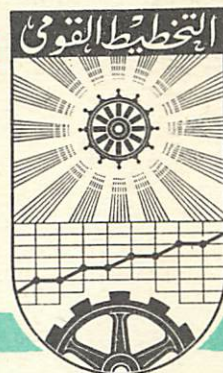


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SYSTEM OF INDICATORS OF ECONOMIC EFFICIENCY
OF SOCIAL PRODUCTION USED IN PRACTICE
OF THE USSR PLANNING

BY

G. GALAKHOV

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SYSTEM OF INDICATORS OF ECONOMIC
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1. Determination of economic efficiency of planned decisions adopted is a fundamental problem of planning at the present stage of development. Data on economic efficiency provide possibilities of measuring ratios of expenditures to results and selecting the most rational ways of national economic development.

Significance of economic efficiency indicators increases particularly in conditions of scientific and technical revolution. Technical progress influences all the aspects of economic development and requires the achievement of high efficiency indicators corresponding to the society's modern development, contributing to the achievement of efficient external economic relations on the basis of high quality and low cost-price of the produce.

A comprehensive system of economic efficiency indicators reflecting all the spheres of production activity has been worked out in the USSR.

The main principles laid down in the system of indicators for determining the efficiency of enterprises' and organizations' economic activities are stemming from the requirements and the clauses of the Socialist reproduction and planning theory.

The system used in the USSR of economic efficiency indicators of national production proceeds from the following stands :

- (a) all-sided characteristic of the development process;
- (b) inter-coordination of indicators for all the levels of planning, viz.: enterprise, sector, national economy.
- (c) application of consolidated efficiency indicators and indicators of efficient use of separate kinds of production resources.

The general system of national economic plan indicators consists of indicators reflecting both intensive and extensive production factors.

Referred to the extensive factors are the ones contributing to the production extension on account of increasing a number of labourers, putting into operation new enterprises and heightening the consumption of material resources at the modern level of using the fixed and circulating assets.

Referred to the intensive factors are the following ones, viz.: application of more effective production means, improvement of technology and usage of material, labour and financial resources, viz. those which provide the growth of social labour productivity.

Economic development of society is always followed by simultaneous influence of those two factors. At the present stage of the country's development the intensive factors have acquired decisive importance.

Due to the fact that time saving is the most important factor in economy development the productivity of labour is considered to be the main indicator of efficiency. Here we discuss expenditures and the results of labour in the sphere of material production. Live labour is a productive one. We proceed from the fact that the society is interested in saving the whole labour embodied in the product in both live and materialized labour.

Out of three elements of production, viz.: manpower, means and objects of labour, the rational use of manpower (i.e. live labour) is the most important factor although all these elements are inter-connected.

At present on account of growing labour productivity the USSR provides 85-90% increase of the industrial produce.

The summary indicator of social labour efficiency on the national economy scale is determined on the basis of national income which is the final result of developing all the sectors of national economy.

At the level of national economy sectors this indicator is a net product estimated as a difference value between the commodity produce and material outlays, including depreciation deductions.

Productivity of labour is approved for the Ministries and enterprises as an indicator estimated on the basis of gross output.

The system of social production economic efficiency indicators used in the USSR includes sections reflecting the efficiency of labour utilization, funds, material

resources, and a summary section.

Indicators characterising the pattern and the production quality are specifically emphasized. Summary indicators for the levels of the national economy and a Union Republic are based on the national income, and for the industrial spheres, agriculture, public transport, communication, construction, as well as for separate enterprises and corporations they are based on the net produce; for some other indicators -- on the basis of gross output.

The principal scheme of efficiency indicators, their content and inter-relation could be seen from the following table :

System of Economic Efficiency Indicators	Formula for Estimating
1	2
1. Summary Indicators	
1.1. Per capita (N) national income (D) growth rates for enterprises and sectors	$\frac{D_1 \cdot N_0}{N_1 \cdot D_0} \quad \text{where :}$ <p>1- index of planned period 0- index of base period</p>
Rates of production growth	
Total :	
(a) net output (P)	$\frac{P_1}{P_0}$
(b) gross output (P^b)	
of which : for sectors -	$\frac{P_1^b}{P_0^b}$
- production growth is isolated on account of operating enterprises	

