

**SUSTAINABILITY OF FARMING ENTERPRISE –
UNDERSTANDING, GOVERNANCE, EVALUATION**

This article gives answers to following important questions: "what is sustainability of farming enterprises" such as individual and family farms, agri-firms of different types, agri-cooperatives, etc.", "what are the mechanisms and modes of governance of sustainability of farming enterprises", and "how to evaluate the sustainability level of farming enterprise and efficiency of its governance". First, evolution of the "concept" of sustainability of farming enterprise is discussed and more adequately defined as ability of a particular enterprise to maintain its managerial, economic, social and ecological functions in a long term. Second, institutional, market, private, public and hybrid mechanisms and modes of governance of farming enterprise's sustainability are specified. Third, a specific for the conditions of East-European agriculture framework for assessing sustainability level of farming enterprise and efficiency of its governance is suggested. Ultimate goal is to assist farming enterprises' management and strategy formation as well as improvement of public policies and forms of public intervention in agrarian sector.

Keywords: *farming enterprise, sustainability, governance, assessment, managerial, economic, social, ecological aspects.*

Introduction. The issue of governance and assessment of sustainability of farming enterprises of different type is among the most debated by researchers, farmers, businessman, policy-makers, interest groups, and public at large (Andreoli M. and V Tellarini; Bachev; Bachev and Petters; Bachev and Nanseki; Bastianoni et al.; Berge and Stenseth; Beerbaum; Brklacich et al.; Daily et al.; De Molina; Edwards et al.; EC, Epp; FAO; Farah and Gomez Ramos; Fuentes; Häni et al.; Hansen; Hayati; Garcia-Brenes; Kremen et al.; Lawandowski et al; Lowrance et al.; Mirovitskaya and Ascher; OECD; Raman; Rigby et al.; Sauvenier et al.; UN; VanLoop et al.).

Despite enormous progress in the theory and practice in that new area, still there is no consensus on "what is sustainability of farming enterprises", "which are mechanisms and forms for its governance", and "how to evaluate sustainability level of farming enterprise and efficiency of its governance". In academic publications, official documents and agri-business practices there is a clear understanding that "farm enterprise's sustainability and viability" is a condition and an indicator for agrarian sustainability and achievement of sustainable development goals. Also it is widely accepted that in addition to "pure" production and economic dimensions, farm enterprise sustainability has broader social and ecological aspects, which are equally important and have to be taken into account. However, most of the assessments of agricultural sustainability are at industry, national or international level (FAO, OECD), while the important "farm level" is usually missing (Thus important links between farm management and impacts on agroecosystems are not studied (Sauvenier et al.)). Often farms and agrarian sustainability unjustifiably are equalized while the latter has larger dimensions including: sustainability of farms, importance of individual farming enterprises in the overall resources management and socio-economic life of households, region and industry; collective actions of diverse agrarian agents; overall (agrarian) utilization of resources and impacts on natural environment; and amelioration of living and working conditions of farmers and rural households; overall state and development of agriculture and rural households (participation in) overall social governance; food security, and conservation of agrarian capability, etc. [7].

Furthermore, in most cases a holistic approach is not applied, and "pure" economic (income, profitability, financial independence etc.), "pure" production (land, livestock and labor productivity, eco-conservation technologies etc.), "pure" ecological (eco-pressure, harmful emissions, eco-impact etc.), and "pure" social (social responsibility) aspects of farm development are studies (assessed) inde-

pendently from one another. Also critical "governance" functions of farming enterprise, and costs associated with governance ("transaction costs"), and relations between different aspects of farm sustainability are mostly ignored. A majority of suggested framework for sustainability assessment apply an "universal" approach for "faceless" farming enterprises, without taking into consideration the specificity of individual holdings (type, resource endowment, specialization, stage of development) and the environment in which they function (competition, institutional support and restrictions, environmental challenges and risks, etc.). What is more, usually most systems cannot be practically used by the enterprises and managerial bodies, since they are "difficult to understand, calculate, and monitor in everyday activity" [26].

Similarly studies on forms and efficiency of governance of farming enterprise sustainability are also at beginning stage due to the "newness" of the problem, and the emerging new challenges at the current phase of development (globalization, climate change, strong competition with producers in other countries, other sectors, etc.), and the fundamental institutional modernization during recent years, and the "lack" of long-term experiences and relevant data, etc. Most studies in the area include only the farmer (the manager of farming enterprise) as responsible and contributing with his behavior, actions or inactions for maintaining production, technological, ecological and social functions of the farm (the sustainability of farm), while a number of key agents like resources' owners (labor, land, capital, etc.), buyers, suppliers, interest groups, state, communities, final consumers, etc. are commonly ignored. More comprehensive studies are usually focused on formal modes and mechanisms while important informal institutions and organizations are not included into analysis. What is more, research is commonly restricted to a certain form (contract, cooperative, industry initiative, public program), or a management level (farm, eco-system, region) without taking into consideration the interdependency, complementarities and/or competition of different governing structures. Besides, widely used complex forms of governance (multi-lateral, multi-level, reciprocal, interlinked, and hybrid modes) are usually ignored by investigators. Likewise, one-dimensional and uni-sectoral analyses are broadly used separating the management of farming activity from the governance of environmental and overall households and rural activities. Furthermore, most studies concentrate on "production costs" ignoring significant transaction costs associated with protection, exchange and disputing of diverse property rights and rules. Moreover, "normative" (to

some "ideal" or "model in other countries") rather than a "comparative institutional approach" (between feasible alternatives in the specific socio-economic and natural conditions of a country, region, sector, ecosystem) is employed. Furthermore, uni-disciplinary approach dominates ("pure economic", "pure ecological", "pure political", etc.) preventing a proper understanding of the driving factors ("logic") and the full consequences (multiple effects, costs, risks) of a particular governance choice. Consequently, a complete understanding and adequate assessment of the system of governance of farm sustainability is impeded.

Therefore, there are strong theoretical and practical needs for proper understanding both the farming enterprises sustainability as well as the system of its governance and assessment. This paper suggests a holistic framework for assessing the system of governance and sustainability level of farming enterprises of different type (individual and family farms, agri-firms, agri-cooperatives, etc.).

