women in medical service,

70% of them in education, 68% - in credit & insurance enterprises, 51% - in management staff, 43% in science and scientific attendance. A high percentage of employment of women in these branches can be seen in all the republics of the USSR. For example, the percentage of women engaged in education, medical service, and science in the Uzbek Republic comprised 56% of all employed in these branches. By the end of 1960 there were 5190 thousand women among specialists engaged in national economy of the USSR, it was 59% of the whole number of specialists. In the Uzbek SSR there were 45% of women among specialists.

Considering the fact that in the general perspective period in the USSR, employment in such branches as medical service, education, science and culture, trade and public catering, will be increased by several times while there will be by far more, increase in number of specialists engaged in all branches of national economy where woman labour is mostly applied, and considering the fact that labour in industry will be mechanized, favourable conditions will be created for involving women from domestic economy in social production.

So, the absolute and relative decrease of labour in domestic economy and individual subsidiary farming is one of the most important peculiarities of rational utilization of labour resources.

Along with this, during the 20-year period the problem of complete supply of every all rapidly developing branch of national economy and cultural construction with labour resources will be solved.

DISTRIBUTION OF LABOUR RESOURCES
BETWEEN TOWN AND COUNTRY AND AMONG
DISTRICTS

Redistribution of national resources from country to town will be a natural result of employment increase in industry, construction, and reduction of employment in agriculture.

But reduction of shifting of the population from country to town will result in vast expansion of service branches in country which at present are less developed than in town. Millions of workers disengaged from agriculture will work in rural service spheres. If to take into consideration the absolute reduction of manpower in agricultural production and increase in the rural service sphere, then, according to calculations, the rural population share in the Soviet Union in 1980 will be about $1/3$ of the whole population, and that of the urban population - $2/3$, against 50% at the beginning of 1961.

A great increase of urban residents rises a problem of town dimensions. Limitation of growth of big towns, development of small and medium comfortable towns offer a possibility to create the most convenient conditions for better utilization of labour resources

In connection with peculiar characteristics of agricultural production the working time is used irregularly throughout the year sowing and harvest seasons. For twenty years in country districts it is planned to develop the industry for processing of agricultural raw materials, repair of machines and equipment. The scale of production of building materials in country districts will considerably increase in connection with wide range of construction works. Workers of all these enterprises might be completely or partially used in agricultural field works during season campaigns. And vice versa, in periods of abatement of field works agricultural workers might be used in the above-indicated branches. This offers a possibility of more rational utilization of labour resources in country districts throughout the year, thus social labour will be economized.

Rational utilization of labour resources provides for changes in distribution of labour among districts of the Soviet Union. Nowadays there is a certain discrepancy between need of some districts in working hands and availability of able-to-work population.

In districts to the East from the Urals, which occupy $3/4$ of the USSR territory and have rich mineral resources, there live only about $1/4$ of the Soviet Union population. But the share of these districts comprises about 90% of potential power resources, they have main resources of non-ferrous metals, $3/4$ of timber resources, etc. The Eastern dist-

districts of the USSR are characterised by exclusively high speed of economic development, and at present they are short of working hands. In twenty years, in accordance with planned location of productive forces need of hands of districts to the East from the Urals will grow more rapidly than in other districts of the Soviet Union. With their own resources they cannot provide needs of working hands. For 20 years about 6 million workers will be shifted to these districts from other regions of the USSR. But in some districts economy will develop more slowly than natural growth of labour resources.

A planned redistribution of labour resources among the USSR districts will offer a possibility of more rational utilization of labour throughout the territory of the country and to obtain a tremendous economic effect.

QUALITATIVE CHANGES IN LABOUR RESOURCES

At present period of rapid technical growth in every branch of national economy, when the latest achievements of science and technology are being applied in production, the greatest part of reproduction (replacement) of manpower on an enlarged scale is in skilled manpower.

As a result of constant change and development of the productive forces of society, together with the implements of production, the people, as the most important element of productive forces are changing and developing.

The productional experience of manpower, the skill and habits of work, the ability to use the instruments of production, are also in constant change and development.

Under the effect of technological progress the deep qualitative changes have taken place in composition of manpower.