1	2	66
1.2 Per capita (N) growth rate of consumption fund resources (D^P)	$\frac{D_1^P \cdot N_0}{N_1 \cdot D_1^P}$	<p>Where :</p> $D_1^P = A_1 + B_1$ <p>A_1 - consumption fund B_1 - non-productive accumulation</p>
1.3 Production of national income (D) per 1 rouble of outlays (S) (Analogically for sectors and enterprises - net output per one rouble of outlays)		$\frac{D}{S}$
1.4 Relative saving of :	<u>General Formula</u>	
(a) fixed production assets	$E_1 = R_0 \cdot K_1 - R_1$	
(b) rated circulating assets	E_1 - relative saving of resources in plan period in monetary terms	
(c) net material outlays (without depreciation)	R_0 & R_1 - average annual value of resource	
(d) wages and salaries fund	K_1 - index of national income growth (for enterprises and sectors-index of gross output) as compared to base period	
1.5 Total profitability ratio of accumulations (H) (profit and turnover tax) to average annual value of fixed production assets (V^P) and circulating assets (V^S)		$\frac{H}{V^P + V^S}$
1.6 Production and distribution costs (Z) per one rouble of		$\frac{Z}{Pt}$

national product (P^t).

For enterprises estimated are outlays per one rouble of commodity output at total cost price.

2. Live labour utilization efficiency

2.1 Labour productivity growth rates for national economy and republics are calculated through national income (D). For enterprises and sectors - through net and gross output

2.2 Share of national income increment on account of improving labour productivity; for enterprises and sectors it is estimated by net and gross output

2.3 Saving of live labour in planned period (annual number of persons employed) as compared to the base year conditions.

3. Efficiency of using funds and capital investments.

3.1 Output-to-assets ratio (fund output) - Production of national income (D) per one rouble of average annual value of fixed production assets (V^P)

$$\frac{D_1 \cdot N_0^m}{N_1^m \cdot D_0}$$

Where:

N^m - number of people employed in material production

$$\left(I - \frac{K^N}{K^P} \right) \cdot 100$$

Where:

K^N - rate of increase in the number of employed

K^P - rate of growth of national income or net output

according to formula in item 1.4.

$$\frac{D}{V^P}$$

For enterprises and sectors it is estimated by production of net and gross output per one rouble of average annual value of fixed production assets.

3.2 Circulating assets turnover.

Production of national income (D) per one rouble of average annual value of rated circulating assets (V^H).

$$\frac{D}{V^H}$$

For enterprises and sectors it is estimated by net and gross output per one rouble of average annual value of rated circulating assets.

3.3 Ratio of annual national income increment (D) to capital investments that caused that increment (W)

$$\frac{D}{W}$$

For enterprises and sectors it is estimated by ratio of net and gross output to capital investments.

3.4 Specific capital investments (W)

(a) per unit of production capacity commissioned (X) (by main types of product)

$$\frac{W}{X}$$

(b) per one rouble of output increment (P^B)

$$\frac{W}{P^B}$$

3.5 Payback ^{time} term of capital invest-

ments - ratio of capital investments (W) to the accumulation increment (H) received on account

received on account of those investments.

For enterprises and sectors - profit increment (HP) is used instead of total accumulation value.

$$\frac{W}{P^B}$$

4.0 Material resources utilization efficiency.

4.1 Material outlays (M) (without depreciation) per one rouble of social product (P^T).

$$\frac{M}{P^T}$$

For enterprises and sectors - they are estimated per one rouble of gross output.

5.0 Indicators of production pattern and quality of products*.

5.1 Share of products depending on quality categories (P^K) in the total volume of output (P^B):

$$\frac{P^K}{P^B}$$

- first category
- second category
- third category

Share of products manufactured for the first time in the USSR (P^I)

$$\frac{P^I}{P^B}$$

* These indicators are considered in the science and technology development section of the plan

Besides the above-mentioned indicators by sectors technical and economic indicators are used. They are specific for each sector, but in most cases they are calculated according to the following pattern: amount of material resources of different types and live labour inputs per unit of output of a certain commodity or type of work; in other cases indicators show the degree of production capacity utilization, equipment productivity, etc.

4. The indicators given in the above table are fixed on the basis of data of relevant sections of the plan.

National income growth rates per capita are estimated proceeding from the data of the plan section: "Planned balance of national economy of the USSR and the Union Republics" in constant prices. Average annual population number while estimating the indicator is taken from statistical data and plan balance of manpower.

For determining an efficiency of using the resources newly involved within the planned period an indicator of ratio is worked out of national income increment (or net produce) to the increment (separately for each type of resources) of fixed production assets cost, rated circulating assets cost, wages and salaries fund and material outlays for the sphere of material production. These indicators are compared with relevant indicators of the base period.