1. Understanding sustainability of farming enterprise

Sustainability movements initially emerged in most developed countries as a response to concern of particular individuals about negative impacts of agriculture on non-renewable resources and soil degradation, health and environmental effects of chemicals, inequity, declining food quality, decreasing farms, decline in self-sufficiency, unfair distribution, destruction of communities, loss of traditions, etc. [18]. "Sustainable agriculture" is used as umbrella term of "new" approaches (organic, biological, alternative, low-input, biodynamical, regenerative, conservative, community supportive) to "conventional" agriculture. Consequently, "social" issues (modes of consumption, quality of life; decentralization; rural development; gender, intra and inter-generation equity; preservation of culture; improvement of nature; animal welfare, tackle climate change) are also incorporated [39-41]. Emergence of that "new ideology" has been associated with a considerable shift of "traditional understanding" of development as theory and policy which now includes a broad range of economic, social, ethical, environment conservation etc. objectives.

More "operational" definitions describe sustainability as "set of strategies" with managerial approaches associated with it: self-sufficiency through use of on-farm/local "internal" resources; reduced use/elimination of chemicals; improved crop rotation and diversification; reduces animals rates; employment of life-cycle management of resources; full pricing of inputs and environmental damages, etc. [32]. Sustainability level is measured through changes in resources use and introduction of alternative methods, and their comparison with "typical" farms. Interpreting sustainability as "an approach of farming" is not always useful for adequate assessment and "guiding changes". Strategies, which emerge in response to problems in developed countries, are not always appropriate for specific conditions of others. Priorities in a particular country also change in time, which makes that approach unsuitable for comparing different subsectors, countries and in dynamic. Such understanding lead to rejection modern approaches ("sustainable intensification") enhancing sustainability. It makes it impossible to evaluate contribution of a particular strategy since it is already used as "criterion". Because of limited knowledge during strategy implementation errors are made (ignoring strategies enhancing or promoting those threatening sustainability). That approach ignores economic dimensions (efficiency of resources) and external factors (institutional environment, markets evolution) critical for sustainability.

Another approach characterizes sustainability as "ability to satisfy a diverse set of goals through time" including: provision of adequate food, economic viability, maintenance of nature, social welfare, etc. [13; 22; 31]. Usually

there is "conflict" between different goals, thus a question which element of the system is to be sustainable (preference is given on some to others). Frequently it is difficult to determine relation between activity and expected effects as integration in "numeric", "energy", "monetary" etc. units suggested. All they are based on wrong assumptions for transition in single dimension, "weights" and interchangeability of different goals, system's sustainability as a sum of components' sustainability, sustainability as absolute state that can only increase or decrease, etc.

"Subjectivity" of specification of goals link criteria for sustainability not with the farm but with the value of pre-set goals depending on outside interests (share/stake-holders, priorities of development agencies, standards of analysts, understanding of scientist). Diverse agri-business organizations have own "private" goals (profit, income, servicing members, subsistence, lobbying, group or public benefits) which rarely coincide with goals of other systems. Different type of farms (individual, family, cooperative, corporative) has unlike internal structure as goals of individual participants not coinciding with entire farm. Therefore, following question is to be answered: *sustainability for whom* in the complex social system – entrepreneurs, managers, working owners, households, hired labor, interests groups, communities, etc. Most approaches lack essential "time" aspect while sustainability has to give idea about *future*, rather than identify past/present states.

Another approach interprets sustainability as "ability (potential) of the system to maintain or improve its functions" [25; 31-32; 41]. System attributes influencing sustainability are specified (such as stability, resilience; survivability; productivity; soil, water, and air quality; energy efficiency; wildlife habitat; self-sufficiency; quality of life; social justice, social acceptance), indicators for their measurement identified and time trends evaluated. Biggest advantage of this approach is linking sustainability with system itself and with its ability to function in future. It gives operational criterion providing basis for identifying constraints and various ways for improvement. It is not complicated to quantitatively measure indicators, their presentation as index in time, and appropriate interpretation of sustainability level as decreasing, increasing, or unchanged. Since trends represent an aggregate response to several determinant that eliminate needs for aggregation.

Shortcomings are that: future state cannot be approximated by past trends, while for new structures (dominating in East Europe) it is impossible to apply. "Negative" changes in certain indicators (yield, income, water and air quality, biodiversity) could be result of "normal" processes of operation and larger systems (fluctuation of market prices, natural climate cycles, pollution by other sectors) without being related with sustainability of agri-business enterprise. It is suggested to compare enterprise indicators not in time, but with average levels in sub-sector, region, etc. However, there are cases when all structures are unsustainable (dying sectors, uncompetitive productions, "polluting" subsectors, deserted regions, economic crisis, negative externalities from other sectors/regions). It is frequently impossible to find single measure for each attribute which necessitates subjective prioritizing of multiple indicators. That approach ignores critical institutional/macro-economic dimensions, unequal goals of different organizations, comparative advantages and complementarity of alternative structures.

Sustainability of farming enterprises cannot be properly understood/assessed without analyzing their comparative production and governance potential to maintain diverse functions in specific socio-economic and natural environment – e.g. high efficiency and sustainability of small-scale

holdings for part-time employment in East Europe cannot be properly evaluated outside of household and rural economy, high efficiency of cooperatives during transition was caused by possibility to organize activities with high "assets specificity" for members in conditions of great uncertainty [2;6]. Sustainability of a particular farming enterprise is determined from its activity and managerial decisions (efficiency, ability for adaptation), and changes in external environment (market dynamics and crisis, public support and restrictions, extreme climate). Finally, there exists no enterprise (another system), which is sustainable "forever", thus assessment of "sustainability" is associated with answer to question for how long – for what period of time we are talking about?

Considering constant evolution of the features and concept of sustainability, and evolution of agrarian system, sustainability is increasingly perceived "as a process of understanding of changes and adaptation to changes" [36]. Accordingly sustainability is always specific in time, situation, and component, and characterizes potential of agricultural systems to exist and evolve through adaptation to and incorporation of changes in time and space. Incorporated internal dynamics of system also implies "end life" as particular farming enterprise is considered to be sustainable if it achieves its "expected lifespan" – e.g. if due to augmentation of income of households number of subsistence/part-time farms is decreasing while resources effectively transferred to other structures, this process should not be associated with a negative change in sustainability.

