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PLANNING OF THE INTERRELATIONSHIP BETWEEN INDUSTRY AND AGRICULTURE 1

by

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Planning is a key component of the system of management of the socio-economic development of the country. Through it the needs of society are coordinated and related to the objective conditions and possibilities of production at a given stage of development. The effectivity of planning is expressed in the degree to which the objective conditions are taken into consideration, their coordination and the direction of human effort to the attainment of a definite goal. Given this, it becomes clear why a thorough knowledge of the objective conditions of production is essential to planning. On the other hand, the effectivity of planning is determined by the feasibility and science-based formulation of the needs of society not only from the standpoint of physiological, spiritual and other needs but also from the point of view of their economic interdependence.

Planning is closely linked with the ownership of the means of production. Only what is at hand can possibly be planned. A petty commodity producer also plans his activity but in the circumstances of private ownership this activity is confined to a single enterprise or organization. Moreover, the contradictions and disproportions that arise between the individual enterprises and organizations in the conditions of private ownership have a negative effect on the overall development of the national economy. This leads to an irrational utilization of land, manpower, raw materials and other resources or creates commodity surpluses as a result of the lack of interdependence with the purchasing power of the population and other factors. In both cases society is the loser, in the first because of the non-utilization of resources and in the second because of the public's unwillingness to buy certian goods. That is why the socialization of the means of production in its different forms is a major prerequisite for effective planning and a proportional development of the whole society. This is a basis for a full utilization of all production resources and high rates of economic growth. In this we see - and our own practice to date proves it the great advantages of planning for stepping up economic development.

The development of agriculture is inseparably linked with industry which provides the basis for its industrialization. For this reason planning the relationship between industry and agriculture plays a key role both in the development of agriculture itself, as well as in the development of industry, which manufactures the means of production. In Bulgaria, this interrelationship has always been based on planning and has taken different forms depending on the economic maturity of society and the organization of the use of the means of production linked with it. The planned use and orientation of this interrelationship has allowed the very rational utilization of the country's production resources as a basis for increasing agricultural production. In this way the output of agricultural produce in our country rose 225 per cent (in comparable prices) between 1948 and 1974, while the manpower employed in agriculture shrank by 61 per cent over the same period.

The correct establishment of the rates and proportions in the development of agriculture and industry, which manufactures the means of production for agriculture, has played a substantial role in boosting the growth of agricultural production. The proportions are established both on a national scale and in the territorial units and individual enterprises.

The first overall economic development plan in Bulgarian history was worked out immediately after the establishment of people's rule in 1944. Ever since, the

country's socio-economic development has been based on long-term (5-year) and annual plans worked out in advance and adopted by the National Assembly.

A question that underlines all plans is the correct determination of the ratio between consumption and accumulation, i.e. the relative share of the national income which will be used to expand production. The allocations for expanded reproduction have varied from 18 to 35 per cent of the national income during the different periods of our economic development. About 28 per cent of the national income have been allotted for the expansion of production in recent years. These general proportions between consumption and accumulation are different in the different sectors of the national economy. The differences stem from the tasks set to the individual branches and types of production during the different stages in our country's development. Therein lies one of the advantages of the system of centralized planning.

The prime objective of agriculture during the years of socialist development has been a maximum growth of agricultural production in order to meet the country's needs, making the most effective use of the existing resources. The country's needs are always concrete in volume and structure. They comprise the necessary quantities of agricultural produce for feeding the population, reproduction and export. The produce for consumption by the population provides the bulk of the nation's total needs, over 70 per cent. The needs of the people have been steadily growing parallel with the rise in their purchasing power. This has led to a change in the volume and structure of food consumption. Most indicative is the change in meat consumption which rose from 26.6 kg in 1956 to 57 kg per capita in 1975, and in the consumption of milk and dairy products which jumped from 81 kg to 174 kg over the same period. The efforts in this direction are aimed at ensuring a better satisfaction of the needs of the population in accordance with the science-based norms of nutrition and the physiological requirements of the people in all age groups and occupations.

