UDC 338.24:332.33:001.8:330.131.5

THE METHODOLOGICAL PRINCIPLES OF ECONOMIC, SOCIAL AND ENVIRONMENTAL LAND USE EFFICIENCY OF THE AGRICULTURAL SECTOR

Zos-Kior Mykola, Associate Professor of the Department of Management and Administration, Ph.D., Associate Professor, Poltava National Technical Yuri Kondratyuk University.
Зось-Кіор Микола Валерійович, доцент кафедри менеджменту і адміністрування, к.е.н., доцент, Полтавський національний технічний університет імені Юрія Кондратюка.

Zos-Kior M. V. The Methodological Principles of Economic, Social and Environmental Land Use Efficiency of the Agricultural Sector.

The article presents methodological principles of economic, social and environmental land use efficiency of the agricultural sector. The author's definition of land types in Ukraine is presented as to their participation in forming the added value of the land interest entities. The author's own system of criteria for the land management efficiency assessment in the agricultural sector has been developed. The criteria of economic efficiency include: land productive capacity; productive motivation; diversification. The criteria include social efficiency: productivity; motivation; sustainability. The environmental efficiency criteria include: human- induced impact, i.e. chemical fertilizers treatment per 1 ha; soil fertility recovery, i.e. land quality according to ball-bonitet; harmonization, i.e. growth rate of the eroded lands. Multiplicative indices, mainly included as components of the aggregate indicators of economic, social and environmental activities in the countryside, first suggested for this analysis, were introduced into the calculation for each efficiency type. The essence of these indicators is the ability to assess the intensity and action force of land relations entities. The developed methodology is the basis for determining the integral index of the country's (region's) land resources management efficiency.

Зось-Кіор М. В. Методичні засади економічної, соціальної та екологічної ефективності використання земельних ресурсів аграрного сектору економіки.

В статті представлено авторське визначення видів земель в Україні за участю у формуванні доданої вартості суб'єктів земельних інтересів. Розроблена система критеріїв оцінки рівня ефективності управління земельними ресурсами аграрного сектору економіки. До критеріїв економічної ефективності віднесено: землевіддачу – основний показник – додана вартість на 1 га сільгоспугідь; продуктивну вмотивованість – співвідношення норми прибутку на капітал, вкладений в аграрний сектор, і середньої ставки за депозитами; диверсифікованість – питома вага продукції тваринництва в структурі товарної продукції. До критеріїв соціальної ефективності віднесено: продуктивність – основний показник – кількість населення, що фактично годує 1 га сільгоспугідь; мотивацію – темп приросту реальних доходів сільського жителя; сталість – частка населення в сільській місцевості непенсійного віку. До критеріїв екологічної ефективності віднесено: антропогенне навантаження – основний показник – внесення хімічних добрив на 1 га; відтворення – якість землі за балом бонітету; гармонізації – темп приросту площі еродованих земель. По кожному з видів ефективності введено в розрахунок мультиплікативні показники, які в основному увійшли як складові вперше пропонованих до даного аналізу агрегованих показників економічної, соціальної та екологічної активності на селі. Сутність даних показників полягає в можливості оцінки інтенсивності та сили дії суб'єктів земельних відносин. Розроблена методика є основою для визначення інтегрального показника ефективності управління земельними ресурсами аграрного сектору країни (регіону).

Зось-Киор Н. В. Методические основы экономической, социальной и экологической эффективности использования земельных ресурсов аграрного сектора экономики.

В статье представлено авторское определение видов земель в Украине с участием в формировании прибавочной стоимости субъектов земельных интересов. Разработана собственная система критериев оценки уровня эффективности управления земельными ресурсами аграрного сектора экономики. К критериям экономической эффективности отнесены: землеотдача – основной показатель – прибавочная стоимость на 1 га сельхозугодий; продуктивная мотивированность – соотношение нормы прибыли на капитал, вложенный в аграрный сектор, и средней ставки по депозитным вкладам; диверсификация – удельный вес продукции животноводства в структуре товарной продукции. К критериям социальной эффективности отнесены: производительность – основной показатель – численность населения, которое фактически кормит 1 га сельхозугодий; мотивация – темп прироста реальных доходов сельского жителя; устойчивость – доля населения в сельской местности непенсионного возраста. К критериям экологической эффективности отнесены: антропогенная нагрузка – основной показатель – внесение химических удобрений на 1 га; воспроизводство – качество земли по баллу бонитета; гармонизация – темп прироста площади эродированных земель. По каждому из видов эффективности введены в расчет мультипликативные показатели, которые в основном являются составляющими впервые предлагаемых в данном анализе агрегированных показателей экономической, социальной и экологической активности на селе. Сущность данных показателей заключается в возможности оценки интенсивности и силы действия субъектов земельных отношений. Разработанная методика является основой для определения интегрального показателя эффективности управления земельными ресурсами страны (региона).