The ever rising rates of technological progress in all branches of national economy call for constant increase in grades of skill of manpower. In order to acquire a higher grade of skill, a worker should be given a certain amount of general, and technical, or vocational, knowledge.

In industrial production development and in rise of labour productivity, the essential importance is attributed to the automation and other trends in development of science and technology.

However, new equipment being the powerful means of production growth, may happen to be a pile of dead stock if without manpower able to master and to use it properly.

To use equipment effeciently, and to fulfil the continuous growth of national social production, it is necessary that every branch of industry be supplied with permanent skilled manpower experienced in work at this branch of industry. Consequently, the social division of labour, and its specialization are directly connected with development of production, improvements in technology, and the specialization in articles of production.

All these theoretical considerations have found striking confirmation in practical development of industry and agriculture, as well as all other branches of national economy of the Soviet Union. The industrialization experience in USSR showed that the rates of economical development are essentially dependent on the cultural-and-technical

level of workers. During the period of low cultural-and-technical level of workers, the progress in industry development has been achieved through great difficulties.

In the Soviet Union, during the first five-year plan of reconstruction of all branches of industry, when the replacement of old equipment by new advanced one has been realized; there was a great lack in the manpower able to operate this new equipment, to organize the new production and to manage the manufacturing production processes on the basis of new complex technology, etc.

New plants and factories supplied with up-to date equipment were in great need of highly qualified specialists and skilled workers able to operate these machines. There was considerable shortage in skilled workers and specialists engineers and technicians in the USSR at that time, that threatened to decrease the rates of production development.

This grave situation can be illustrated by an example of Volgograd tractor-building plant. The plant was built over extremely short time (11 months) but the time required for putting it into operation (for mastering the production processes and equipment) was more than one year. Many engineers, technicians, and workers of the plant did not know how to operate the new equipment, and to work well-coordinatedly under the conditions of line production.

More than one half of workers employed at this plant in 1930 (soon after its launching) were low-skilled and non-skilled.

The Number of workers, who had experience in production work up to one year, amounted to 48% of total number of workers; those with experience up to 2 years - 17.9%; those with experience up to 3 years - 7.2%; and only 17% of total number of workers of the plant had experience of work in industrial production more than 3 years. Thus, main part of manpower of the plant consisted of unskilled labourers. As a result of this, the gross output of the plant during the first four months of work was 5 - 13 tractors a month, while the designed production capacity of the plant was 144 tractors a day. During the first year of operation, the plant fulfilled only 13% of the designed capacity.

The low skill of workers during the first five-year plan in USSR was caused by the fact, that during the period of 1920 - 1936 the new unskilled manpower (12.5 mln persons in number) was employed in different branches of industry. These new workers had been never employed in industry before. This number included 8.5 mln persons taken from agriculture as a result of planned redistribution of labour forces. Another reason for low technical level of new manpower in that period was a high degree of illiteracy of the population. In 1926 the share of literate

population (in the age from 9 till 49) in the USSR was 56.6%, though it had been doubled since pre-Revolution time.

As a result of high shortage in qualified specialists (engineers and technicians) for all branches of economy, lots of jobs for engineers, technicians, and managers in industry were occupied by persons who were experienced in practical work but had no vocational or special education (higher or secondary). Considerable part of managers of industrial enterprises had no engineering knowledge, and they did not know anything about the production process organization and economical aspects of production.

At that period of time the system of training specialists in educational establishments was not closely and integrally connected with industry and its requirements.

The lag in training skilled manpower could have delayed the mastering of new production processes as well as new equipment and decelerated the rates of industrial production growth.

To eliminate such a discrepancy, drastic measures were taken to improve the training of skilled manpower, and to increase the cultural and technical level of working people.

With a view to increase the number of specialists to be trained during the first five-year plan period, the quantity of higher educational establishments was increased 5.6 times, while that of secondary vocational (special) establishments (to train technicians) 3.4 times.

National economy was supplied over this period with more than 170,000 specialists, provided that the number of graduates from higher educational establishments in 1932 was 1.5 times more than that of 1928. While the number of graduates from secondary-special (or vocational) educational establishments over the same period of time (from 1928 till 1932) was increased 4 times.