In our country conditions exist for the production of all the basic kinds of agricultural produce needed for feeding the population. This is the basis of the policy for making our country almost completely self-sufficient in the basic kinds of agricultural produce. The satisfaction of the country's domestic needs of such produce by its own agriculture is presently more advantageous than by way of imports. In addition, our country exports substantial quantities of agricultural produce, either fresh or processed. Agricultural exports are steadily increasing: between 1956 and 1973 they went up by 5.3 times. At the same time, considerable changes have occurred, too, in the structure of these exports. The main change is the rapid growth of the export of processed agricultural produce and the relative share of products which ensure more currency per unit of land. In 1973 processed products accounted for 84 per cent of the country's total agricultural exports. The export of agricultural produce is essential for a better utilization of the production resources and for the industrialization of agriculture in the ccuntry.

Given Bulgaria's limited natural land and water resources, the growth of agricultural production has been achieved through the industrialization of agriculture. In future, too, industrialization will remain the main factor for boosting agricultural production. The increased output of agricultural produce has allowed the allocation of more funds to expand the nation's agriculture and step up its industrialization.

In our country, the industrialization of agriculture is a comprehensive process, effected mainly through mechanization, chemization, irrigation, the use of more productive crop varieties and breeds of animals, and industrial processing of fodder and agricultural produce so as to raise the effectivity of production by ensuring its rhythmic and uninterrupted character.

As a result of the rapid development of industry and the other branches of material production and the industrialization of agriculture itself, the manpower resources engaged in the latter are steadily diminishing. Depending on the intensity of this process, the individual factors of production are coordinated in the plan, tipping the scales in favour of one method of industrialization or another.

A keynote of the industrialization of agriculture in our country is the rapid and smooth large-scale introduction of the achievements of science and technology in production. The complete mechanization of grain production and land cultivation operations in the other agricultural sectors has released substantial manpower resources. As a result, the question has arisen of their redistribution. Part of the no longer needed manpower has been oriented to the developing industries and the rest to the labour-intensive sectors of agriculture itself in which technological progress is slow to penetrate. Industrialization has led to an increase both in grain production and such labour-intensive crops as tobacco, vegetables, fruits, etc. For instance, the production of grain (grain fodder included) soared from 3.4 million tons in 1956 to 8.0 million tons in 1975. During the same period the production of tobacco jumped from 56,600 tens to 161,000 tons, of tomatoes from 372,000 to 578,000 tons, etc., while the number of people engaged in agriculture fell from 2.9 million to 1.3 million. Industrialization and increased grain production have, in turn, made possible a rise in the production of animal products. From 1936 to 1975 meat production increased from 266,000 tons to 565,000 tons (slaughterhouse weight), while during the same period milk production went up from 778,000 tons to 1,657,000 tons.

The problems of mechanization, the reorientation of manpower and the alteration of the structure of production are solved on the basis of planning by regions in accordance with the existing natural and other resources. Industrialization has paved the way for a substantial rise in the volume of agricultural production and a considerable improvement in the economic results of production, notably higher labour productivity and production effectivity. This goes hand in hand with the solving of the major social problems in rural areas: allevation of farm work, shorter working week, levelling up rural and urban life, social insurance, etc.

The industrialization of agriculture requires large capital investments. They are provided by agriculture itself and by the national budget. Their amount depends on the tasks set to agriculture in a given period. The progress of agriculture and its specialization is parallelled by an increase in the relative share of the means of production (machines, fertilizers, mixed fodder, building machines, etc.) received from the other branches of material production. Part of these means are produced in Bulgaria, the rest are imported. Our country's membership of the Council for Mutual Economic Assistance facilitates the effective development of the industries manufacturing means of agricultural production, largely because of the series character of production and the stability of its markets. Besides, planning in the

manufacture of the means of agricultural production within the Council for Mutual Economic Assistance ensures a higher degree of standardization and facilitates supply and repair. For instance, our country specializes in the production of a limited number of agricultural machines. However, their production takes into account not only the national needs but also the needs of the other members of the community. Bulgaria is supplied with machines it does not manufacture from the other CMEA member-countries.

