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Method of Analysis of the Effectiveness of Environmental Business Activity of State Organizations

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Abstract: In the article the author justify that the effectiveness of environmental management in business government organizations should be assessed using three interrelated criteria: economic efficiency, social efficiency, eco-efficiency. The system of indicators let the author assess the possible effectiveness of environmental business activity of state organizations. Assessment of the effectiveness of environmental business activity of environmental organizations conducted through the use of the proposed indicators includes consecutive stages.

Key words: Ecological entrepreneurship · State environmental entrepreneurship · Efficiency · Criteria

INTRODUCTION

All over the world, governmental business activity is a contradictory phenomenon. On the one hand, in many countries, the state budget and local budgets often include free financial resources that could well be invested in entrepreneurial business, developed directly by state (or municipalities) entrepreneurial firms. On the other hand, in this case, public authorities and management are objectively in the dual position – organizing the business of their companies, they however are required to perform the role of arbiter of business relations between all subjects of entrepreneurial businesses, including firms created by them.

To overcome and later – always overcome the inevitable conflicts of business interests, especially between state (municipalities) business firms and other entrepreneurial businesses in different countries different approaches are used. The common feature of these approaches is to ensure the effectiveness of functioning of public institutions.

From the perspective of the analysis of organization performance indicators of the effectiveness should meet a number of requirements, which in the current scientific literature include:

- Measurable – an indicator can be measured in constant terms;
- Justification – an indicator completely reflects what is necessary to evaluate;
- Definitely – indicator is clear, common definition and units of measurement;
- Stability –time (dynamic) data slices are available during the evaluation;
- Availability – data needed to calculate the indicator are available in the traditional sources of information;
- Reach – supplied target value index can be achieved with the available resources;
- Attachment to a particular reporting period;
- Specificity and concreteness – indicator refers to a particular organization.

In the basis of an overall assessment of the effectiveness of environmental business activity of state organizations are two main concepts:

- Cconomic efficiency, linking up volume of services with the costs (including the costs caused by the concept of social value); increase of economic efficiency implies cost savings while maintaining the volume of services or increase volume of services while maintaining the levels of funding;
- Social efficiency, concluding provision of a certain level of quality services within the resources necessary to achieve social goals. Social efficiency is quality assessment of activity, represented accordance of the purpose of the authority to the needs of the population. The social effect is creation of favorable conditions for the population in the territorial education, improving the quality of

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services, as well as the creation of more favorable conditions of employees of the organization. In many cases, the social effect cannot be quantified and it is determined by the qualitative changes that occur in the territorial entities.

At the same time economic efficiency can be measured the most correctly. Economic efficiency is quantification assessment of relationship between an effect and costs in concrete terms: savings by streamlining and rationalization [1]. It characterizes the conservation of efforts, funds at the certain time in conditions of operation of existing systems under specified conditions.

Objectiveness of evaluation of effectiveness in western countries designated as the three E: economy, efficiency and effectiveness [2].

Economy is reducing costs while maintaining the required quality of the content, products. Efficiency means the optimum result for inputs. Effectiveness reflects the extent the organization's goals (both general and very detailed). In a number of studies in order to systematize approaches the term effect is the difference of benefits and incurred costs, while efficiency is understood as the ratio of these quantities.

The objectives of the government businesses often include non-financial targets (for example, quality of recreational services). However, for these purposes quantitative measuring instruments (such as lower costs of the population for rest) can be developed. Importance of social efficiency of business activity of state organizations is determined here because social orientation of the environmental business is undeniable.

Environmental problems of social significance, of course, take the first position. Setting priorities to address environmental problems in a social context is a difficult task, since it is necessary to take into account many factors and the original data, usually is incomplete and reliability.

It is also necessary to find out whether the achieved distribution of resources, such as human, financial, technological, or optimal, since eco-products, works, services can be socially effective, but cost-ineffective.

Legislator in the Federal law of 08.05.2010 No 83 “About amendments to certain legislative acts of the Russian Federation in connection with the improvement of the legal status of state (municipal) institutions” in the field of conservation, protection and restoration of natural resources recommended for state and municipal agencies in security, protection, restoration of natural resources to establish at least 2-3, but not more than 7-8 indicators of quality [1].

To determine the social impact we recommend use a system that takes into account the volume and quality of eco-services rendered by the state eco-conservation organization. Traditionally, the provision of ecological and environmental services by government agencies is part of the state tasks, programs, etc.

M.A. Isakin notes that the fiscal target programs are aimed at the realization of expenditure obligations of the state in the sphere of socio-economic development and by the benefits of the program means a series of socially important social outcomes [2]. According to other classifications, the effectiveness of the programs means a series of social effects and the efficiency is the ratio of social effects and focus on their implementation of the budget [3, 4]. We will follow the second type of classification.

We believe that for botanical gardens and arboretums, we can use the following indicators of quality of eco-services:

- The number and length nature trails, landscape compositions, collections, rock gardens, rockeries, etc.;
- Number of equipped recreations (campsites, etc.)
- Number of publications of the popular character, the amount of scientific papers carried out on the materials PAs;
- Number of student term papers prepared by the materials collected at the protected area;
- Number of protected theses produced by the materials collected at the protected area;
- Proportion of users of protected areas in the excursion, recreational, satisfied with the provided services.