Characterization of sustainability has to be "system-oriented" while system is to be clearly specified, including

its time and spatial boundaries, components, functions, goals, and importance in hierarchy. That implies taking into account diverse functions of farming enterprise at current stage of development, its type and efficiency, and links (importance, dependency, complementarity) with sustainability of households, region, eco-system and entire sector. Sustainability approach is to allow comparative analysis of diverse farming enterprises (different type, different countries) while approaches [25; 38] associating comparability only with "continues (quantitative) rather than discrete property" rejected – discrete features ("sustainable"- "non-sustainable") are possible, and of importance for managers, interests groups, policy makers [9]. Characterization of sustainability must be predictive since it deals with future changes rather than past and only present. It should be diagnostic, and *focus on intervention* by identifying and prioritizing constraints, testing hypothesis, and permitting assessments in comprehensive way. Sustainability has to be criterion for guiding changes in policies, agri-business and consumption practices, agents' behavior, research and development, etc. It is to allow facile and rapid diagnostic, and possibility for intervention – easy to understand and practical to use by agents without evaluation to require huge costs.

Definition of sustainability of farming enterprise has to be based on "literal" meaning and perceived as a system characteristics and "ability to continue through time". It has to characterize all major aspects of activity of farming enterprise, which is to be *managerially sustainable, economically sustainable, ecologically sustainable, and socially sustainable*(Figure 1).

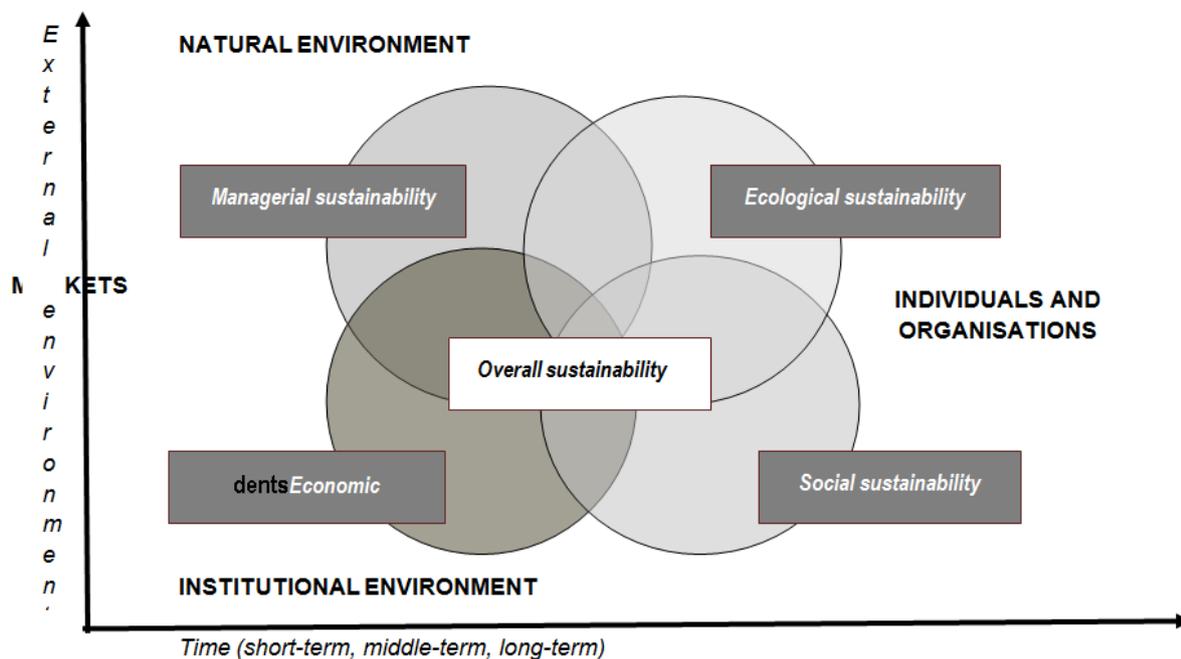


Fig. 1. Sustainability of farming enterprise

Source: Author

Farming enterprise sustainability characterizes the ability (internal potential, incentives, comparative advantages, importance, efficiency) of a particular entity (individual or family farm, agri-firm, agro-corporation, agro-cooperative, etc.) to maintain its governance, economic, ecological and social functions in a long-term. Agri-business enterprise is sustainable if: it has a good *managerial efficiency* – it is a preferable for agents (entrepreneurs, resources owners, managers, farmers, hired labor) from having the same or

greater potential for governing of activities and transactions comparing to other economic organizations; it is *economically viable* and efficient – it allows acceptable economic return on used resources and financial stability; it is *socially responsible* – it contributes toward improvement of welfare and living standards of farmers, hired labor and rural households, preservation of agrarian resources and traditions, and sustainable development of rural communities and society; it is *environmentally friendly* – its activity is

associated with conservation, recovery and improvement of natural environment (lands, waters, biodiversity, atmosphere, climate, ecosystem, animal welfare).

Depending on combination of all dimensions, sustainability of a particular enterprise could be *high, good, unsatisfactory*, or it is *unsustainable* – e.g. it may have high managerial and economic sustainability, and low ecological and social sustainability. In any case, the low/lack of sustainability in any of four aspects (pre)determines the overall level (e.g. inferior governance efficiency means low overall sustainability). Assessment has to be always made in the specific socio-economic, ecological, etc. rather than unrealistic (desirable, "normative", ideal) context [2; 6].

2. Understanding the governance

A great part of farming activity is fully governed in a "decentralized" way by *individual (private) actions* of independent agents (family farms, agri-cooperatives, agri-firms of different type, suppliers, buyers, consumers), "*visible hand of the manager*", and *market competition* ("invisible hand of market"). For instance, intra-farm distribution of land, labor, finance etc. between individual plots and productions is managed by the manager; "optimal" utilization of resources in economy is "directed" and motivated by (free)market prices movement; agents adapt production and technologies to market needs and demands; low efficiency is "punished" by insufficient profit and failure..