One of the principal questions of industrialization is the planning of new capital investments for different purposes. Because of the limited amount of funds it was initially impossible to make equal investments for all purposes. These difficulties were felt particularly during the initial period of the industrialization of agriculture when there was an acute shortage of machines, fertilizers, chemicals, building materials and other items. During each stage of our development planning has directed capital investments to those spheres of industrialization which, in combination with the existing conditions and factors, have been most conductive to greater and more inexpressive production.

Taking into consideration the overall impact of the factors influencing production is essential in building the material and technical base of agriculture. The main efforts have been concentrated on the mechanization of agricultural operations. The collectivization of agriculture and the amalgamation of production has made possible the effective use of machines on a large scale. During the initial period of the industrialization of agriculture the share of machines and farm equipment in the fixed capital rose from 22 per cent (in 1952) to 30 per cent (in 1957). During the same period capital investments in agricultural machinery and farm equipment went up from 278 million to 452 million leva. That period also saw a series of qualitative changes in the equipment of labour with machines. The number of draft animals decreased drastically. From 57 per cent in 1952 its share on the overall energy capacity of agriculture dropped to 13.8 per cent in 1960. In turn, this relieved considerable fodder resources for the development of productive stock-breeding. At the end of 1960 the country already had 40,309 tractors in terms of 15 h.p. units. During the same period the energy available to labour doubled. Qualitative improvements occurred in the machine and tractor park. Old models of machines and farm equipment were replaced with advanced and more productive models. The mechanization of the agricultural operations continued after 1960, too. In 1975, agriculture had 135,960 tractors in terms of 15 h.p. units, 10,500 grain combines and other machines. Conditions were created for a substantial improvement of agricultural standards, for a sharp rise in labour productivity and drop in production costs. The basic operations are almost completely mechanized. However, some labour-intensive operations such as seedling planting and the gathering in of maize, sugar beet, cotton, tobacco, fruits, vegetables and other crops are still not mechanized enough. This is still an unresolved problem which hampers the expansion of production in these branches and the most rational utilization of the existing natural resources. That is why already under the present five-year plan the main emphasis will be put on the mechanization of these operations.

The task of raising labour productivity goes hand in hand with the task of increasing the volume of agricultural production. Irrigation and fertilizing are essential

this. That is why considerable capital investments have been appropriated to expand the acreage of irrigated areas and raise the level of chemization along with the growth of the country's economic potential and the solution of the mechanization problem.

Larger investments in the construction of irrigation facilities have led to a rapid increase in the acreage of irrigated land. The need for an effective use of irrigated areas especially in the last 10-15 years has called for the updating of the old irrigation systems and equipment. The state and the agricultural enterprises have made additional appropriations for this purpose. More intensive methods of irrigation are employed country-wide. The reconstruction and updating of irrigated areas and irrigation have been necessitated both by the achievements of science and technology in this field, as well as by the concentration of agricultural production. In the future, too, irrigation will remain an essential factor for the industrialization of Bulgarian agriculture. The fact that about 20 per cent of the total capital investments in agriculture under the current five-year plan are earmarked for the construction of irrigation facilities testifies to the importance attached to it. Moreover, the total capital investments during the current five-year plan will be 60 per cent up on the previous five years.

Chemization plays a key role in the industrialization of agriculture. The main line of chemization in our country is the use of mineral fertilizers. In the past their use was almost unknown in Bulgaria. From 4 kg active substance per hectare in 1952, the use of mineral fertilizers has skyrocketed to 150 kg per hectare in recent years.