The first step is connected with the need to identify program activities that the organization was planning to implement in the prescribed period, to determine their number. Then similar work conducted to establish the actual volume performance planning activities.

The second step requires a set amount of planned allocation for the implementation of each activity.

The third step involves determining the degree of satisfaction of users of the service quality of its execution (in a survey).

The fourth step shows the calculation of the structure of the implementation of activities (planned and actual);

The fifth step is determined by calculation of the budget of social effect from the measures.

Social efficiency of program implementation of environmental measures can be defined by the formula:

$$Эс = \frac{\sum_{i}^{n} C}{\sum_{i}^{n} Б}, \quad (1)$$

where: C – social effect resulting in the implementation of measures n in i-project;

$Б$ - allocations from the budget or other sources allocated for the implementation of environmental, ecological, n events in the i-th project.

Analyzing the results of the calculations, we conclude that the state organizations form a significant social impact, assisting with state environmental problems. In general, the nature of the above methodological approach to assess the social performance includes:

- The choice of indicators and evaluation of social benefits (in kind / conditional or cash);
- Assessment of the costs associated with the implementation of the social effect;
- Calculation of the coefficient of efficiency.

Evaluating the implementation of eco-efficiency should be complemented by the introduction of an assessment of eco-efficiency. It is difficult to quantify the effectiveness of institutions designed to protect environmental interests formalized [5].

In our opinion, it can be approximated as the ratio of damage avoided (number of costs for its prevention) to the magnitude of the potential damage:

$$Ээ = \frac{Уп}{Ун} \quad (2)$$

где: $Ээ$ – effectiveness of ecological institution;
$У_п$ – prevented damage;
$У_п$ – damage.

Thus, the assessment of the effectiveness of environmental business of government involves comparing the results with the resources spent to achieve them.

Improving economic efficiency can be made by saving costs while maintaining the same level of services or increase services while maintaining the same level of funding, with an increase in the cost of prevention of environmental damage per 1 unit of losses from its application.

Table 1: Local elements of index matrix of the effectiveness of environmental business activity of organization

	Economical effect	Social effect	Ecological effect
Э	1	0,97	1,06
Эс	ТРэ= 1,02	1	1,09
Ээ	ТРээ=0,96	ТРс =0,92	1

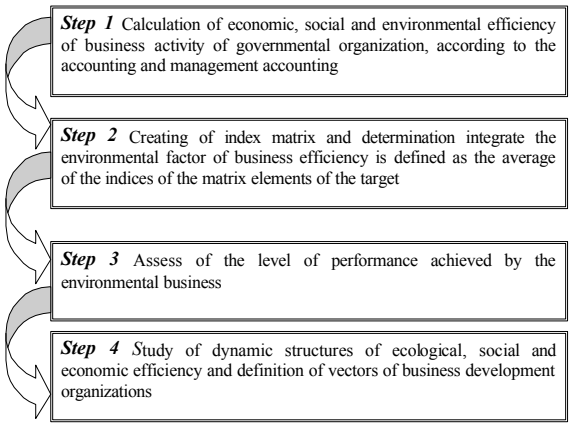

Fig. 1: Stages of methods of determining the effectiveness of environmental business activity of state organization

A set of methods for determining the economic, social and environmental performance in our combined method to determine the total (integrated) efficiency, the implementation of which is associated with a number of successive actions is presented in Figure 1.

We believe that it is appropriate to use the method of the matrix of the diagnostic assays described by A.A. Bachurin [6]. The essence is construction of dynamic matrix model, whose elements are the indices of core indicators of effects - economic, social, environmental (Table 1).

Table 1 requires the following comment. The growth rate of indicators is calculated by the formula (3):

$$T_{ofgrouth} = \frac{indicator_{ij}(by\ the\ period\ n)}{indicator_{ij}(by\ period(n-1))} \quad (3)$$

where: n is the reported period;
(n - 1) - the period before reporting.

To determine the overall performance of the state organization is advisable to use the integrated rate determined by the formula of arithmetic index of the target elements of the matrix presented in the table.

Table 2: Evaluation of the effectiveness of environmental business activity

Range of values of K effectiveness	Point
> 1	5
0,8 – 1	4
0,5 – 0,7	3
0,3 – 0,4	2
0,1 – 0,2	1

$$Кэф = \frac{2 \cdot \sum TRi}{n^2 - n} \quad (4)$$

where:

Кэф – Index comprehensive evaluation of the environmental business activity of the organization;

2 ΣTRi – Twice the sum of all the indicators "growth rate effect" presented in the matrix (below the diagonal);

n – Number of input parameters of the matrix (in this case, the three parameters).

3 phase is identification and assessment of the current effective environmental entrepreneurship of the organization. The level of effectiveness of environmental business activity, calculated by the formula (4) is equal to 0.97. Following Table 2, we estimate the environmental business by 4 points.