Formulation of the problem. Among scientists, practitioners, analysts, the problem of defining the criteria, factors and land resources management efficiency indices in the agricultural sector is ambiguous. It is due to: incomplete harmonization of "old" and "new" efficiency assessment systems; undetermined assessment base; undefined types of efficiency; undefined management objects; undefined management entities. Therefore, it is important to systematize methodological framework for integrated assessment of the land management efficiency in the context of globalization.

Analysis of recent research and publications. There are various efficiency criteria for the state, regional authorities and firms due to the social, collective and personal interests [5, P. 5; 8, P. 214]. This necessitates consideration of the land administration efficiency on both sides: the national economy and commerce. For example, the performance gains and profitability, as important indicators of mass effect and efficiency, are the extremely valuable analytical material for the enterprise at taki ng decisions of production and financial nature. However, they do not take into account costs spent by the state on land management [8, P. 214], so, at the regional and the state level, these figures are less informative. At the same time, specific research of the criteria, based on a system of indicators, not only relative and absolute, but dynamic, expert, multiplicative and aggregated, is not paid enough attention, thus making the presented research a topical one.

Aim of the research is to suggest a method of assessing the economic, social and environmental land management efficiency in the agricultural sector.

Results of the research. The land management efficiency in the agricultural sector of Ukraine is determined by a set of its priority types: economic, social and environmental efficiency and their varieties [1, P. 21; 3, 6; 8].To make the analysis, the classification of land resources as a management object should be performed. In our view, the list of management entities should include: micro-agents (micro agents - McA), mini-agents (mini agents - MnA), common agents (general agents - GnA), state (the state - S), regional agents (regional agents - RA) and global agents (global agents - GlA). If their interests are not identical, their relations are transformed from complementary to competing. Let’s define the main land types involved into forming the added value of land interest business entities (Table. 1).

Table 1

The types of land in Ukraine with the participation in the formation of the value added of the subjects of interest

The types of land	The subjects of land interests					
	MnA	McA	GnA	S	RA	GlA
Processed and such, which are registered in the land registry	+*	+	+	+	+	+
Processed, but not listed at the land registry	+	+	+	+		
Are not processed and are not registered in the land registry				+		

* there is an interest in a subject

The presence of interest in business entities is determined not only by the current, but also by the prospective use (e.g. through privatization) / non-use (e.g. through withdrawal from the economic turnover), paying and receiving taxes, distribution and redistribution of products obtained from the land, etc.

For each of the land relations objects, a different kind of efficiency is more important (Table. 2). Yes, for the land it is the ecological efficiency, for the land rights it is the economic efficiency, and for the added value it is the social efficiency.

Table 2

The ranking values of the indicators of the effectiveness of land management the agricultural sector for the objects of land relations

Objects	Kind of efficiency		
	economic	social	ecological
Land	2*	3	1
Land rights	1	2	3
Value added	2	1	3

* grades 1 to 3 (1 – maximum interest, 3 – the minimum interest)

Under the circumstances, when resources are limited, it is reasonable to speak about the efficiency as obtaining the maximum effect at the fixed, i.e. the predetermined amount of resources or obtaining the given result (effect) at the least resources costs [1, P. 11]. It is this very approach, that reveals the essence of technical efficiency, which together with allocative ability and general economic ability is a specific form of the economic efficiency [1, P. 20]. Thus, technical efficiency, as the ability of a land relations entity to obtain, at a fixed number of factors, the maximum production output, which is determined by the marginal production function [1, P. 16; 9], is very important in formation of the economic efficiency indices system (Fig. 1).

Economic efficiency is inseparable from the social one, which efficiency criteria, according to the today's research literature, are: sustainable human settlements development, through the optimal combination of income and leisure time, the maximum employment of rural population, which, in our opinion, can be defined too arbitrary, and the main indicator is considered to be the ratio of profit aimed at social events, in the total mass of the net profit per an average employee [1, P. 27; 2; 4, P. 57].

According to this logic, an enterprise, which increased salaries, repaired a country club renovated and mended a road (i.e. it was socially active), but it had worked at a loss for a year, it is less socially efficient than the one, that had income, but confined itself to the payment of wages. Taking into consideration the results of the study, we present the system of land management social efficiency criteria assessment in the agricultural sector (Fig. 2).