When property rights are not well defined and enforced, and transaction costs high, then market governance does not achieve maximum efficiency (output, welfare) and sustainability [14]. Effective governance of farming activity

usually necessitates concerted (collective)actions of farmers as it is in the case of efficient marketing of output, sustainable use of common pasture, limited water supply, protection of local biodiversity, etc. Agrarian activity is also associated with significant positive and/or negative externalities, and production of multiple collective, quasi-public and public "goods and bads". All these require special governance of relations (cooperation, conflict resolution, costs recovery) between different farms as well as farmers and non-farmers [5]. Minimization of negative effects is achieved through effective collective organization (partnership, cooperative, association, codes of behavior) [24] or "public intervention" (regulation, control, and sanctions by authority) [35]. Governance of modern farming sustainability more frequently requires "management" of collective actions of agents with diverse interests, power relations, awareness, capabilities etc. in large geographical, sectoral, and temporal scales, and integral management of social, economic, and natural resources at regional, national and transnational scale [5]. That is associated with the needs for "balanced" development of rural areas and communities, and management" of natural resources and risks, demanding effective *regional, nationwide, international, and global management, coordination and control*.

The system of governance of farming enterprises' sustainability includes following *distinct* mechanisms and modes, managing behavior and actions of individual agents, and eventually (pre)determine the level of sustainability (Figure 2):

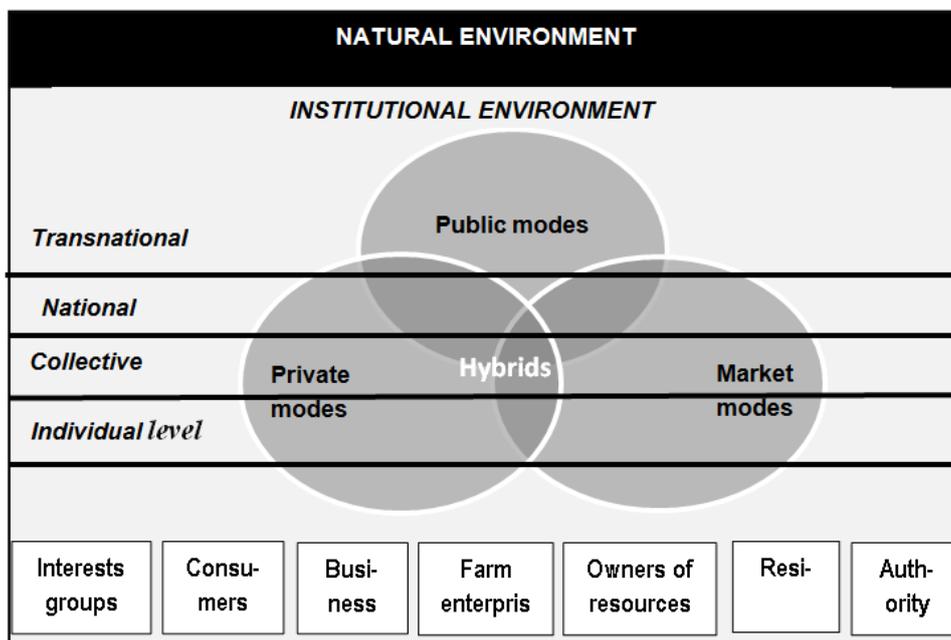


Fig. 2. Modes of governance of farming enterprise sustainability

Source: Author

First, *institutional environment* ("rules of the game") – distribution of rights and obligations between individuals, groups, and generations, and system(s) of enforcement of rights and rules [33]. Spectrum of rights comprises material assets, natural resources, intangibles, activities, working conditions, remuneration, social protection, clean environment, food and environmental security, intra- and inter-generational justice, etc. Enforcement of rights and rules is carried out by state, community pressure, trust, reputation,

private modes, or self-enforced. A part of rights and obligations is constituted by formal laws, official regulations, standards, court decisions, etc. There are important *informal rights and rules* determined by tradition, culture, religion, ideology, ethical and moral norms, etc. In East Europe many of formal rights and rules 'do not work' well and informal "rules of the game" predetermine ("govern") agents behavior.

Institutional development is initiated by public (state, community) authority, international actions (agreements,

assistance, pressure), and private and collective actions. It is associated with modernization and/or redistribution of existing rights; and evolution of new rights and novel (private, public, hybrid) institutions for enforcement. EU membership of East-European countries is associated with adaptation of *Acquis Communautaire* and better enforcement (outside monitoring, and sanction with non-compliance by EU). Many institutional innovations are results of pressure and initiatives of interests groups (consumer and eco-organizations). Institutions and institutional modernization create unequal incentives, restrictions, costs, and impacts for agri-business sustainability – e.g. if rights on natural resources are not well-defined/enforced, that leads to inefficient organization and exploration, constant conflicts among parties, and low economic, social and ecological sustainability. There is no perfect system of preset "outside" rules/restrictions that manage effectively entire activity/behavior of individuals in all possible and quite specific circumstances.

Second, *private modes* ("private or collective order") – diverse private initiatives and decisions of individual agents (managers, resources owners), and special contractual and organizational arrangements (long-term supply and marketing contracts, voluntary eco-actions, voluntary or obligatory codes of behavior, partnerships, cooperatives, brands, trademarks, labels). Agents take advantage of economic and other opportunities, and deal with institutional and market deficiencies through selection/designing beneficial private forms/rules for governing relations and exchanges. Most agri-business activity is managed by voluntary initiatives, private negotiations, "visible hand of manager", or collective decision-making. Nevertheless, there are many examples of private sector deficiency ("failures") in governing of socially desirable activity (eco-protection, preservation of traditions, rural development).

Third, *market modes* ("invisible hand of market") – decentralized initiatives governed by decisions of managers, market price movements and competition (spotlight exchange of resources, products, services; classical purchase, lease, sell contract; trade with quality. products and origins, ecosystem services). Agents use (adapt to) markets, profiting from specialization of activity and exchange, while their decentralized actions "direct"/"correct" overall distribution of resources between activities, sectors, regions, countries. There are many examples for lack of incentives and choice, unwanted exchange, and unsustainable development (missing markets, monopoly/power relations, positive/negative externalities, income disproportion).

