CHOICE AND ASSESSMENT OF A TECHNIQUE OF PLANNING IN MANAGEMENT OF PRODUCTION RESOURCES OF THE RURAL ENTERPRISES

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The relevance and problem of a research is caused by need of the choice of theoretical and methodical base of reforming and improvement of planning of production activity of the rural enterprises. Research purpose is to assess a degree of quality of planning of activity of the agricultural enterprises during the different periods of time when not only different techniques of planning were applied, but also there was respectively a different ideology of process of planning. Being based on conclusions of the carried-out analysis, it is possible to establish what methodical approaches have the right for existence further, taking into account improvement. Method of a research is the comparative analysis of rejections of actual data from planned data on two groups of indicators. Results: considerable differences as planning on two groups of indicators are revealed, trends of their behavior, which demonstrate imperfection of all technique of production planning, but not techniques of planning of the analyzed indicators or objects of a research are established. It is offered to refuse a standard method of planning of factorial indicators and to replace it with method of expert evaluations.

Keywords: quality of planning, management of production resources, rural enterprises, technique of planning.

JEL codes: Q10, L21, M11.

1. Introduction

Management of production resources is a basic element of the agrarian management directed to achievement of a main goal of the enterprise in market conditions – maximizing of a profit. Formation of the most effective model of production resources using in agriculture is complicated by lack of physical interrelation between the used resource and the made products. This interrelation can be expressed by functional dependence, which is a characteristic feature of agrarian production. In industrial production where stable such relation, it is much simpler to define influence of quality and quantity of the consumed resource on the result of production. But in agricultural production at the time of loss of physical properties of a resource is lost direct material conditionality of emergence of a product. This feature does not establish the direct functional formalized interrelation between quantity and quality of the used resources and the made product.

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As a result, it's not possible to define functions that directly describe the production course. There is an opportunity to describe only those indicators, which probabilistically influence the production course. This factor complicates planning of agricultural production. Therefore, the need of development and use of special forms of planning of resources using and results is updated. This form should consider extent of influence of probabilistic factors on process of transformation of resources into a ready-made product.

The theory and practice of planning in agriculture has a long story. At the time of the Soviet Union, techniques of planning were defined at the state level and were obligatory. Specialists in planning at the level of the separate agricultural enterprises could not change anything in techniques and were obliged to use invariable procedures of planning for decades. With respect, the developed plans were very detailed and bulky, but were not used in business management. Only at end of the planning period was there a retrospective comparison of the planned and actual indicators. The results of such of comparison personnel decisions rather than economic were more made often.

With obtaining Ukrainian independence, the obligation of planning was cancelled and some enterprises inertially continued to plan by the Soviet techniques. Gradually, the meaning of this planning was lost. Today some agricultural enterprises in Ukraine use planning only in fragments. Their main part refused planning on a system-wide basis.

Continuous planning remained now at the level of public authorities which are responsible for a condition of agriculture. These are regional departments and regional managements of agro-industrial development which function as a part of public administrations. Need of planning of key indicators of resources using and activity results at this level is predetermined by need of complex strategic assessment of prospects of agriculture of a certain region. It is also necessary to form different regional and state balances: balance grain, milk, fuels and lubricants, human resources and so forth. Planning techniques, which are used, are synthesized from many sources now. The Soviet techniques with insignificant improvements remain a basis as it is not paradoxical. But essential difference are motives of this planning - for today interest in more exact planning much higher. But, on the other hand, responsibility for failure to follow these plans almost does not exist.

Therefore, for today there is a scientific and practical problem concerning what theoretical and methodical base should be propagandized for reforming and improvement of planning of the agricultural enterprises' activity. The used methodical approaches are mainly inherited from the Soviet methodology. The best world samples mostly are too difficult for application in modern personnel realities of agrarian management. Therefore, the most expedient is synthesis of own approaches on the basis of available techniques and procedures of planning.

The relevant purpose of the article is to assess the quality of planning activities of agricultural enterprises at different periods of time, when not only different planning methods were applied, but also there was accordingly different ideology of the planning process. For this purpose, the quality of agricultural plans over a sufficiently long period of time has been calculated and analysed. The results of this assessment determine which methodological approaches are eligible to exist in the future, considering improvements and which have no prospects.