To consider options of combining vectors of temp growth we use a combination of the basics of combinatorics. We have accommodation of 3 elements Э, Эс, Ээ.Then, the number of placements:

$$A_n^m = n \cdot (n-1) \cdot (n-2)....(n-m+1), \quad (5)$$

From n elements to m. For the research we have:

$$A_3^3 = 3 \cdot 2....(3-3+1) = 6$$

In this regard, the number of combinations is defined as 24 (6⋅4) (рис. 2).

Developing the method of matrix diagnostic analysis, interpret the relation in growth of three performance characteristics (Table 3).

Analyzing the structure combining growth business efficiency (economic - Э, social - Эс, environmental - Ээ) suggests the conclusion of the three slopes of the organization (Figure 3):

Taking as a sustainable environmental development of entrepreneurial organization diagonal of the square, we understand that when you move the organization on a diagonal from the square A to the square K, there is a uniform development characterized by an inflow of economic, social and environmental effects.

Э>Эс>Ээ	Э> Ээ > Эс	Vector of development
Э<Эс<Ээ	Э< Ээ < Эс	- economical business
Э>Эс<Ээ	Э< Ээ > Эс	activity
Э<Эс>Ээ	Э> Ээ < Эс	
Эс > Э >Ээ	Эс >Ээ> >Э	Vector of development
Эс < Э <Ээ	Эс<Ээ<Э	- social business activity
Эс > Э<Ээ	Эс>Ээ<Э	
Эс < Э >Ээ	Эс<Ээ>Э	
Ээ >Э>Эс	Ээ>Эс>Э	Vector of development
Ээ < Э <Эс	Ээ<Эс<Э	- ecological business
Ээ> Э<Эс	Ээ>Эс<Э	activity
Ээ< Э>Эс	Ээ<Эс>Э	

Fig. 2: Design and direction of development business activity organizations

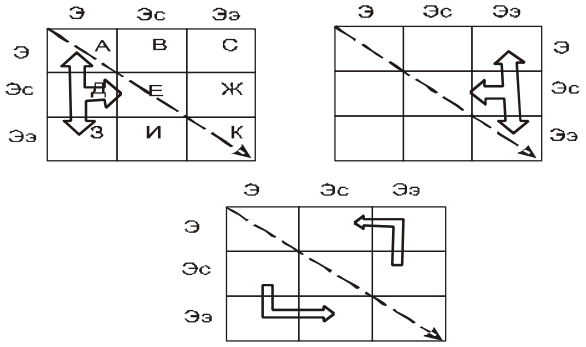

Fig. 3: The three areas of the business environment of the organization

When moving from point Ж to point C and K, there is a significant increase of profit environmental organization. At the same time, moving to the top of the slope reflects the activity in the performance of social roles and the emphasis on increasing social income.

When moving from point Д to point A or З there is an increase of business revenue. Moving below the diagonal from point Д to З and then to the point È means that social orientation of enterprise get environmental business income.

Thus, the effectiveness of environmental business in the state organizations should be assessed using three interrelated criteria:

- Economic efficiency – maximization of profit based on the optimum use of all resources with including synergies;

Table 3: Some constructions of characteristics of effectiveness of development of business activity and their interpretation

Construction	Temp of growth	Interpretation		
Construction 1	Э>Эс	Э>Ээ	Эс>Ээ	In its activities the organization seeks to profit at the expense of environmental protection. Incorrect redistribution of business income
Construction 2	Э<Эс	Э<Ээ	Эс<Ээ	Entrepreneurial activity of the organization is not developed, social programs are minimizing, high environmental impact investigation previously conducted environmental activities, stagnation. Aging organization.
Construction 3	Э>Эс	Э<Ээ	Эс<Ээ	Entrepreneurial activity is developed, but implementation of social programs delayed, despite the investment in environmental protection. If high growth entrepreneurial income is "enviable" organization: it has untapped opportunities of growth of social effect.
Construction 4	Э<Эс	Э>Ээ	Эс<Ээ	Orientation to social activity instead of the economic and environmental, this condition is not conducive to the dynamic development of the material-technical base and thus minimizes the environmental impact
Construction 5	Э<Эс	Э<Ээ	Эс>Ээ	There is a bias in the development of entrepreneurship in the social, economic and environmental activities, depending on the prevailing vectors.
Construction 6	Э>Эс	Э>Ээ	Эс<Ээ	
Construction 7	Э>Эс	Э<Ээ	Эс>Ээ	
Construction 8	Э<Эс	Э>Ээ	Эс>Ээ	

- Social efficiency – ensuring that consumers receive social benefits in the delivery of their recreational and educational services;
- Eco-efficiency – sustainable natural resources.

We believe that using the results of the environmental assessment of the effectiveness of the state organization of business, we can:

- Draw conclusions about how well environmental programs in general (how close the level of integrated assessment to the maximum value) are implemented;
- Identify adverse trends of development of environmental business, reasons (based on analysis of the level of component estimates the environmental, economic and social impact and direction of other more detailed indicators);
- Make recommendations to improve the planning, implementation and monitoring of business organizations.

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