The chemization of agriculture is connected with the creation of a national fertilizer industry and the development and use of productive varieties suitable for higher norms of fertilizing. Our agriculture now has crop varieties which can utilize mineral fertilizers effectively and require higher fertilizing quotas. The grown irrigation possibilities are essential for this, too. A further - and substantial - increase of the use of mineral fertilizers is planned for the next five years on this basis, i.e. the existing chemical industry, suitable varieties, increased irrigation possibilities and a high degree of mechanization. The plan envisages the introduction of some 250 kg of mineral fertilizers per hectare of arable land by 1980. The country is completely self-sufficient in mineral fertilizers. However, the production of phosphate fertilizers is based on imported raw materials. Besides, certain quantities of phosphate and potassium fertilizers are imported, too. In recent years our fertilizer industry has been concentrating on the production of long-action compound fertilizers and fertilizers with a high concentration of active substances.

The improvement of the biological factor of production, crops and livestock, is a necessary prerequisite for the effective utilization of the other material elements of production. For this reason, radical changes have been made in the crop varieties and animal breeds in use in Bulgaria. This activity is the subject of the state policy followed by the Ministry of Agriculture and the Food Industry. The implementation of this policy is facilitated by the socialist character of our agriculture which makes it possible to introduce new varieties rapidly and to plan the improvement of animal breeds and the reconstruction of orchards and vineyards, lengthy processes which require considerable funds. In the past 10-15 years alone grain varieties have been replaced twice. The variety composition of orchards, the sorts of tobacco, sugar

beet, tomatoes, grapes, etc. in use have been almost totally renovated. The animal breeds in the public sector of livestock breeding have also been thoroughly renovated. Big poultry farms specializing in the breeding of highly productive hybrids have been set up and they already account for 70 per cent of the total output of poultry meat in this sector. Egg production in the public sector is now based entirely on the world's best-known laying breeds. Pig raising is also being put on a hybrid basis. Sheep and cattle breeds are being improved on the basis of extensive programmes. As a result, wool yields in the public sector of stock breeding have tripled and the average shear per sheep now stands at 4.4 kg. The yield of milk has increased many times over averaging 2,800 litres per milch cow.

The improvement of the material and technical base and the introduction of more productive crop varieties and animal breeds have made possible substantial change in production technologies and switch over to industrial methods of production. Grain production, the production of sunflower seeds, sugar beet, poultry meat and eggs will be put on an industrial basis. A great part of the pork, veal and milk is also produced by industrial methods. Such are being introduced in the production of tomatoes, fruit and grapes for processing. These changes call for a large number of specialized machines and equipment, as well as considerable investments.

Apart from the introduction of highly productive breeds and the supply of the necessary equipment, the industrialization of the public sector of stock-breeding also calls for the provision of other prerequisites among which the development of a solid fodder base and a modern fodder industry figures prominently. Not until recent years has this problem found an optimum solution, following the rapid rise in the consumption of animal foods as a result of the higher living standards of the population. Considerable funds are invested not only to increase the number of productive animals but also to build up a modern fodder industry. The development of this industry is based on local raw materials. However, certain components of industrial origin, namely pre-mixes, and insignificant quantities of high-protein fodder are imported. At present the fodder industry meets about 60-65 per cent of the country's needs. Bulgaria plans to become self-sufficient in concentrated fodder by 1980.

The planning of the interrelationship between industry and agriculture has its concrete expression during every single stage of development. Through the plan, the state always seeks the optimal variant on the basis of appropriate criteria. The systematic and comprehensive approach and normative, balance, mathematical and other methods are employed in planning this relationship. Recent years have seen a rise in the scientific standard of planning, with special attention being paid to the scientific basis of the interrelationship between industry and agriculture.