Rural enterprises are *the object of research* in the article. The *subject of the study* in the article is methodological support of management of production resources, comparative analysis of production planning techniques of the enterprise.

The methodology and technique of planning of the agricultural enterprises activity must consider important factors of the present stage of the agrarian sector development of economy. The main thing from such factors is considerable reduction of the period of adequate forecasting of events. According to many scientists the enterprises development of the agrarian sector of economy depends on external institutes' development. It happens in a situation when the removability of economic conditions of housekeeping is so high that long-term planning loses meaning (Mykhailova, 2018; Plotnikova, 2014; Zinchuk, 2018). In modern conditions it is impossible to make even the annual plan, without speaking about more long-term plans. But agricultural

production, crop production, has annual or longer production cycles. It predetermines a problem which is that annual plans have almost no chances of performance. The reason for this is a significant change of assessment of production factors, for example, of the prices of resources. We note that in this situation we are not talking about an imperfect technique. Short-term plans do not give complete idea of desirable future result of production and cannot serve as the full-fledged administrative tool.

In these circumstances of the enterprise are forced to vary planning techniques which are for them available. And, besides, mainly Soviet techniques are available. But the existing techniques significantly differ in own opportunities to provide quality of planning of rather different terms of planning. This research aims to analyse and establish differences in planning quality of separate indicators of production activity of the agricultural enterprise, which were planned by essentially different techniques. It will give the chance to find optimum techniques of planning for different indicators.

The concept "quality of planning" is one of the most debatable in science. Many researchers consider that it is essentially impossible to design a universal indicator, which would allow estimating unambiguously quality of the plan (Grabovec'kyj, 2013; Planning at the Agrarian…, 2002; Jacobs, 2018). According to the opinion of the leading Ukrainian scientist in the agricultural planning industry V. Nelepa, who argued that the main characteristics of the plan, which allow assessing its quality quite gender, are: efficiency, reliability and tension. The plan which, firstly, will be agreed with the purposes and tasks of society development and that economic unit which made it is considered qualitative. Secondly, meets the requirements of efficiency, optimum balance and reliability and also tension when using resources. Rather generalizing characteristic of the plan' quality, it should be noted that its main characteristic is the efficiency, and tension and reliability supplement it (Planning in Agro-Industrial …, 2008). However, most of modern scientists consider that the previous assessment of plans quality is essentially not as important as retrospective. Any previous parameters of plans estimating are indirect. Only the final executability of planned parameters is the essential to adequate assessment used planning technique (Hahn, 2005; Vaznonienė, 2012).

Therefore, in the course of preparation of plans preliminary estimate of their quality can be applied. But a final assessment can be given only after the end of planning period. The main criterion by which in the offered research judgments of quality of the used plans are taken out is their final executability. The analysis is based on the principle of comparison of planned sizes with reached. The closer there was a value of the planned indicator to really received, the more qualitative the made plan was. Consequently, the technique of planning was more effective.

All planned indicators that are calculated are conditionally subdivided into two groups. The first group is indicators of expected character, which describe technological aspects of production (factorial indicators are farther). The source of these data is the mainly regulatory base, which is widely described in literature of the Soviet period. The principles of the first group indicators planning are described in the researches devoted to production planning (Pogrischuk, 2015; Planning at the Agrarian…, 2002). It should be borne in mind that the methodology of these indicators has not changed for many years. For example, in publications (Bachurin, 1973; Vishnev, 1968) the methodology is presented in the same form as in the above-mentioned sources. The second group is planned indicators, which characterize result of application of one or another model of production resource using (further - productive indicators), for example, gross collecting, product cost, and profit on realization. These are the indicators obtained by means of a settlement and constructive method. The basis of the calculations of this method are the forecasted indicators of the first group. Planning of these indicators is more described in researches on financial planning (Drury, 2008; Ekholm, 2011; Garrison, 1998). In this regard, it should be noted that retrospective research only indicators, which characterize result of model of resources use, insufficiently. Not less important studying and indicators of the first group, which describe the course of production -

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process of resources use. Therefore, this research is conducted in parallel on two groups of indicators: on planned indicators of effectiveness and on indicators, which are the production factors. The selected indicators are given in tables 1 and 2.