Consequently, the number of specialists engaged in national economy has been doubled over the period of 5 years.

The training of specialists has acquired considerably more expansion in subsequent periods of development of the USSR national economy.

During the same period, a number of measures had been taken to increase the level of knowledge of management staff (economic executives at the industrial enterprises) in engineering and economy. Ad-hoc (special-purpose) educational establishments called "Industrial Academies" were established in great number to train managers for industry.

Over the same period of time, in order to meet the requirements of national economy in skilled workers, a considerable number of vocational technical schools of various types were established for training skilled workers. So, the number of trainees at these vocational schools has increased 4 times.

During 4 years of the first five-year plan 450,000 skilled workers have been trained only in "FZU"⁽⁺⁾ schools ("factory-and-plant apprenticeship" school is a type of vocational schools for training skilled workers).

In addition, a great development has taken place in training skilled manpower inside industrial enterprises.

To this effect, different kinds of training facilities (general schools for workers, technical and vocational schools, courses, and vocational circles, etc....) were provided at plants, factories, and new constructional enterprises.

Besides, special time (whole days or several hours) was allotted at the enterprises for lectures and practical studies for workers during regular work process.

Thus, workers were getting acquired technical and vocational knowledge and were becoming skilled workers.

The rise of technical level of manpower was hindered by insufficient literacy level of population (lack of general education). Therefore, a great movement was developed all over the country for elimination of illiteracy of grown-up population.

In 1930 the law about Universal compulsory elementary education was adopted in the country.

As a result of the drastic measures taken to improve the situation by 1932 98% of children (in the age from 8 till 11) was covered by the system of universal compulsory elementary education.

By 1939 the number of literate urban population constituted 94.2% provided that the number of persons having general secondary and higher education has increased many times.

(+) FZU -abbreviation of three Russian words used in the name of this type of vocational school :
F - Factory,
Z - Plant,
U - apprenticeship.

Thus, the reconstruction of national economy was being accompanied by cultural revolution taken place in the country of that period of time.

Further development of productive forces carried out by the plan on the basis of applying the new achievements of science and technology in production has called for new efforts to rise the cultural and technical level of population. Tremendous extent of technical progress provided for new changes in the nature of work.

Only a comprehensively developed person with a high level of general education, vocational and technical training is able to control the complex modern equipment, to understand the designs of automatic machines and production lines to use and operate the most accurate control-and-measuring instruments and devices, to make necessary calculations, to know the technological process of production (manufacturing procedure), to read the design schemes and working drawings, etc....

In this connection, people's general education and technical-vocational training of manpower have been developed on a bigger scale.

The census of population taken in January, 1959, showed that in the USSR there was 13.4 mln persons with higher, uncompleted higher, and secondary-special education, 45.3 mln persons with completed general secondary and preparatory (7 first grades or years, of general school) education, and 12.5 mln persons with uncompleted general preparatory education.

Total number of persons with education higher than elementary or primary, (i.e. 4 first grades of general school) was 71.2 mln, this amount constituting more than 1/3 of total population of the Soviet Union.

For one thousand of persons there were 263 persons with secondary education in 1959 comparative to 77 persons in 1939, (i.e. 3.4 times increase), while the increase in total number of persons with higher education was 3 times, i.e. for one thousand persons the number of persons with higher education (college or university graduates) in 1939 was 6, comparative to 18 persons in 1959. The rate of increase in people's education in Central Asian Union Republics of the USSR was much more high. For instance, in Uzbek Republic, over the abovementioned 20-year period (1939-1959) for one thousand persons the increase in number of persons with uncompleted higher, secondary, and uncompleted secondary education was 6 times, i.e. 234 persons; while in Kirghiz Republic - 8.6 times, (i.e. 277 per 1000 persons) & so on.

In 1959 the number of workers in the Soviet Union with secondary general education constituted 39% of the total number of workers. The share of workers having secondary general education in total number of workers in the USSR in 1959 has increased 4.7 times in comparison with 1939.

Per a thousand of workers engaged mainly in manual work in 1939 there were 32 workers with secondary general education, while in 1959 there were 386 of them.