The satisfaction of society's needs has always been the prime objective of production in Bulgaria. However, the ways and means for attaining this goal have differed during the different atages in the country's development and so have the criteria for determining the optimal variant. The extensive factors for boosting production prevailed during the initial stages and the socialist transformation of Bulgarian agriculture. Planning was used for the utilization in introduction of new resources which did not demand big investments. During that period, the growth of agricultural production relied mostly on making better use of available manpower by ensuring

year-round employment, by increasing the acreage of arable land and expanding some intensive branches. The planning of the interrelationship between agriculture and industry was not always based on scientific quotas for the use of manufactured means of production, mainly because of the shortage of such means. The science-based approach was expressed mainly in planning the utilization of the existing natural resources and their effective combination with the limited means of production. The basic criterion then was the increase in the volume of agricultural production, which was of great importance for solving the nation's tasks.

The development of the national economy has led to a parallel increase of the possibilities of supplying agriculture with manufactured means of production, both produced totally and imported from the other member-countries of the CMEA and especially the Soviet Union. The international socialist division of labour has enabled our country, with its limited economic potential, to build within a short period of time a modern material and technical base for its agriculture.

Along with the task of increasing agricultural production, the saturation of agriculture with means of production, especially during the past decade, has increasingly been focusing attention on the use of these means. Priority is given to capital investments in those projects which will increase not only the volume of production but also its effectivity. That is why the planning of the interrelationship between industry and agriculture begins with the establishment of a science-based correlation between the individual factors of production in the different branches, all this within the framework of the existing fixed capital and funds for investment purposes. The investment funds allocated to agriculture are distributed according to need (farm machinery, fertilizers, herbicides, buildings, irrigation and land improvement projects, animals, fodder, perennial crop plantations, etc.), depending on their impact on the volume of production and its effectivity. In tackling this complex problem the central planning organs take into account both the results and estimates of the effect of the different investment appropriations, as well as the estimated needs on a national scale, by districts and enterprises, established during the pre-plan period.

After the establishment of the amount of agricultural investments for different purposes, one of the key elements in planning the interrelationship between industry and agriculture is the concrete working out of the quantity and quality of the means of production for these purposes. In the field of mechanization, planning covers the number of tractors, combines, road vehicles and other machines and items of special equipment, in the field of chemization - the quality of the different kinds of mineral fertilizers and chemicals, in the field of land improvement and irrigation operations and the means sary equipment, in the field of construction - the number and type of buildings and other facilities, in the field of stock-breeding - the funds needed for the purchase and raising of productive animals, for farm buildings and equipment, and so on.

The planning of capital investments for different purposes is carried out to enter-prises, by districts and on a national scale.

The necessary quotas of means of mechanization are concruined in terms of units of land, crops and a given number of animals. Planning is based on the existing methods of production, the productivity of the machines, the concrete conditions of

production, the optimal duration of the individual operations and other indices. The possibility of using the same machines for similar operations in the raising of different crops is also taken into account. The overall quantity of the machines and equipment for the needs of agriculture is determined on the basis of the pre-established quotas per unit of land and a given number of animals and on the basis of the fixed structure and volume of production. The extent to which agriculture is supplied with new machines and equipment depends on two factors: the stock of machines and equipment in use and the capital investment appropriations for new machines and equipment. In some instances the rapid development of science and technology necessitates the replacement of some obsolescent types of machines before they end their useful life. In such cases the criterion is the production costs which will be saved by the introduction of a new machine. Our economic system allows a rational use of the machines and equipment and thereby helps stop the machines from becoming quickly obsolescent, although this is an objective process.

The planning of the necessary types and quantities of mineral fertilizers is based on the requirements of the individual crops and the soil reserves of feeding substances. In this field there is separate planning for the irrigated and unirrigated areas. The optimal fertilizer quotas per unit of land for the different crops are determined by the scientific institutes. These quotas serve as a basis in determining the national newls of nitrogen, phosphate, potassium and other fertilizers.