The aggregate evaluation of efficiency is effected by means of the indicator of national income (or net produce) per one rouble of production costs taken into account in the estimates of the production cost-price (indicator 1.3).

A very important indicator for evaluating effectiveness

of plan decisions is an indicator of relative saving of all types of resources in monetary terms (1.4). Indicators of overall profitability (1.5) and costs of production and circulation per one rouble of national product (1.6) are financial indicators of economic efficiency.

5. Indicator of live labour productivity growth (2.1) is determined on the basis of calculations of labour inputs saving according to the number of employed. In this case a unified (for all the sectors and enterprises) classification of factors is used, that is:

raising technical level of production (especially the impact of mechanization of production), improvement in the organization of production, labour and management, change in the volume and structure of production as well as shifts in the location of production. Special account is taken of specific factors in individual sectors:

- changes in mining and geological conditions, contents of minerals, methods of their extraction, influence of season works. Technical measures providing the execution of tasks on the labour productivity growth are worked out for each factor.

For the last five-year period (1966-1970) the specific weight of these factors on all the industries reached according to the rated data as follows: increase of production technical level - 51%, improvement of production and labour arrangements - 29%, changing the production volume and structure - 17%, sectoral and other factors - 3%.

To substantiate the plans of improving the productivity of labour the estimates of assets-to-labour indicator are used

as well. This indicator is estimated as the ratio of average annual cost of fixed production assets (V^P) to one labourer:

$$\frac{V^P}{N^{mp}}$$

Where:

V^P - average annual cost of fixed production assets;
 N^{mp} - number of labourers.

It is our striving to have the rates of productivity growth somewhat higher than the rates of labour fund availability. However, in separate spheres, e.g. in agriculture, temporarily quite the reverse ratio might take place.

6. Calculations of economic efficiency of capital investments are made with a view to choosing most effective channel for investments as soon as they have their bearing on overall social production efficiency.

The most important summary indicator of capital investments efficiency at the national economic level of planning is the production of national income per one rouble of capital investments (indicator 3.3) as it characterizes total amount of resources both for consumption and accumulation. To evaluate capital investment efficiency by individual sectors besides the fund return (indicator 3.1) payback time (indicator 3.5) as well as specific capital investments (3.4) are used. For industry as a whole payback time coefficient is determined to be 8 years.

In carrying out pre-plan estimates which require comparing economic and technical variants of decisions, calculations of comparative efficiency are used.

Indicator of comparative economic efficiency is the mini-

sum of imputed outlays. Imputed outlays for each variant are the sum of current outlays (cost-price) and capital investments multiplied by efficiency standard, which is reverse to the payback indicator.

$$Ci + En \cdot Ki = \min$$

where:

Ki - capital investments for each variant

Ci - current outlays (cost-price) for particular variant

En - standard coefficient of capital investment efficiency equal to 0,12 for industry as a whole.

Standard coefficient of capital investment efficiency is a reverse indicator to the payback time coefficient.

All these indicators will be considered while indicating methodological base of planning the capital investments.

7. All the increasing importance in improving the production efficiency is attached to the saving of material outlays, which share in the total value of spendings is continuously growing and in 1973 it reached in the sphere of industry - 75%.

Therefore we are providing for in plans permanent lowering of consuming the most important types of raw materials, materials, fuel, electric power per production unit which is secured through the execution of measures for each sector of the national economy.

To characterize the usage of the most important resources there are used physical, monetary and mixed indicators of consuming the material spendings. E.g.: consumption of metal per 1 kw of turbine capacity, per 1 automobile, or consumption of power per 1 rouble of a sector's produce - these are

mixed indicators of the consumption. Monetary indicators include: the indicator of production consumption of chemical industry sector in roubles per 1 rouble of gross output of construction materials sector.

These indicators are reflected in general form in the material intensity indicator of production (indicator 4.1), which reflects on the national economic level a volume of material outlays per 1 rouble of the gross national product, and for sectors - per 1 rouble of gross output accordingly.

So as to express properly the change dynamics of the material spendings level the indicator is estimated in constant prices.

8. At present while characterising the efficiency much attention is paid in the USSR to the production pattern and quality.

This is provided for by the population's growing requirements, higher technical production level and the targets of expanding the commodity exports.

A system of certificates for high quality of products has been introduced: some high grade products are awarded "High Quality Mark", economic incentives have been introduced to stimulate output of such produce.

Indicator 5.1 characterizes the share of produce of various quality categories in the production total volume.