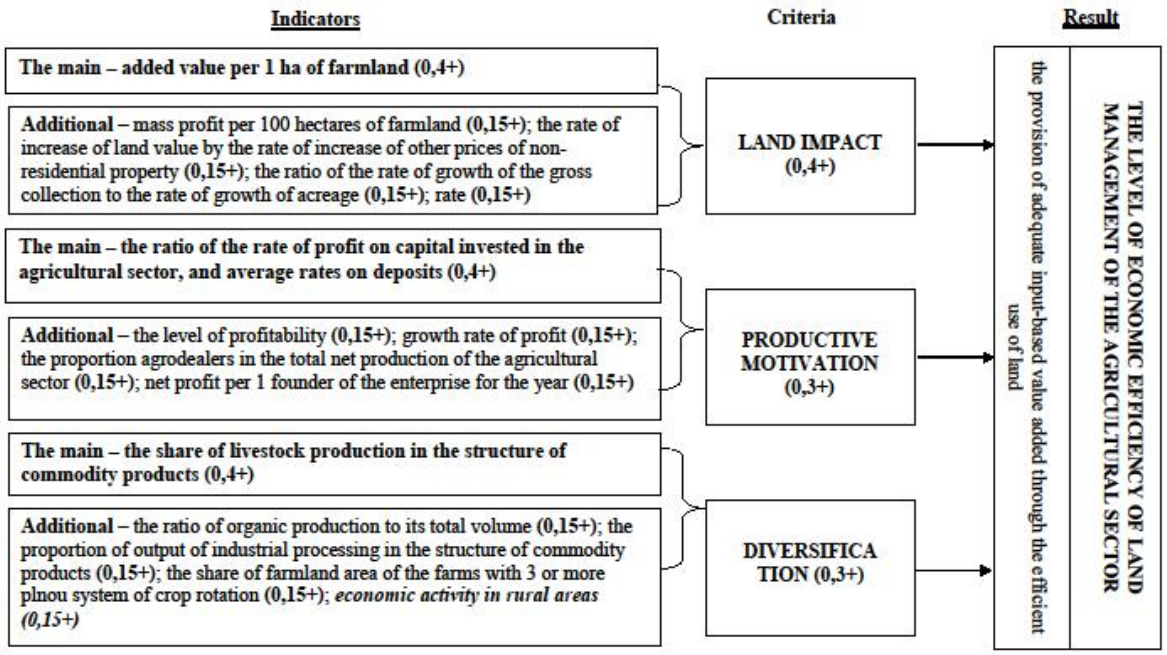

Figure 1. The system of criteria of estimation of level of economic efficiency of land management of the agricultural sector *

* developed by the author on the basis of results of expert evaluation where, for example, 0.15+ means that the indicator has a weight of 0.15, stimulant

Defining the environmental efficiency as an independent form, is determined by: the need of creating the environment, safe for humans, animals and plants, in which the biological and water balance of the territory is preserved, the circulation of organic substances is being improved, the expanded reproduction of economic soil fertility is provided, accompanied by the increased humus content, ecologically friendly products are produced, and the environmental pollution with chemicals for agricultural purposes is forbidden, as well as the by the need for an indicator to determine the harmonious development of production [1, P. 27].

In the agrarian economy of Ukraine, as in other industries, the hierarchy of priorities is determined by the economic results of the enterprise (branch, region). At enterprises with low incomes, the environment protection is absent in the list of priorities. Above all they are worried about their own survival within a short period of time. Business entities will only solve the long-term socially significant problems, when they are provided with profitable work, and the higher is the profit, the more a company is interested and able to care for the environment [7, P. 107-108]. Under these circumstances, even the state environmental investments are mainly used improperly. Taking into account the results of the study, we present the system of land management ecological efficiency criteria assessment in the agricultural sector (Fig. 3). All types of efficiency should be considered not in isolation, but in the context of preventing situations, when the higher economic efficiency is achieved at the expense of environmental safety and social programs curtailing.

Conclusions. The methodology for assessing the economic, social and environmental land resources management efficiency, based on formal and informal types of assessments, includes multiplicative and aggregated indices, permits adding dynamism and objectivity to the assessment, and forming the efficiency scale for each indicator.