The research consists of three integrated temporary periods. The first period is the Soviet period from 1977 to 1991. The beginning of the period in 1977 is predetermined by availability of full statistical data, available to a research, from this time. The second period is 1992-2001. These are independence times when the collective farms existing in Soviet period were reformed in the collective agricultural enterprises almost in the same look as they existed earlier. That is only change of legal form took place, mostly. The research of these two periods included the agricultural enterprises of the Luhansk region with specialization, typical for the region. In addition, for carrying out the authentic statistical analysis only the enterprises of those areas at what farms with typical regional specialization not less than 10 participate in a research. Besides, for comparability of cost indexes for the entire period of a research, since 1991, they are brought by means of chain indexes of inflation to a state for the beginning of 1991. Thus, it gives the chance to compare as indicators for the entire period of a research, and derivatives of size from them. The plans of social and economic development of areas with workbooks prepared by regional Departments of Agriculture and plans of social and economic development of farms with workbooks formed for these calculations entrance information base. Sources of actual data are statistical collections of the Luhansk regional management of statistics with specification behind areas, reports of the state committee (service) of statistics of Ukraine, annual reports of the studied farms. Key characteristic feature of two specified periods is that all agricultural enterprises counted very detailed annual plans of social and economic development of economy. In Soviet period, it was obligatory, and at the time of independence, it became inertially, without external demand.

The third time period – is chosen 2002-2018. 2002 the beginning of the third period in view of the fact that since this time mass disaggregation of the agricultural enterprises began. Against the background of 15-20 farms of the typical region of the Luhansk region tens of the enterprises, small and average behind the sizes, farmer and personal subsidiary farms appeared. The heredity of structure and structure of the enterprises of the area was lost. Mostly it was connected with features of development of the land relations of that time. Besides, internal planning of activity of the enterprises was almost stopped. During this period function of planning of indicators of activity of the agricultural enterprises as it is noted above, regional departments and regional managements of agro-industrial development undertook. In the third period indicators, available to a research, according to table 1, the indicators only aggregated on areas. While in two previous periods, indicators for a research were average from these separate enterprises. But in general, it does not reduce ponder ability of results of a research.

Sources of data for calculation of the investigated indicators are sources of primary statistical and accounting reports of agricultural enterprises, sources of primary reports on planned results of economic activity of agricultural enterprises, as well as consolidated forms of such reports at the district level. Data collection involves manual processing of information sources in specialized archives. There is no single publicly available standardized source.

The analysis of the methodological basis of the study forms the understanding that the composition, essence of the planned indicators, their methodology, are the product of fundamental Soviet science, which was very carefully suited to their justification. But indicators and methodology have remained unchanged for more than sixty years and are inertial used in the production planning of modern enterprises.

The methodology of production planning was established in the USSR by law and enterprises on their own could not change it and could not even simply challenge it. For example, the methodology of planning, accounting and calculating the cost of agricultural products () was adopted in 1969 by law and did not change until the collapse of the USSR. In independent Ukraine, both the need for compliance with the State planning methodology and the need for planning itself

have ceased. This stopped scientific research in the field of improvement of planning techniques and in fact until today Ukrainian agricultural enterprises use obsolete Soviet methodology.

The only country in the world that had similar initial conditions is China. In communist China, businesses also originally used a state-prescribed methodology, but gradual institutional reforms in agriculture over the past forty years have spared agrarian businesses the need to build the same management systems (Ji, 2013; Jin, 2010). This has gradually led to the emergence and application of modern competitive approaches. This did not happen in Ukraine.

2. Research results and discussion

In the Luhansk region, as well as in all territory of the Donetsk-Dnieper economic area, the technique of production planning was administratively fixed and focused on the uniform system of standards. Therefore essential methodological differences in internal planning between separate farms of this region were not observed. It means that at the level of a single agricultural enterprise the difference in the mechanism of planning was caused mostly by creative abilities of specialists-employees of economical departments and adaptation properties of a technique of production planning.

For any plan, the best characteristic is the fact that the planned events, finally, came true. The more the value of a planned indicator differs from reached value, the more the bases for complaints on a planning technique. The dimension of deviations can fluctuate from several parts of percent to several hundred times. Therefore, for removal of the systematized judgments calculation of several deviations for separate indicators insufficiently. Necessary calculation of the massif of deviations, which can be processed statistically authentically.