9. Estimates of social production efficiency are determined in the following succession:

- Selection of alternatives of better use of running enterprises resources
- Selection of alternatives of new enterprises based on

comparison of various projects and alternatives of running enterprises development

- Formation of a comprehensive plan and evaluation of its efficiency
- Acceptance of plan with due account to instructions of directive bodies

While selecting the alternatives of development of running enterprises as well as new ones the above system of indicators is used, materials of Ministries, agencies and local bodies being applied thereto. It is obligatory to carry on comparisons of plan efficiency indicators with actual reported ones, with achievements of the best home enterprises as well as foreign achievements.

If the planned indicators are worse than the actual reported ones, a special analysis of causes is made and arrangements for elimination of such position are worked out.

10. The rated method is widely used for planning of social production efficiency in the USSR.

The rate is assumed to be a maximum permissible value of specific consumption of material, labour and financial resources in the conditions of planned year production for manufacture of products unit.

The rated method facilitates to fix a progressive level of spending the individual types of resources for the planned period, the said level shall take into account the latest achievements of science and technology as well as the advanced organization of production and labour.

The rates are used in all sections of the national economic development plan as criteria at evaluation of achieved re-

sults or as indicators to be achieved at determining the plan level of expenditure.

Apart from the consumption rates of resources used are various norms that characterize continuity of production and construction cycle, various financial payments, etc.

Rates and norms may be represented in the following table:

Rates and Norms

Consumption of material resources	Labour inputs	Continuity of production cycle	Financial rates and norms
by use	by use		
production and operation		Norms of mastering of production capacities	Rates of payment for fixed and circulating assets
capital construction			Norms of depreciation contributions
Repair needs		Rates of construction continuity	Norms of circulating assets only
Creation of stock			Norms of contributions to economic incentive funds
services sphere			Rates of turnover tax
	Total labour intensity including		Norms of various contributions to new technology, social insurance, etc.
	Basic production		
	Auxiliary production		
	Management sphere		
by types of resources			
raw materials & materials			
fuel & power resources	Rates of output		
equipment & instruments	Norms of number of persons employed		
spare parts	Rates of services		

The rate is usually determined on the basis of by-factor estimate with due account to changing the production structure and envisaged economizing vs. achieved spendings or base rates. While determining the economizing it is obligatory to take into account the impact of technical progress. For the rates to be used in the perspective plans the estimate to be coordinated with the efficiency indicators is usually applied.

The USSR Gosplan sets a target on reducing the consumption rates of material resources based on estimated by-factor economizing.

The methods of estimating the targets on economizing of material resources are laid down in the lecture on material balances.

The rates for estimates on the national economic level are aggregated as follows:

$$N_a = \frac{N_1 P_1 + N_2 P_2 + \dots + N_i P_i - E}{\sum_{k=1}^{k=i} P_k}$$

where:

$N_1, N_2 \dots N_i$ - consumption rate in a base year

$P_1, P_2 \dots P_i$ - volume of products output to be equal to the rate in a planned year

E - economizing of aggregated kind of material resources to be achieved in production in a planned year

P_k - volume of products output for which the given kind of material resource is used.

The rates of enterprises are aggregated on all the top levels of planning. The Ministries aggregate the norms for a number of enterprises subordinated thereto. The USSR Gosplan

uses in estimates mainly the aggregated norms worked out by the Ministries, agencies and scientific and research organizations.

The individual rates are also used in the Gosplan with respect to the most important items of the plan. For instance, consumption rates of metals with respect to individual types of machinery and equipment of mass production.

11. The scientific and technical progress is the most important factor at fixing the progressive rates and improving efficiency.

The planning of scientific and technological development is a special section of national economic plan. This section includes preparation of scientific and research work plan, mastering of new finished articles, their first industrial series, plan of introduction of advanced technology, mechanization and automation of production processes, introduction of computers, purchases and sales of licences .

To solve large scientific and technical problems being of great national economic importance the comprehensive (complex) programs are made out.

The plan of scientific and technical development is worked out by the Ministries and agencies with scientific and research organizations being involved under the guidance of the State Committee for Science and Technology, the USSR State Construction Committee (Gosstroy) and the USSR Gosplan.

Efficiency of measures envisaged in this section of the plan is estimated as economizing of manpower - by number of persons employed, economizing of production costs and economizing of investments in monetary terms.

Economizing of material resources due to introduction of advanced technology, mechanization and automation is taken into account at elaboration of plan target on reducing the consumption rates of major raw materials and materials.

Economizing due to introduction of scientific and technological achievements is also taken into account in the section of cost price and profit.