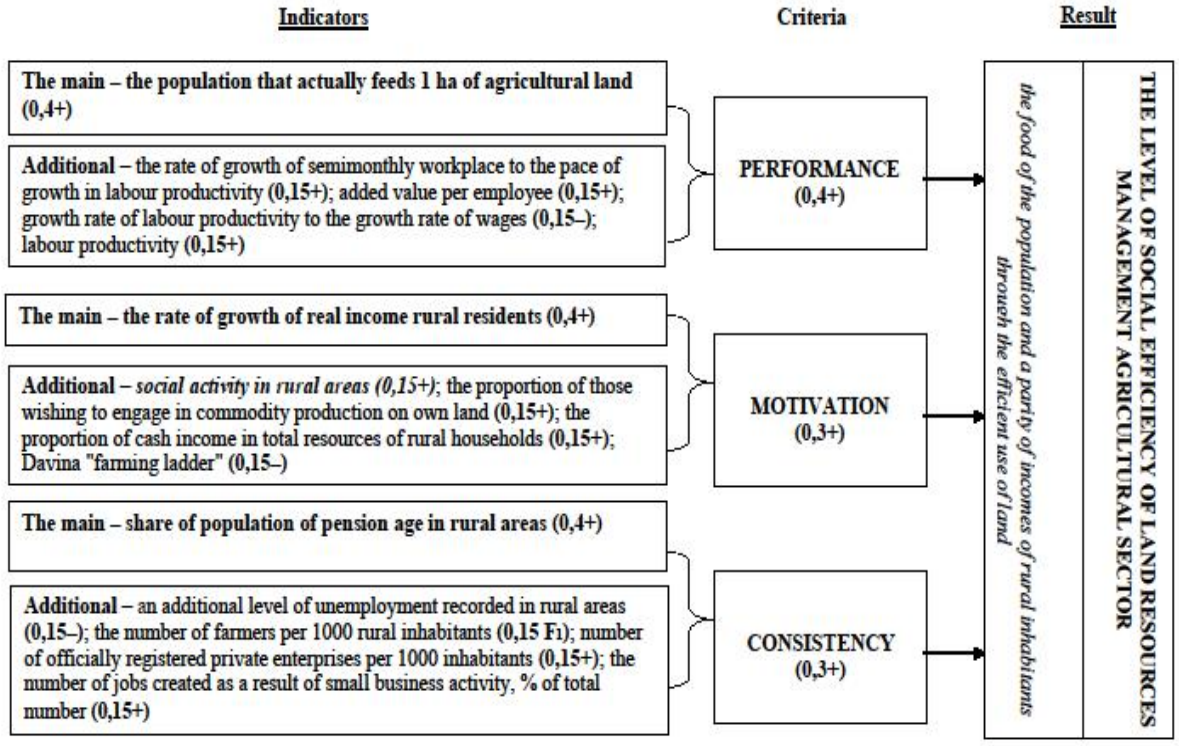

Figure 2. The system of criteria of estimation of level of social efficiency of land resources management agricultural sector *

*developed by the author on the basis of results of expert evaluation where, for example, 0.15+ means that the indicator has a weight of 0.15, a stimulant; the standard value of F_1 – to 2.5 – stimulant, more than 2.5 – destimulation