Calculation of deviations of planned values from actual is performed by a classical way of calculation of rate of gain. Calculation results are given in tables 1 and 2. Comparison of the sums of the saved-up positive and negative deviations on each indicator gives the chance to compare efficiency of techniques of these indicators planning. When planning each of indicators different connection of the regulatory base using and creativity in the course of planning takes place. By the comparison carried out by us it is possible to reveal the most successful option of connection.

Table 1. Indicators of statistical processing of the deviation's massif on group of productive indicators for the entire period of a research

No.	Indicators / unit of measure *	The sum of the saved-up positive deviations, %	The sum of the saved-up negative deviations, %
1.	Average annual cost of business assets, SUR, UAH	192,3	-49,9
2.	Average yield of grain crops, centners from hectare	379,0	-117,0
3.	Average productivity of a dairy livestock, kg	409,0	-217,0
4.	General prime cost of the made products of crop production, SUR, UAH	142,4	-319,5
5.	General prime cost of the made products of livestock production, SUR, UAH	149,2	-325,6
6.	General cost of sales, SUR, UAH	132,8	-320,3
7.	Sales proceeds, SUR, UAH	280,9	-137,1
8.	Annual wage fund, SUR, UAH	135,7	-324,0

* - the research is conducted for a long period which includes the Soviet period and times of independence. Therefore, cost indexes are expressed in the Soviet rubles (SUR) and hryvnias (UAH) in the corresponding temporary periods.

As for group of productive indicators (table 1), it is easy to notice the fact that each indicator

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is characterized by relative stability in distribution of deviations. As a rule, if the indicator has a large sum of the saved-up positive deviations, then it contains rather small sum of negative deviations. Respectively, on the contrary, if the considerable sum of negative deviations takes place, then the facts of positive values of deviations are rather infrequent. It means that during all studied period separate indicators had the resistant directions of deviations. As show calculations, when planning account indicators and their elements (prime cost of the made and sold products, wage fund) permanent understating of planned level took place, and when planning profitable indicators (sales proceeds, yield of grain crops, productivity of a dairy livestock) – permanent overestimate of planned level. At the same time extent of overestimate or understating was approximately identical what approximately identical sums of the saved-up deviations on these subgroups of indicators testify to. It easily is explained by the place and a role of planning in command and administrative economy which recurrence is felt also in modern planning. The plan served not as the instrument of management, but means, which displays relationship with the state. Consequently, plans were formed almost unreal, underestimated or overestimated by the same value, regardless of features of a technique of each indicator planning. It did not give the chance to use them in the organization of economic activity.

The economic value of what occurred lies in excessive dependence of a technique of production planning on the state requirements. This contradicted the requirements of the economic environment of the concrete enterprise. It also led to the fact that differences between single deviations in their general set have to a great extent probabilistic character. That is possible to provide the place of a deviation in an overall picture of deviations in principle. And here the existing methodology and a technique of production planning did not give to the chance to guess rather exact value of a deviation.

Now we will conduct a similar research on group of indicators, which characterize production factors. These indicators have other economic contents. They display the process of production costs formation and an exit of products. Therefore, methodical approaches of their planning must be absolutely others. In Soviet period, concern on planning of these indicators undertook the state. To the enterprises, they came in the form of standard reference books, and the state did not recommend departing from help data. But after all some adaptation on places of these indicators was carried out. Dynamics of deviations of planned values from actual shows the efficiency of this adaptation process.

Table 2. Indicators of statistical processing of the deviation's massif on group of factorial indicators for the entire period of a research

No.	Indicators / unit of measure *	The sum of the saved-up positive deviations, %	The sum of the saved-up negative deviations, %
1.	Dose of introduction of mineral fertilizers expressed in active ingredient on 1 hectare of grain crops, kg	1 915,8	0,0
2.	Norm of seeding of seeds on 1 hectare of grain crops, kg	512,5	-8,6
3.	Quantity of forages on 1 cow in a year, centners of fodder units	461,2	-3,5
4.	Percent of rejection of cows in dairy herd, %	1 494,6	-66,5
5.	Development of conditional reference hectares on 1 physical hectare in crop production	787,9	0,0
6.	Consumption of fuels and lubricants on 1 conditional reference hectare, kg	11,3	-1 025,9
7.	Growth rate of level of compensation, %	3 007,8	-138,9
8.	Number of machine operators by 1000 hectares of an arable land, persons	550,5	-232,0