12. The planning of efficiency indicators growth of social development is carried on by directive targets. At the same time the methods of economic incentives and various forms of moral encouragement are used. The indicators of economic efficiency are particularly taken into account at socialist emulation, system of awards to persons employed, etc. The new important form of enterprises work on increasing production efficiency is a system of so-called oncoming plans of enterprises that envisage higher and more effective indicators for the state plan target. The economic incentives are applied to two directions: creation of more favourable conditions for practical development and introduction of the most effective measures and material encouragement of persons employed.

The economic incentives of sectors effective development in the socialist planning practice are achieved by :

- system of prices to be fixed subject to their consumer characteristics that make up for increased expenditure on output of high-quality products. Thus, the products that are given a Mark of Quality receive an additional extra charge on the price vs. ordinary finished article;
- use of investments first and foremost for arranging the production of new progressive economical articles and

introducing the advanced technology, mechanizing and automizing the production processes;

- top-priority implementation of projects having the highest economic indicators;
- use of financial resources left at the disposal of a sector and enterprise (fund of new technology mastering, fund of production development and other sources of non-centralized use), first and foremost the most effective measures.

The material incentive of production efficiency increase has taken various shapes particularly in the course of economic reform. The socialist planning practice has shown that the material incentive system shall be realized subject to the obtained result. The basic kind of material incentive is wages by production, particular importance is attached in the USSR to perfection of the said system of wages.

Additional pay and bonuses are provided from economized (saved) resources and encouragement funds to be left at the disposal of enterprises.

The most significant kinds of encouragement are as follows:

Pay from the encouragement funds:

- from the fund of enterprise material incentives - for the results of work within one month, quarter, for economizing of material resources, for elaboration and introduction of effective measures, according to the results of work per year;
- from the fund of new technology mastering - for elaboration and introduction of new technology, machinery, mechanization and automation of production processes

stipulated by the plan;

- bonuses according to the results of socialist emulation from the funds of higher organization.

There are some kinds of bonuses that stimulate specific goals on efficiency increase:

- economizing of fuel and electric power;
- collection of metal scraps and paper wastes over and above the plan;
- commissioning of production capacities and their mastering ahead of schedule;
- inventions, rationalization proposals, transfer of experience on effective work from one enterprise to another;
- combination and simultaneous performance by one worker of two or three specialities, etc.

The general requirement for all kinds of material incentives that are fixed at the enterprises by the administration upon an agreement with the trade union organization in the obligatory implementation of the plan and achievement of results better than envisaged in the plan.

The scale of material incentives is determined as follows:

First and foremost determined are a purpose of incentives to be provided, object (kind of material resource subject to economizing and production process) then a number of persons and a fund of wages to be received by them prior to introduction of incentives system.

Later on, a desirable result is determined, this result shall be obtained from technical or production and financial side, specific scale of its implementation and economizing

shall be also received.

Then, the scale of incentives for achievement of effect is fixed keeping in mind to direct the main portion of received effect to incentives. Prior to introduction of incentives system the economic experiment is carried on, the elaborated system of incentives is temporary introduced at the said experiment. Subject to the obtained results in the conditions of incentives the required amendments are introduced and the incentives system covers the whole range of persons employed.

13. The meetings hold with the counterparts of the Ministry of planning point out that while using the indicators of economic efficiency in the ARE it is necessary to take into account peculiarities of the present stage of the country's development.

Subject to the content of indicators some of them may, in our opinion, be widely applied in the nearest time (e.g. target on labour productivity growth, estimates of specific investments and other require certain preparatory work).

To our mind the following peculiarities shall be reflected in the ARE system of economic efficiency indicators:

- efficiency of resources in particular related to the use of foreign credits as well as the use of products received through imports and products to be exported.

With due account to the above it would be worthwhile to include the external trade balance into a number of indicators of efficiency for sectors:

- draw special attention to the indicator of the production technical level and quality as a basis of the ARE products competitive power in the world markets;
- taking into account the shortage of skilled personnel to

particularly isolate and show the efficiency of using skilled labour, engineering and technicians.

- It will be required to estimate specifically data of the Public Sector enterprises in the system efficiency indicators.
- As to the private sector it will be necessary to define its participation in the total development of economy through the implementation of capital investments, payment of taxes, etc.

Important conditions of planning the indicators of economic efficiency in the ARE are as follows: creation of enlarged norms, inclusion of section for development and introduction of new equipment into the plan composition and the economic effect obtained as a result of its introduction particularly at the operating enterprises.

To apply the efficiency indicators of the fixed assets it is necessary to carry out a simultaneous list of the fixed assets with their recalculation into unified modern prices.