Forth, *public modes* ("public order") – various public interventions in market and private sector (guidance, regulation, assistance, taxation, funding, provision, property right modernization).

Importance of public (local, national, transnational) governance increases along with intensification of activity/exchange, and growing interdependence of socio-economic and eco-activities. Often effective management of certain activity through market mechanisms and/or private negotiation would take long time, be very costly, could not reach socially desirable scale, or be impossible. Thus centralized intervention could achieve willing state faster, cheaper or more efficiently. There are numerous "bad" public involvements (inaction, wrong intervention, over-regulation, mismanagement, corruption) leading to significant problems of development.

Fifth, *hybrid forms* – some combination of above three (public-private partnership, public licensing and inspection).

In a long run the system of governance "put in place" (pre)determine the type of socio-economic development and the level of farming enterprises' sustainability [2, 6].

3. Assessment of governance mechanisms and forms

Governance "needs" are associated with necessity for building adequate system for stimulation, coordinating, directing, and harmonizing behavior/actions of agents, maintaining economic, social, and ecological functions of farming enterprises, reviling problems and risks associated with sustainable development [2, 6].

Certain mechanisms and modes exist in assessment moment, since they are a part of institutional environment or result of market, private and public order development. It is to be analyzed to what extent managerial needs associated with diverse aspects of sustainability are "satisfied" by existing governance system. Analysis is to embrace formal and informal ("*de-facto*" rather than "*de-jure*") rights and rules, market, private, collective and public forms. Assessment is to be made on extent institutions creates incentives, restrictions and costs for individuals and society for achieving sustainability, intensifying exchange and cooperation between agents, increasing productivity of resource utilization, inducing private and collective initiatives, developing new rights, decreasing divergence between social groups and regions, responding to socio-economic and ecological challenges, conflicts and risks.

Next, various market forms of governance are to be specified, and extent in which "free" market contributes to coordination and stimulation of farming activity, and effective utilization of resources analyzed. Market governance is effective for immense portion of activity/transactions in agribusiness since it is characterized with many participants, standard products, "free" competition and price formation, high frequency of transactions and low specificity of assets [2]. There are numerous "failures" of market in governing of critical activities like innovations, long-term investments, infrastructural development, eco-protection, which are associated with high uncertainty/risk, low frequency and appropriability, great specificity, insufficient size, which have to be identified.

After that it is to be analyzed how individual agents take advantage of economic, market, institutional etc. opportunities, and overcome existing restrictions through choice/design of new private or collective modes (rules, organization) for governing activity and relationships. Agrarian sector is rich of diverse private organizations of different type based on contract agreements, quasi or complete integration in land, labor, finance, inputs supply, marketing of products, etc. "Rational" (private) agents usually use such forms which are efficient for the specific institutional, economic and natural environment. Outcome of such private optimization not always is the most efficient allocation of resources in society and maximum possible sustainability [2, 6].

There are many instances for private sector "failure" in governing of socially desirable farming (economic, social, ecological) activity, which are to be identified and analyzed.

After that, analysis is to be made on diverse forms of public "involvement" in farming management through provision of information and training, stimulation and (co)funding of voluntary actions, imposition of obligatory order and sanctions for non-compliance, direct organization of activities (state enterprise, scientific research, monitoring). Often there are cases for public "failure" (inactions, wrong interventions, over-regulations, mismanagement, corruption) leading to significant problems which have to be identified.

Some of agro-management modes are integral affecting more aspects of sustainability. Besides, improvement of one aspect is often associated with negative effects for others. Thus, overall efficiency of a particular form, "package" of instruments, or system as a whole is to be evaluated. All existing and other feasible forms are to be identified, and assessed as well as their complementarities (mu-

tual/multiplication effect) and contradictions specified. Assessment of governance system is a complex, multi-facet, and interdisciplinary process, requiring profound knowledge of advantages and disadvantages of diverse modes, and in-detail characterization of efficiency in the specific conditions of each agent, ecosystem, subsector, region. Often, quantitative indicators are less applicable, and qualitative (Discrete structural) analysis [2, 6] of comparative advantages, disadvantages, and net benefits is to be applied [42; 5].

Identification and assessment of the specific forms and mechanisms of governance of farming enterprises sustainability at farm, ecosystem, regional and sectoral scales is object of a separate microeconomic study. Uncomplete list of major mechanisms and forms of governance of farming enterprise sustainability during EU integration in Bulgaria are summarized on Table 1 (Table 1).

Table 1. Mechanisms and modes of governance of farming enterprise sustainability in Bulgaria during EU CAP implementation

Institutions	Private modes	Market modes	Public modes
Well-defined and better enforcement rights and rules; "Concept of sustainability"; EU Community Acquis; Collective institutions; Monitoring and sanctions from EU	Unregistered farms; Firms; Cooperative farms; Specialized and multipurpose cooperatives; Long-term inputs supply and marketing contracts; NGOs; Codes for professional behavior; of behavior; Diversification into processing, services and marketing; Credit cooperatives; Water User Associations; Professional producers organizations; Vertically integrated modes; Eco-associations, Eco and other labels; Protected origins and brands	Direct marketing; Wholesale, terminal and exchange markets trades; Trade with formal brands, origins, organic products, and ecosystem services; E-commerce with agrarian products; Free (monopoly) agricultural water pricing; Insurance against natural disasters	Implementation of EU regulations and standards; EU Operational Programs; National programs for eco-management (lands, waters, waste, emissions, etc.); National Program for Agrarian and Rural Development; Direct EU payments; National tops-ups; Export subsidies; Milk quotas; Agricultural Advisory Service; Regional programs for agrarian development; System of social, economic and eco-monitoring, analysis and control; Protected zones (NATURA); Compensations for natural disasters; Mandatory training for farmers; Income and garbage taxation; Support to trans-border initiatives; Social security and assistance system; State companies for research, maintenance of eco-systems, etc.; State promotions, fairs etc. for farm produces and services

Source: Author

Analysis of governance system is to be done for *overall* and *private* (managerial, economic, social, ecological) sustainability. Some forms of governance are relevant only for one aspect of sustainability, while others are *integral* (two or more of them). In case two or more forms are complementary and impact sustainability jointly, they have to be evaluated together as "package".