Calculation and comparison of the sums of the saved-up positive and negative deviations (table 2) showed other results, than in the previous case. That stability of the deviations massif here takes place too. That is, on a single indicator the preference of the sums of the saved-up or negative, or positive deviations. But similarity of behaviour of deviations on different indicators is not observed. Secondly, all these indicators have account character. But unlike the previous group of indicators (table 1) here planned level is overestimated everywhere, except for expenses of fuels and lubricants on 1 conditional reference hectare. It means that these account indicators were planned to proceed from regulatory production requirements without appropriate accounting of the actual opportunities of the enterprise. It, in turn, did not give the chance to achieve performance of initially unjustified planned results of economic activity. In this regard, the trend of overestimate of planned level of factorial indicators looks rather steadily. That more speaks about imperfection of sources for planning of these indicators - standard reference books, than about imperfection of the procedure of planning of these indicators at the enterprise.

It is necessary to complete a research of the deviation's massif, grouping by one principle - aggregation in time. This way will allow seeing differences in behaviour of deviations during the different periods of time. For the studied period from 1977 to 2018 economic priorities in the agricultural industry several times changed. This was reflected in efficiency of planned work.

The dimension of deviations, which is observed considerably, varies. And when averaging such data, the noticeable shift of average sizes in the direction of extreme values takes place. It is necessary to result value of deviations in the only dimension by means of the procedure of statistical rationing. The essence of this procedure comes down to ensuring relative balance of the deviation's massifs on different indicators. For this purpose, the representation of size of a separate deviation in the form of specific weight in the total amount of the saved-up deviations on this indicator is used. At the same time the saved-up sum of deviations is accepted to 100%, and the concrete deviation accepts value of specific weight in this sum.

Having carried out the procedure of rationing of deviations, we calculate an average deviation by all indicators on a classical formula of calculation idle time of arithmetic average for every year of the studied period. The calculated average deviations are reflected in figure 1.
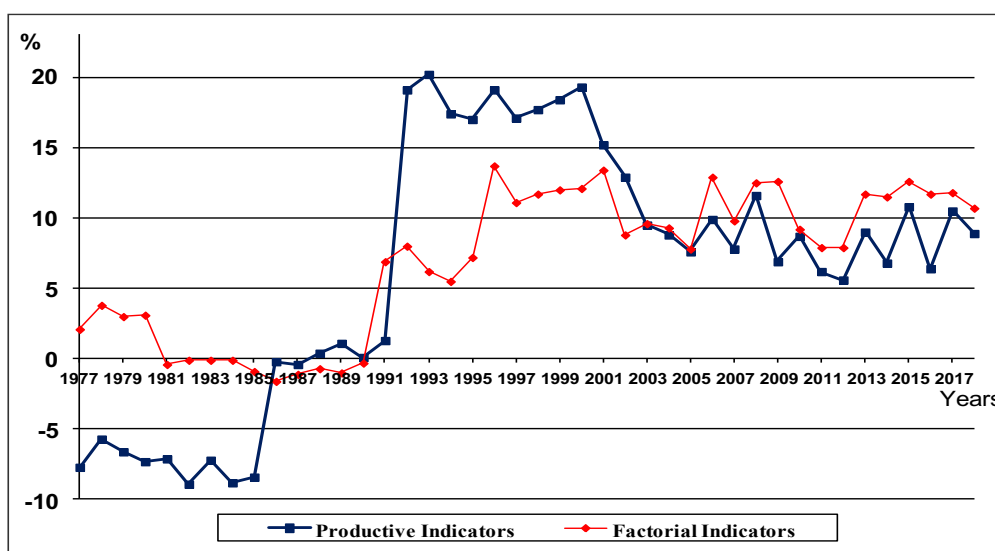

Figure 1. Behaviour of deviations on both groups of the studied indicators

Lack of the procedure of rationing is that the normalized assessment is the relative size valid for comparison only in this massif or in the massif with identical quantitative characteristics. Therefore, the average normalized estimates reflected in figure 1 are comparable only within the given calculation.