The rise in the quantity of fertilizer used has brought to the fore the question of the effectivity of fertilizing. Possibilities of raising it are sought in several directions: optimization of the fertilizing quotas, the use of more productive varieties, the combination of fertilizing with adequate irrigation, soil cultivation, efficient combatting of plant diseases and pests, etc. On the other hand, the effectivity of fertilizing is increased by the application of technological innovations in the fertilizer industry, namely through the production of long-action compound fertilizers, fertilizers of higher concentration and low cost per unit of active substance, through the improvement of the organization and methods of delivery, storage and spraying of the fertilizers.

The industrialization of agriculture is inseparably linked with the use of chemical means of combatting plant diseases and pests. The kind and quantity of the preparations used for this purpose are planned in advance on the basis of quotas set in accordance with the specific requirements of the different crops and the conditions of a given area. The total needs for chemicals for plant protection are determined on the basis of these quotas and the volume of production. The needs for machines and equipment for plant protection are determined in the same way.

The need for irrigation of the crops in Bulgaria stems from the shortage and uneven distribution of rainfall. The amount of water needed for irrigation purposes is determined on the basis of quotas set in accordance with the water consumption of the different crops but rainfall is also taken into account. The water shortage and the high effectivity of irrigation in Bulgaria's specific conditions call for a most rational utilization of the irrigated areas and the irrigation facilities. For this reason, not only the construction of new irrigation systems of high technical standards is subject to planning but also the reconstruction and updating of the existing ones. Special attention is paid to the improvement of the ratio of crops with priority given

to those most suitable for irrigation and which are, therefore, likely to bring early repayment of the capital investments. The extraustion of easily accessible water sources makes necessary the construction of irrigation systems in unfavourable circumstances. Moreover, the introduction of expensive equipment increase construction costs. Hence the need for full utilization of irrigation systems by providing a host of production boosters such as more productive varieties, fertilizing, mechanization, pesticides and insecticides and others which acquire exceptional importance in the areas under irrigation.

The reconstruction of agriculture on industrial lines also demands the same for the production of agricultural means of production (animals, plantations, building materials, etc.). The big agricultural enterprises set up in Bulgaria specialize in the production of breeding stock, select seeds and seedlings in accordance with differentiated needs of the country. These very specialized enterprises equipped with modern machinery and employing highly qualified cadres make it possible for the state to introduce the achievements of science and technology in agriculture on the basis of planning.

The construction of farm buildings, roads, water supply systems and other facilities is becoming the exclusive concern of the agro-industrial complexes and it, too, is being put on an industrial basis. The amount of investments in construction depends in the needs of production and the improvement of the living conditions of agricultural workers. During the first years of the collectivization of agriculture in our country, construction work was handled almost exclusively by teams of building workers from the enterprises themselves on the basis of approved projects. The same teams also handled almost all housing construction in the villages on terms most advantageous to the cooperative farmers. With the advance of technology, construction in agriculture has passed over to the hands of special building organizations. The same holds true for the production of building materials and equipment which is entirely industrial in character.

The industrialization of agriculture and the specialization of production has enhanced the role of the repair and maintenance of agricultural machinery and equipment. This has also been made a separate activity with a view to better meeting the grown requirements. It is carried out by state enterprises and special divisions of the agricultural enterprises themselves. Overhauls are done in state repair enterprises, while routine repairs and maintenance are handled by special divisions of the agricultural enterprises. The type, cost and time of repairs are planned in accordance with the work done and the physical condition of the machines and farm equipment.

On the basis of the planned quotas of means of production the agricultural enterprises place orders with the industries and organizations which manufacture and supply such means. This activity is supervised and coordinated by the State Planning Committee which is a supra-ministerial state organ. The State Planning Committee evaluates to what extent the needs of agricultural means of production can be met by the nation's industries and what portion of them should be imported. This is the level at which the functional and integration links between the national economic sectors and our participation in the international division of labour materialize in the import and export of means of production.