According to the specific objective analysis of the system of governance of sustainability could be made at different levels (Figure 2): *individual* – individual farming enterprise; *collective* – complex farming enterprise (cooperative, partnership, corporation), special organization (inputs supply, group eco-activity.); ecosystem, region, etc.; *national* – certain subsector, entire sector; *trans-national* – regional, European, global scale. For each level relevant forms and mechanisms of governance are to be identified and analyzed. Effects and costs at lower and upper management levels are not simple sums of the composite elements. Thus multiplication, adverse, and complementary effects are to be identified and evaluated.

Efficiency of the governance represents specific effectiveness in relations to extent of realization of practically (managerially, technologically, socially, economically) possible level of sustainability, and minimization the overall costs. Assessment is to be made on *overall efficiency* and *partial efficiency* – first one including system as a whole, while the latter its components/instrument.

According to the objectives and period (past, current, future) of analysis, and available information, assessment of efficiency is for *potential efficiency* or *actual efficiency*.

Former indicate potential of the system/mode to change agents' behavior, action or impacts for achieving sustainability, while later *ultimate result* (effect, impact, costs) in relation to sustainability. Efficiency of governance system eventually finds expression in certain level (dynamics) of managerial, social, economic and ecological sustainability of agri-business enterprises. Accordingly *high or increasing sustainability means high efficiency of governance system, and vice versa*.

Absolute and comparative efficiency of the governance is to be also evaluated. The former represents effectiveness in relation to state before introduction of a particular form or improvement of the system – e.g. impacts of direct EU subsidies or NPARD measures on agri-business enterprises sustainability, "green payments" on eco-behavior and ecological sustainability, etc. *If sustainability as a result of new system of governance is improving or further deterioration is prevented, then the form is (more) efficient, and vice versa*.

Comparative efficiency shows effectiveness (effects, costs) of a particular form or the system in relation to another alternative form/system – e.g. alternatives of public interventions like direct income support based on product subsidies, decoupled subsidies, preferential taxes and crediting, price regulation, trade measures, indirect support. Assessment is to find if at all is feasible alternative system of management which is able to increase sustainability level or achieve certain level with less overall (private, public) costs. That approach is also used for comparing two or more feasible forms in order to select most efficient one(s).

It is to be distinguished and made assessments on the *short-term*, the *mid-term* and the *long-term efficiency* of the system of governance of farming enterprise sustainability. That is conditioned by the fact that the needs and conditions of governance change in time, while analysis is made in a particular moment in time or for certain period of time. Taking into account of "time" factor is done through evaluating of: *short-term efficiency* – usually up to 5 years or current programming period; *mid-term efficiency* – a relatively longer period of time (e.g. 5-10 years). Majority of European farmers are in advanced age and they are going to retire in coming years, that is why it is appropriate to use 8-12 years; *long-term efficiency* – in a foreseeable longer-term 12-15 and more years, which is to be greatly related with the conservation and transfer of agrarian resources into next generation(s). In addition *historical* (retrospective) assessment could be undertaken for the level and dynamics during certain "past" period of evolution of farming enterprises of particular type, region, subsector, etc.

When the effects, costs and efficiency of individual components of governance are evaluated it is to be taken into account their different temporal scale, jointness, complementarity, controversies, temporal and social apartness, and potential for development in the conditions of constantly changing socio-economic and natural environment. For instance, many assessments of efficiency usually include only direct costs and benefits, and ignore significant indirect costs and benefits. Besides, when evaluating governing forms often it is not fully accounted for significant private and social *transaction costs*, while they are critical for adequate assessment of efficiency [2, 6].

Two types of transaction costs have to be distinguished: *long-term* (for design and introduction of a particular governing mode) and *current* (for using a particular form by different agents) [2, 5].

Therefore, assessment of the costs of governance is to include: purely "*production*" costs and investment, which are associated with the technology of agrarian production,

social development and natural conservation; and *transaction costs*, which are associated with the governance of relations with other agents – costs of finding labor, acquiring information, negotiation, organizational development, registration and protection of rights and products, controlling opportunism, conflicts resolution, adaptation to market and institutional environment, etc.

The evaluation of public forms is to include the overall costs comprising: direct program costs of tax payers and/or assistance agency (program management, funding private/collective activity, control, reporting, disputing implementation), transacting costs (coordination, stimulation, controlling opportunisms and mismanagement) of bureaucracy, private/collective costs for individuals' participation in public modes (adaptation, information, negotiation, paper works, payments of fees, bribes), costs for community control and reorganization (modernization, liquidation) of public forms, and (opportunity) "costs" of public inaction (negative effects on economy, human and animal health, lost biodiversity).

4. Framework for assessment sustainability level of farming enterprises

Efficiency of the specific system of governance of sustainability eventually finds expression in a certain level and dynamics of overall, and managerial, social, economic and ecological sustainability of farming enterprises. Accordingly *high or increasing farming enterprise's sustainability means a high efficiency of the system of governance, and vice versa*.

The hierarchical levels, which facilitate formulation of the system for assessing sustainability of farming enterprises include well determined and selected *principles, criteria, indicators* and *reference values* (Figure 3).

Principles are the highest hierarchical level associated with the multiple functions of farming enterprise. They are universal and represent the states of sustainability, which are to be achieved in four main aspects – managerial, economic, social and ecological – e.g. a Principle "the soil fertility is maintained or improved" in the Ecological aspect.

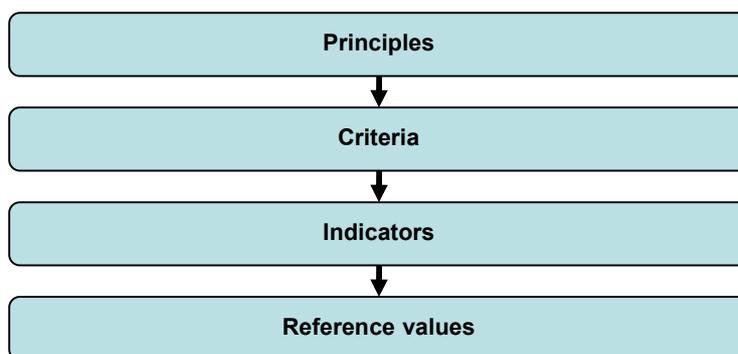


Fig. 3. Hierarchical levels of system for assessing sustainability of farming enterprise

Source: adapted by author from Sauvenier et al.