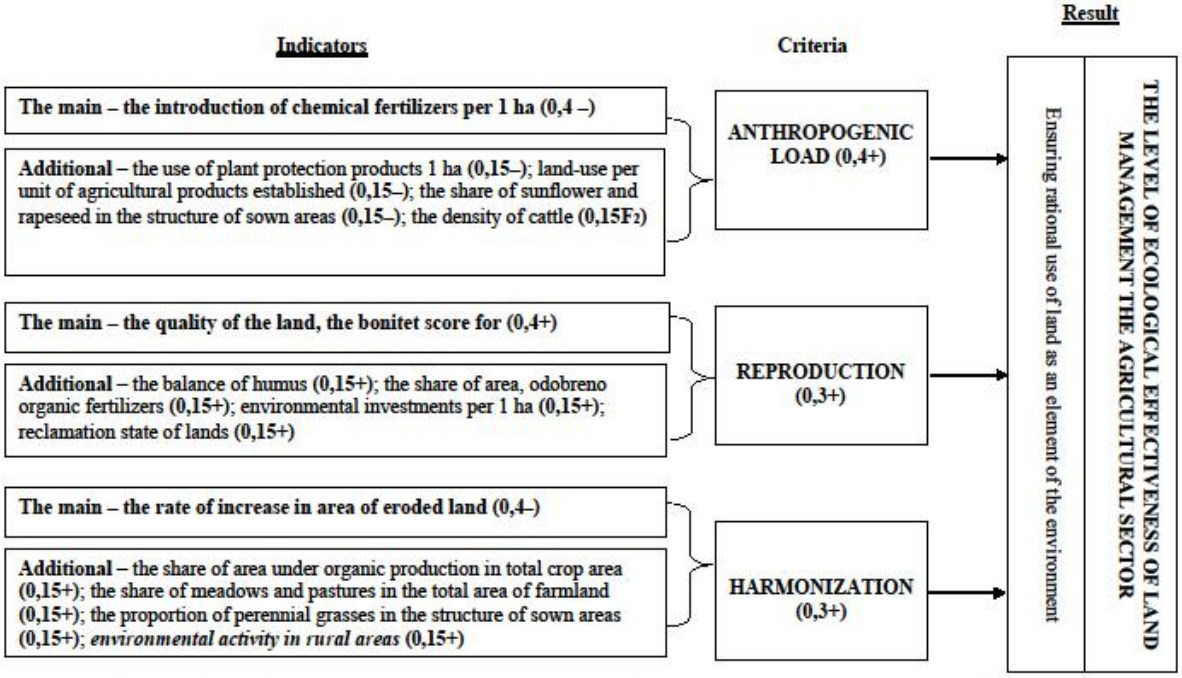

Figure 3. The system of criteria of estimation of level of ecological efficiency of land resources management agricultural sector

*developed by the author on the basis of results of expert evaluation where, for example, 0.15+ means that the indicator has a weight of 0.15, a stimulant; the standard value of F_2 – 1 to the mind. goal./ha – stimulant, more 1 mind. goal./ha – destimulation

References (BSI)

1. Andriychuk V.H. (2006), «Efficiency of activity of agrarian enterprises: theory, methodology, analysis»: monograph, [«Efektyvnist' diyal'nosti ahrarnykh pidpryyemstv: teoriya, metodyka, analiz»: monohrafiya]. Kiev, KNEU, 292 p
2. Budzyak V.M., «Economic and environmental principles of efficient use, protection and reproduction of agricultural lands», [«Ekonomiko-ekolohichni pryntsypy efektyvnoho vykorystannya, okhorony ta vidtvorennya zemel' sil's'kohospodars'koho pryznachennya»], available at: http://economics-of-nature.net/uploads/arhiv/2009/Budziak-Vasil.pdf
3. «Doing agribusiness in Ukraine», [«Vedenye ahrarnoho byznesa v Ukrayne»]. Kiev, UKAB, 2015, 82 p
4. Kvasha S.M. (2009), «Land relations in the context of models of development of agriculture of Ukraine», [«Zemel'ni vidnosyny v konteksti modeley rozvytku sil's'koho hospodarstva Ukrayiny»], *Ekonomika APK*, No3, pp. 54-57
5. Kropyvko M.F., Ksenofontov M.M., Khmil' N.V. (2015), «Directions of improving state control of the agrarian sector in the conditions of decentralization of power and deregulation of economic activity», [«Napryamy udoskonalennya derzhavnoho upravlinnya ahrarnym sektorom v umovakh detsentralizatsiyi vlady ta derehulyatsiyi hospodars'koyi diyal'nosti»], *Ekonomika APK*, No3, pp. 5-14
6 Peschans'ka I.M. (2004), «Development of land management in the land administration system», [«Rozvytok zemel'noho menedzhmentu v systemi upravlinnya zemel'nymy resursamy»]. *Avtoref. dys. kand. ekon. nauk: 08.08.01*, 20 p.
7. Stukach V.F. (2013), «Mechanisms of motivation of the land owners in the area of soil-protective technologies», [«Mekhanizmy motivatsii sobstvennikov zemli v sfere prymeneniya pochvozashchitnykh tekhnolohiy»], *Biznes. Obrazovanie. Pravo. Vestnik Volhohradskoho instituta biznesa*, No3(24), pp. 106-114
8. Tretyak A.M., Druhak V.M. (2003), «The scientific basis of the Economics of land use and land management»: monograph, [«Naukovi osnovy ekonomiky zemlekorystuvannya ta zemlevporyadkuvannya»: monohrafiya]. Kiev, TsZRU, 337 p.
9. Lissitsa A. The data envelopment analysis (DEA) – Modern methods of production efficiency / Lissitsa, A., Babitcheva, T. IAMO Discussion Paper №. 50, Halle (Saale), available at: http //www.iamo.de/iamo/publikationen/dokumenty-predstavlennye-na-obsuzhdenie-discussion-papers/html

Keywords: management, efficiency, land resources, agricultural sector, land interest entities, assessment criteria system, aggregate indices, activity in the countryside.

Reviewer: S. Y. Pogorelov, doctor of Economics, Professor, Poltava National Technical Yuri Kondratyuk University