A state system of plauning and supply has been set up for the practical implementation of the link between agriculture and industry. The central planning organs, namely the State Planning Committee and the Ministry of Agriculture and the Food Industry, demand from the agricultural enterprises, organizations and the districts lists of the means of production they will need during the period under planning. In the pre-plan period the agricultural enterprises and organizations establish what means of production they will need during the coming planned period, and in what quantities. The needs of the respective means of production are determined, as already said, on the basis of quotas. The proposals of the individual enterprises and organizations for their needs of means of production in kind and in terms of money are summarised by the respective higher levels of government for the whole country. In this form the proposals are discussed and finalized by the Ministry of Agriculture and the Food Industry, after which they are placed before the State Planning Committee as orders to industry and the country's import organizations. For its part, the State Planning Committee draws up the respective national balances fixing the participation of agriculture both as a producer and consumer of means of production supplied by the national industry or through imports. In this way the actual needs of agricultural means of production and the possibilities for their supply are coordinated.

Besides the supply of manufactured means of production, the interrelationship between agriculture and industry is materialized as well through the production and supply of raw materials for the processing industries. With the development of science and technology, an ever increasing portion of agricultural produce undergoes processing. This is the basis on which the correlation between the volume of raw materials and the capacity of the processing enterprises is planned. The planned relationship between agricultural and industrial enterprises is effected mainly through contracts. Direct vertical integration of the production and processing of agricultural raw materials has been gaining increasing popularity in recent years.

After setting the tasks of the different agricultural sectors on a national scale, the Ministry of Agriculture and the Food Industry receives from the State Planning Committee concrete indices, quotas and limits for the volume of production, the amount of investments and the expected results of production. The investment appropriations for agriculture are fixed in the state plan with the plans of the ministries, departments and enterprises which manufacture and supply means of production.

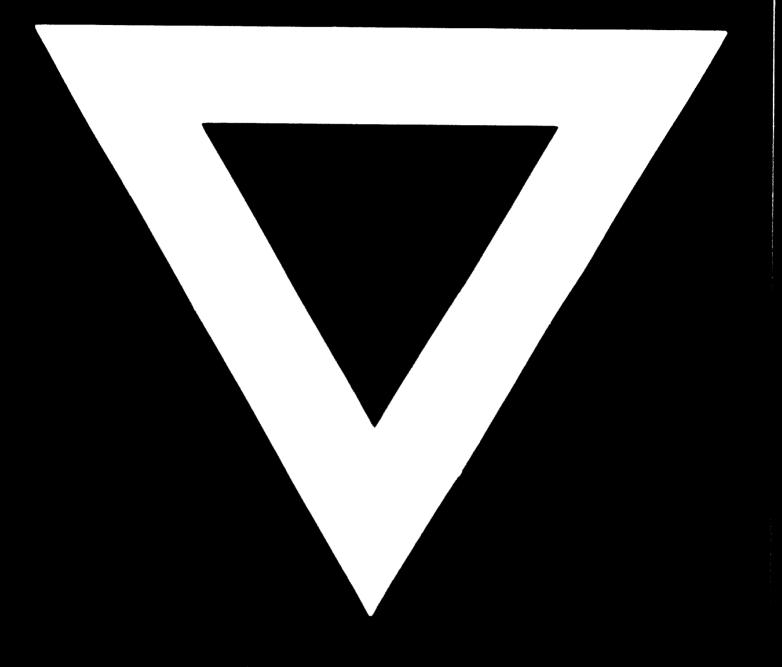
For their part, the planning organs of the Ministry of Agriculture and the Food Industry distribute the means of production in accordance with the production programmes of the individual districts and economic organizations which, in turn, redistribute them among their subordinate agricultural units.

The plans for the production and supply of agricultural means of production by industry are worked out on a five-year basis. Then the plan indices are concretized year by year.

The supply of manufactured means of production is done by special state supply organizations. They are responsible for the distribution of the means of production as specified in the plan.

The planning of the interrelationship between industry and agriculture is a powerful lever of the state in stepping up the development of that planning. The methodical approach and the organization of planning are steadily improving so as to better suit the changing conditions and assist the solution of the nation's socioeconomic tasks.

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