Criteria are more precise from the principles and easily linked with sustainability indicators. They represent a resulting state of evaluated enterprise when the relevant principle is realized – e.g. a Criteria "soil erosion is minimized" for the Principle "the soil fertility is maintained or improved".

Indicators are quantitative and qualitative variables of different type (behavior, activity, input, effect, impact, etc.), which can be assessed in the specific conditions of evaluated enterprise, and allows measuring compliance with a particular criteria. The set of indicators is to provide a representative picture for farm sustainability in all aspects –

e.g. Indicator "extent of application of good agro-technics and crop rotation" for Criteria "soil erosion is minimized".

Reference value is desirable levels (absolute, relative, qualitative, etc.) for each indicator for specific conditions of evaluated enterprise. They are determined by science, experimentation, statistical, legislative or other ways, and assist sustainability assessment and give guidance for achieving (maintaining, improving) sustainability. As a Reference value it could be used: *specific rule or standard* (application of good agricultural and ecological practices; labor safety standards; standards for animal welfare); *formal restriction* (norm for acceptable pollution of waters, soils and air; ecological limit for Nitrate pollution of lands and

waters); *norm for comparison*(optimum rate for chemical fertilization, pesticides application, water irrigation; extent of conservation of traditions); *minimum or maximum requirement* (lack of unsolvable problems for supply of needed agricultural land, labor,; optimum extend of farm's liability); *limits of variation* (number of livestock on a unit of pasture land; diversity of population of wild birds and animals); *average values for similar farms*(average productivity and profitability of the farms in the region or subsector; diversity of cultural plants); *trends* (level of income and welfare of rural households, emissions of greenhouse gasses from the farms; level of diversity of insects and plants); *personal or collective preferences* (satisfaction from farming activity, preservation of traditions, varieties and technologies).

Most Reference values show the level, which (presume to) guarantee a long-term sustainability. Depending on what extent it is achieved or overcome the enterprise could be with a *high, good, or low sustainability, or unsustainable* – e.g. farms with higher than the average for sector profit-

ability or lower soils' acidity are more sustainable then others, while with inferior or greater values are with lower economic or ecological sustainability or (economically, ecologically) unsustainable. Another part characterizes a condition for sustainability, deviation of which indicates the state of insufficient sustainability or unsustainability – farms not complying with standards for labor (working, safety) conditions, animal welfare, application of banned chemicals and technologies, producing forbidden products (cannabis), etc.

Content and importance of the principles, criteria, indicators and reference values are formulated and selected by the leading experts on farming enterprise sustainability. They have to be permanently updated for the specific conditions of evaluated enterprise according to development of science, measurement and monitoring methods, available information, industry standards, social norms, etc. An example for a system for assessing sustainability level of farm enterprises in the specific socio-economic and natural conditions in Bulgaria is presented on Table 2.

Table 2. Principles, criteria, indicators and reference values for assessing sustainability of farming enterprises in Bulgaria

Principles	Criteria	Indicators	Reference values
Managerial aspect			
Acceptable governance efficiency	Efficiency for governing of activity in relation to other feasible organization	Comparative efficiency for supply and management of workforce	Similar to alternative organization
		Comparative efficiency for supply and management of natural resources	Similar to alternative organization
		Comparative efficiency for supply and management of material inputs	Similar to alternative organization
		Comparative efficiency for supply and management of innovations	Similar to alternative organization
		Comparative efficiency for marketing of products	Similar to alternative organization
		Comparative efficiency for supply and management of finance	Similar to alternative organization
Sufficient adaptability	Farm adaptability	Level of adaptability to market environment	Good
		Level of adaptability to institutional environment	Good
		Level of adaptability to natural environment	Good
Economic aspect			
High economic efficiency	Economic efficiency of resource utilization	Level of labor productivity	Similar to the average for the sector
		Land productivity	Similar to the average for the sector
		Livestock productivity	Similar to the average for the sector
	Economic efficiency of activity	Profitability of production	Similar to the average for the sector
		Farm Income	Acceptable by the owner
Good financial stability	Financial capability	Return on own capital	Average for the sector
		Overall Liquidity	Average for the sector
		Financial autonomy	Average for the sector
Social aspect			
Good social efficiency for farmer and farm households	Farmers welfare	Income per a member of farm household	Similar to other sectors in the region
		Satisfaction of activity	Acceptable for the farmer
	Working conditions	Compliance with formal requirements for working conditions	Standards for working conditions in the sector
Acceptable social efficiency for not farmers	Preservation of rural communities	The extent farm contributes to preservation of rural communities	Overall actual contribution
	Preservation of traditions	The extent farm contributes to preservation of traditions	Overall actual contribution
Ecological aspect			
Protection of agricultural lands	Chemical quality of soils	Soil organic content	Similar to the typical for the region
		Soil acidity	Similar to the average for the region
		Soil soltification	Similar to the average for the region
	Soil erosion	Extent of wind erosion	Similar to the typical for the region
		Extent of water erosion	Similar to the typical for the region
	Agro-technique	Crop rotation	Scientifically recommended for the region
		Number of livestock per ha	Within limits of acceptable number
		Rate of N fertilization	Within limits of acceptable amount
		Rate of K fertilization	Within limits of acceptable amount
		Rate of P fertilization	Within limits of acceptable amount
	Extent of application of Good Agricultural Practices	Approved rules	
	Waste management	Manure storage type	Rules for manure storage
	Water irrigation	Irrigation rate	Scientifically recommended rate for the region

Table 2. Continued

Principles	Criteria	Indicators	Reference values
Protection of waters	Quality of surface waters	Nitrate content in surface waters	Similar to the average for the region
		Pesticide content in surface waters	Similar to the average for the region
	Quality of ground waters	Nitrate content in ground waters	Similar to the average for the region
		Pesticide content in ground waters	Similar to the average for the region
Protection of air	Air quality	Extent of air pollution	Acceptance from rural community
Protection of biodiversity	Variety of cultural species	Number of cultural species	Similar to the average for the region
	Variety of wild species	Number of wild species	Similar to the average for the region
Animal welfare	Norms for animal welfare	Extent of compliance with animal welfare norm	Standards for animal breeding
Preservation of ecosystem services	Quality of ecosystem service	Extent of preservation of ecosystem services	Acceptance from communities