On some specialities the share of workers having secondary general education is even higher. For instance, among the workers engaged in metallurgical and metal-cutting industries, the percentage of persons with secondary general education amounts to 53.5%, for chemical industry - 51.4%, for printing and publishing industry - 64%, etc.

The experience of the Soviet Union showed that as a result of broad extent of application of mechanization and automation in production and considerable rise in general education level of population and in training skilled manpower in great numbers essential changes took place in professional and technical composition of workers.

For the latest 20-years the share of skilled manpower engaged in mechanized work in total number of workers has increased many times.

The number of manual workers increased by 21% for the period from 1939 till 1959, while the number of workers engaged in operation of power plants and hoisting gears, or material handling equipment, increased 3 times.

The number of operators of coal-cutting and mining machines increased 3.2 times, operators of excavator machines 14 times, operators of metal cutting machine tools 2.1 times, operators of buildings and road construction machines 70 times, electric locomotives drivers 9.7 times, and so on ..

In 1959 the share of number of workers engaged in controlling the operation of machines and gears, and in maintenance and repair of equipment in total number of workers was as follows: in petroleum production industry - 76%, in petroleum processing and refining industry - 70%, in electric power production and heat power supply - 72%, in iron and steel and non-ferrous industries - 65%, etc....

Simultaneously, the amount of non-skilled labour consumption is considerably decreased. For instance, in construction, as a result of widespread adoption of mechanization in earth work operations and application of industrial construction methods, the use of trades of hard manual work (such as a navvy or earth digger, loader, etc.) had been almost completely eliminated. The most pronounced changes in qualification's composition of manpower have been brought about by automation of manufac-

turing production processes. As a result of automation of production one person combines two specialities (main and auxiliary activities), i.e. one worker is used for operation of an automatic machine tool or production machines line, and at the same time for setting-up/or repairing this equipment. Such a combination requires high qualification or skill of workers, since the automatic equipment is of complex design and its successful operation calls for great amount of knowledge of workers in charge of it.

In the process of automation of production, the number of low-skilled workers engaged in auxiliary or servicing, activity decreases both absolutely and relatively. This can be illustrated by the following example of some industrial enterprises of Moscow.

Name of enterprise and shops	Share of autom. Equipment used, %	Share of workers according to groups of occupation, %				
		Machine Tool Operators	Adjusters of Mach.	Repair men	Elec-tricians	Auxiliary Workers
1 st State ball-bearing plant.						
-Automatic Machines shop	100	7.6	51	24	7	10.4
Plant of Motorcar & tractor electrical equipment						
-Automatic Machines shop	65.5	39	31	13	2	15

The automation of production being carried out in industry provides for further rise in cultural and technical level of manpower.

During coming 20-year plan period (1960-1980) it is intended to attain such a level of manpower education that all the workers would have secondary, and some part of them - higher education.

As a result of rapid development of secondary and higher education the cultural and technical levels of workers of manual and mental labour will be of no great difference.

Targets put in long-range plan concerning the increase in volume of production and labour productivity require for continuous growth of number of skilled manpower.

Training the skilled manpower is being accomplished through the following systems:-

- 1) permanent vocational-technical schools;
- 2) Secondary general schools with vocational training program attached as compulsory one;
- 3) directly at the industrial enterprises by means of individual and team apprenticeship method, as well as training courses.

In vocational technical schools and centres as well as in secondary general schools with vocational training program, the workers of complex professions and specialities are trained, first of all of specialities for operating the machines and equipment, and other all-round professions.

Training workers of such specialities requires for long period of vocational training and considerable amount of theoretical knowledge to be given.

At present time, at vocational technical schools skilled workers on 700 specialities are trained, and in the nearest future the number of these specialities for workers is supposed to be increased up to 1,500 - 2,000.

Over the period of 1959-1961 more than 1.1 million skilled workers have been trained at these vocational technical schools to meet the manpower requirements of industry, construction, and transport, this number constituting to one-fourth of total increase in number of workers of these branches of economy.

In future time great expansion will take place in training skilled workers through secondary general schools with vocational training program.

All the pupils of 9th- 11th grades (classes) of these schools, in addition to the curriculum of general secondary education, will be given simultaneously vocational training in some speciality required in one of the branches of national economy.