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Considering behaviour of average deviations of productive indicators (figure 1) it is possible to divide all term of a research into four conditional periods: the first is 1977-1986, the second is 1986-1991, the third is 1991-2001, and the fourth is 2002-2018. Divergences between these periods are observed very accurately. In the first period noticeable understating of planned indicators is observed. It relates to the slogan "let's execute and will exceed" existing at that time. And in order that it was easy to implement plans them, naturally, underestimated. And extent of understating increased because implementation of the plan steadily caused statement of more difficult tasks. The second period is characterized by universal introduction of cost accounting at the agricultural enterprises and a binding of extent of implementation of the plan to extent of material stimulation. This entailed substantial increase of quality of planned work. And deviations which are observed are insignificant. The third period is marked by crisis of the agricultural industry in which jungle function of planning got hypertrophied role in the administrative mechanism. In addition, the inflationary splash led to the fact that planned indicators lost touch with the actual situation and ceased to be used in administrative process. It, in turn, disorganized the mechanism of internal planning. At the same time need for the accuracy of calculation of planned sizes disappeared. Plans repeated annually practically at the same level. Meanwhile, the actual level was falling. That caused considerable overestimate of planned indicators. The fourth period is characterized by instability of deviations in the range of 5-13% of excess of the plan over the fact. Insignificant excess of planning quality of productive indicators compared with factorial is observed.

As for behaviour of deviations on factorial indicators, it is another. Unlike dynamics of the first period on group of productive indicators, in this case overestimate of planned targets is observed. It is caused by features of planning of this group of indicators. At which planned calculations joined the standard level necessary for the optimum production technology. But really, in the conditions of the concrete enterprise, level inexpedient because the optimum result was achieved also at much smaller expense of material and monetary resources. The second and third periods have no considerable differences in behaviour of deviations from group of productive indicators. The exception is the fact that the trend of overestimate of the plan, since 1990, is in a stage of steady growth.

3. Conclusions

1. The conducted retrospective research on two groups of indicators revealed considerable differences as their planning.

2. On group of factorial indicators steady overestimate of planned indicators along with internal stability of the deviation's massif. That is caused, in most cases, impossibility for the enterprise to provide optimum technological level of production resources using. This level is predetermined by a prevalence of a standard method of the planning, which is not adapted for conditions of the concrete enterprise is observed.

3. On group of productive indicators are observed considerable both overestimate and understating of planned indicators along with big variability of deviations. This says, that the technique of their planning was torn off from features of the enterprise and is brought excessively closer to requirements of the state to the size of these indicators in Soviet period. At the time of the Ukrainian independence the technique of planning did not experience significant changes and productive indicators were planned with constant considerable overestimate. That is plans "gave out desirable for valid".

4. Irrespective of a way of aggregation of the massif of deviations, trends of their behaviour remain invariable. That demonstrates imperfection of all technique of production planning, but not techniques of planning of the analyzed indicators or objects of a research.

5. For the entire period of a research the considerable decline in quality of indicators planning of productive group in comparison with factorial is observed. In the course of arithmetic-

logic processing of technological information about models of production resources usage (factorial group) for data acquisition about its effectiveness (productive group) the economic interrelation between initial conditions of housekeeping and tactical, strategic tasks of the enterprise is lost. In general differentiation in techniques of planning of these two groups of indicators is almost absent. The mixed technique loses important nuances of planning of each single group which leads to the general falling of quality of planning, and, as a result, qualities of management. Accuracy of planning of factorial indicators is important for effective management of production and production costs of the enterprise. And the accuracy of planning of productive indicators is important for financial management of the enterprise. But identical methodical approaches in planning which do not give the chance of exact planning neither one nor the other group of indicators are put into practice.

6. At preservation of the established trends steady decline in quality of planning will continue that finally will lead to its full eradication. For improvement of a situation planned indicators have to be accurately differentiated on their role in administrative process and own methods of planning have to be developed for each group of indicators. Due to numerous of factors that influence the production course in agriculture it is necessary to go from a standard method of planning of factorial indicators and to replace it with method of expert evaluations. When planning productive indicators as basic is recommended a settlement and constructive method. The most successful period in the history of domestic planning is the period of 1986-1991, therefore the use of methodical experience from this period is the most expedient.

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