Source: Author

In management practice and design often it is necessary to assess governance efficiency through potential efficiency allowing timely assessment, detecting low "efficiency" and possibility for augmentation, and undertaking measures for improvement. That is a consequence to that there is not or it is too expensive to collect needed information for some/all elements, or impossible to determine quantitatively contribution of a certain form to final out-

come. A system of appropriate indicators for assessing potential of individual modes for effective managerial, economically viable, socially responsible, and ecologically sustainable behavior/activities suggested on Table 3. It has to be bearded in mind that improvement of activity not always is associated with progressive change in sustainability level due to low actual efficiency or impact of other factors [7].

Table 3. Indicators for assessing potential efficiency of governance of farming enterprise sustainability

Managerial sustainability	Economic sustainability	Social sustainability	Ecological sustainability
Lack of serious difficulties for supply of needed workforce; Lack of serious difficulties for supply of needed land and natural resources; Lack of serious difficulties for supply of needed material inputs; Lack of serious difficulties for supply of needed innovation and know-how; Lack of serious difficulties for supply of needed finance; Lack of serious difficulties for marketing of products and services	Share of marketed output; Innovation activity; Extent of implementation of required agro-technique operations; Share of private investment; Participation in public support programs; Amount of public subsidies; Amount of external foreign investment; Implementation of systems for quality control; Long-term inputs supply contract; Long-term contract for marketing of output; Membership in farm organization; Training of personnel; Number of protected and used origins, brand names etc.	Participation in social initiatives of farms and farmers organizations; Extent of implementation of working condition standards; Extent of diversification of activity; Participation of women in management of farms; Number of hired labor; Number of involvement in collective initiatives; Membership in community and interests groups organizations; Dynamics of labor remuneration; Extent of social assurance; Amount of costs for social development	Implementation of efficient crop rotation; Implementation of Good Agricultural and Ecological Practices; Introduction of professional codes of eco-behavior and standards; Transition to eco or organic production; Introduced eco-products and services; Amount of costs for environmental protection; Amount and coverage of signed public eco-contracts; Membership in eco-cooperatives or associations; Number and coverage of agro-ecological payments; Amount and share of uncultivated farmland; Number of type of animals per unit farmland; Amount of chemicals for crop protection total and per unit of utilized farmland

Source: the author

Conclusion. Analysis of the system and efficiency of governance of farming enterprise's sustainability are extremely important both in academic, and practical (policy, farm and business forwarded) respects. In many countries such analyses are far behind from modern developments in theory, and needs and evolution of practice. Suggested framework for understanding, governance and assessing sustainability of farming enterprise is to be further discussed and improved. After that it could be used for identification and assessing specific mechanisms and modes of governance of sustainability of farming enterprises of different type, particular subsector, ecosystems, regions of a country, and countries. Such analysis necessitate collecting additional macro and microeconomic data for agent's preferences and behavior, activities and efficiency of farming enterprises, impacts on social, commu-

nity and natural environment, etc. The ultimate goal of such studies is to improve management and strategies of farming enterprises, and public policies and forms of public intervention in agrarian sector.

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СТІЙКІСТЬ ФЕРМЕРСЬКОГО ПІДПРИЄМСТВА – РОЗУМІННЯ, УПРАВЛІННЯ, ОЦІНКА

Ця стаття дає відповіді на наступні важливі питання: "що таке стійкість сільськогосподарських підприємств" як індивідуальних, так і сімейних ферм, агро-фірм різного типу, агро-кооперативів і т.д., "які механізми і способи контролю системи фермерського господарства", "як оцінити рівень стійкості підприємства в сільському господарстві і ефективності управління". По-перше, еволюція "концепцій" стійкості сільського господарства обговорена і більш адекватно визначено яка здатність конкретного підприємства для підтримки своїх управлінських, економічних, соціальних і екологічних функцій в довгостроковій перспективі. По-друге, інституційні, ринкові, приватні, громадські та гібридні механізми і способи управління стійкістю розглянуті. По-третє, запропоновані специфічні для умов Східно-європейського сільського господарства основи для оцінки рівня стійкості підприємства і ефективності його управління. Кінцева мета полягає в тому, щоб допомогти керівництву сільськогосподарських підприємств у формуванні стратегій, а також вдосконалити державної політики та форм державного втручання в аграрному секторі.

Ключові слова: фермерське господарство, стійкість, управління, оцінка, управлінські, економічні, соціальні, екологічні аспекти.

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УСТОЙЧИВОСТЬ ФЕРМЕРСКОГО ПРЕДПРИЯТИЯ – ПОНИМАНИЕ, УПРАВЛЕНИЕ, ОЦЕНКА

Эта статья дает ответы на следующие важные вопросы: "что такое устойчивость сельскохозяйственных предприятий" как индивидуальных, так и семейных ферм, агро-компаний разного типа, агро-кооперативов и т.д., "какие механизмы и способы контроля системы фермерского хозяйства", "как оценить уровень устойчивости предприятия в сельском хозяйстве и эффективности управления". Во-первых, эволюция "концепции" устойчивости сельского хозяйства обсуждена и более адекватно определены способности конкретного предприятия для поддержки своих управленческих, экономических, социальных и экологических функций в долгосрочной перспективе. Во-вторых, институциональные, рыночные, частные, общественные и гибридные механизмы и способы управления устойчивостью рассмотрены. В-третьих, предложены специфические для условий Восточно-европейского сельского хозяйства основы для оценки уровня устойчивости предприятия и эффективности его управления. Конечная цель заключается в том, чтобы помочь руководству сельхозпредприятий в формировании стратегии, а также совершенствовании государственной политики и форм государственного вмешательства в аграрном секторе.

Ключевые слова: фермерское хозяйство, устойчивость, управление, оценка, управленческие, экономические, социальные, экологические аспекты.