Thus in coming years the new manpower from the rising generation will come in production enterprises with some preliminary vocational training given at general secondary schools or vocational technical training schools.

Besides this, a substantial importance in increasing the technical level and grade of vocational skill of workers is attached to retraining

the manpower inside industry. Plenty of workers are shifting to higher grades of skills. Those trained in a narrow speciality are being trained in all-round one, or for another new speciality. Many workers are also being trained for engineers' and technicians' specialities. Nowadays in the U.S.S.R., over 10% of total number of manpower annually increase their skill and qualification inside enterprises.

Simultaneously with the progress of science and technology the further development of higher and secondary-special (vocational) education will take place.

The seven-year plan provides for increase in number of graduates from higher and secondary-special (vocational) educational establishments to the extent as to meet completely the requirements of all economy branches in specialists.

According to the plan, during the period of 1959-1965 over 2.3 million young specialists will be trained by the higher educational establishments, i.e. 1.9 times more than during the previous seven-year period.

At the same time 3.6 million graduates from secondary-special (vocational) educational establishments will be trained during this period, i.e. 1.3 times more than that of the previous plan period of 1952-1958. Therefore, by 1965, the national economy will be supplied with about 6 million young specialists with higher and secondary-special (vocational) education.

The training of specialists during coming long-range plan period will be developed even on a larger scale. It is evaluated that in 1980 the national economy will be supplied by higher educational establishments with 1-1.1 million specialists compared to 343.3 thousand ones in 1960.

In 1980 the number of graduates from secondary-special (vocational) educational establishments will be 1.6-1.7 million persons comparative to 483 thousand persons in 1960, i.e. 3.4- fold increase.

Owing to the rapid rate of development of training engineers and technicians, the supply of industry with specialists (engineers and technicians) has been substantially increased.

In 1940 for a thousand persons employed in industry there were 28 specialists, while in 1960 there were 75 of them, i.e. 3 times increase.

By 1980, the share of specialists in total number of industrial-production personnel should go up to 15% comparatively with 7.5% in 1960 provided that a certain amount of specialists (with higher, and especially, secondary-vocational education) will occupy the jobs of workers engaged in operation or control of complex machines and units.

For the purpose of assessment of national economy requirements in

skilled manpower for long-range plan periods, the balances of skilled workers and specialists are worked out for every branch of economy.

The total requirements in skilled workers for each branch of economy separately and for each stage of plan period, is evaluated on the basis of two mutually related factors :-

- 1) Scientifically worked out production program for any plan period for volume of industrial production output, evaluated both in natural and money values, or for volume of work.
- 2) Approved plan of increase in labour productivity.

In this case, factors influencing the decrease in amount of labour are taken into consideration. They are as follows:-

- 1) According to the plan, the application of new equipment at the enterprises of industry and construction, the realization of overall mechanization and automation of production processes, and the improvements in technological procedures of production as well.
- 2) Reduction of amount of labour used in auxiliary operations in connection with growth in volume of production.
- 3) Improvements in organization of work and production processes which cause economy of manpower use.

When assessing the requirements in skilled manpower by every profession or speciality, or by occupational groups, the following factors are accurately taken into account:-

- 1) The volume of different kind of work engaged in production process (turning work, milling work, etc...) on the basis of planned growth in volume of production and the degree of supply of every sector of industry with technical equipment.
- 2) Fulfilment of the planned level of output rates by workers for different kinds of work;
- 3) Planned number of personnel according to the jobs for every profession and speciality for piece rate paid work.

Apart from assessment of total requirements in skilled workers for every plan period, it is necessary to evaluate the extra requirements in them as well. Unlike total demand in manpower required for fulfilment of the planned production output, the extra demand in manpower is provided to meet the requirements of enterprises for:-

- a) increase of total number of manpower in connection with development of production, and
- b) substitution of those who leave the enterprise (turnover)

On the basis of evaluation of extra requirements in skilled workers the plan for training manpower is worked out.

The main methodical principle of evaluation of the requirements of national economy in specialists for a plan period is the determination of scientifically grounded ratios between the rates of production development and increase in number of engineers and technicians, as well as other specialists.

In the sphere of material production, the training of specialists must be ahead of production growth.

The requirement in specialists is determined separately for every branch of industry, construction, transport, communication, and agriculture for each plan period.

When evaluating the demand in specialists, the belowmentioned factors are taken into consideration:-

- 1) the planned increases in production capacity, and in number of industrial and constructional enterprises;
- 2) the planned increases in development of mechanization and automation of production, and in amount of new equipment;
- 3) the changes applied in technological production processes;
- 4) the changes stipulated by the plan in kind and number of articles of output (nomenclature and assortment)
- 5) the plan of development of the net work of scientific research establishments, scientific laboratories, design offices, experimental shops and plants, etc...,
- 6) the changes stipulated by the plan in the relation between jobs of engineers, technicians, and foremen.
- 7) the changes in ratios between the numbers of specialists with higher and secondary special (vocational) education, and workers.

In calculations of requirements for specialists, one should take into account the factors influencing both the increase and decrease in share of specialists in number of manpower. It is of essential importance to determine the correct numbers of specialists required in terms of relative units (for instance, in number of specialists per 1,000 workers, or per total number of manpower engaged in a certain branch of industry, or national economy sector, and so on..)

The rates of requirements in specialists cannot be equal for all branches of industry. They should be calculated separately for each branch of industry, or sector of economy. As a result of analysis of methods, or the existing ways, of management and organization of production at the advan-

ced enterprises, taking into consideration the abovementioned factors, the correct share of specialists in total number of manpower of an enterprise or a branch of industry is determined.

The requirement in specialists is going up in proportion to the volume of production, and to the increase in share of specialists engaged in production, while being inversely proportional to the increase in labour productivity.

In this connection, the total increase in requirements for specialists for a plan period can be evaluated by index method according to the following formula :-

$$J_s = \frac{J_p \times J_{sat}}{J_L}$$

Where

J_s = index of increase in number of specialists (engineers and technicians);

J_p = index of increase in production volume;

J_{sat} = Index of increase in share of specialists relative to total number of manpower at the enterprise, so called "saturation" of industry with specialists;

J_L = Index of increase in productivity of labour.

Extra requirement in specialists is formed by the three following elements :-

- 1) Requirement for increase in number of specialists in connection with development of production;
- 2) Requirement for replacement of those who leave the enterprise (turn over);
- 3) Requirement in additional number of specialists for substituting those who occupied engineer's and technician's jobs and knew their work by experience but had no special education.

The method of calculation of requirements in specialists for non-production or service branches of economy is based on the proportional increase between the volume of work and number of specialists. For instance requirements in teachers for every kind of national educational system is determined on the basis of planned increase in number of students, the fixed rates of teacher's work in terms of academic hours, changes in educational programs and curricula, and so on.

The calculations for requirements in teachers are done for all kinds of national education system beginning from the elementary school up to the University.

To calculate the requirements of health service in medical specialists (doctors and nurses), it is necessary to take into account the increase in amount of health service facilities, for population provided by the plan; the increase in the service capacity of hospitals, convalescent houses, and other types of medical establishments. Besides that, the fixed rate of work for medical personnel expressed in terms of number of patients to be served for one medical officer (doctor or nurse) should be taken into consideration.

As a result of calculations for requirements in specialists for each plan period as a whole and for every year of this period as well, the training plans concerning the admittance and graduation of students for higher and secondary-special (vocational) educational establishments are developed. In working out the plans for training specialists, it is necessary that the number of extra requirements in specialists be equal to the number of graduates, in case there is no unemployed potential of specialists on the manpower market.

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The abovesaid material shows the great importance of working out the balance of labour resources in planning the development of national economy of the country which entered the path of self-independency in its development.

The most important ratios in distribution of the labour resources in conformity with general regular trends of development of economy and culture of the country are determined by means of the labour balance in the plan of national economy development.

These most important ratios comprise that of distribution of labour resources according to the kind of occupation, type of activity, form of property (private, public, or cooperative), and social groups; as well as distribution between urban and rural regions and among geographical districts of the country.

In addition, the most essential changes in qualitative composition of labour resources as well as rise in cultural and technical level of population of the country are revealed.

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