State Governance Tools for Environmental Management and Agrarian Business in the Digital Age

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ABSTRACT

Because of the acceleration of the development of various types of business in the era of global digitalization, the authors propose to pay attention to the regulation of environmental management and agricultural business, as well as to offer tools for state regulation of this aspect. To do this, the authors analyzed the impact of the digital era on various aspects, studied foreign experience in reducing the negative environmental impact of digital technologies. The authors analyzed the current state of the domestic agricultural business and gave forecasts for its development. All this allowed the authors to develop tools for state management of environmental management and agricultural business in the digital era, namely, the main tools and ways to reduce the negative impact of the agricultural business on environmental management using ICT, as well as the main steps of the state program for the rational use of natural resources in the region.

Keywords: Agrarian Business, Digital Age, Environmental Management, State Governance Tools.

JEL Classification: G18, Q14, M21

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1. Introduction.

The main features of the information-digital economy are its global nature and the operation of intangible goods: ideas, information and relationships, network principles in the coordination of markets and society. In the digital economy, the world of subtle technologies controls machines; the virtual world changes the behaviour of the real (Galkin et al., 2019; Tkachenko et al., 2019; Shpak et al., 2020). It is these features that create new types of markets and societies (Boiko et al., 2019). The technological foundation of the digital economy is created based on the discoveries of the fourth industrial revolution. Among them are artificial intelligence, distributed data, the Internet of things and for things, blockchain, mining centres, big data and cloud storage, digital platforms, 3D and then 4D printing (Basiurkina et al., 2020).

The digital economy growing based on the information economy can be defined as its continuation in a new quality after a technological breakthrough as a result of the fourth industrial revolution, which is characterized by a nonlinear (exponential) rate of innovation spread, the depth and scale of penetration of digital technologies, the power of influence of digital complexes and systems. Their use changes a lot in the way of thinking and motivating decisions, i.e. not only in productivity but also in economic behaviour, in the principles of organization and operation of companies and the entire economic mechanism (Dzwigol & Dzwigol-Barosz, 2020).

Digital technologies play a critical role in achieving a long-term balance between the technosphere and the natural environment, which is essential for sustainable development (Shpak et al., 2019).

In an innovative economy, business is continually changing under the influence of the political, legal, economic, technological and cultural environment, which becomes a prerequisite for the emergence or transformation of forms of entrepreneurship (Halkiv et al., 2020). At the current level of internationalization of the economy, the integration of economic agents already goes beyond the traditional forms of international business, namely foreign trade, foreign investment, licensing and joint ventures (Mura & Gašparíková, 2010). New are considered to be international networking, engineering, outsourcing, crowdsourcing, crowdfunding, etc., which use in their activities not only multinational companies as significant players in the global economy but also small firms and companies. Such changes make it possible to introduce the latest forms of entrepreneurship in rural areas (Trusova et al., 2019). In the context of European integration processes, decentralization of management and finding ways to diversify the agricultural economy, identifying mechanisms for the development of new forms of international business in rural areas of Ukraine becomes especially important. Global economic integration for the agrarian sector is manifested in increasing the openness of agri-food markets by ensuring the free movement of agricultural products, works and services. Accordingly, European integration has created additional opportunities for the development of agribusiness as a fundamental sector of rural areas and the use of experience in the effectiveness of rural development tools, but on the other hand, exacerbated their problems, as the competitiveness of agribusiness is relatively low compared to European products (Tekin, 2013; Czyżewski et al., 2019). Rural areas face the need to diversify their economy, which is based on the relocation of available resources to new types of agricultural and non-agricultural activities and helps to create opportunities to improve living standards in rural areas. The implementation of the strategy of diversification in rural areas of Ukraine is slow, which is explained by the peculiarities of the rural mentality, the way of life of peasants, insufficient funding of local budgets, technological backwardness, etc. (Styskal et al., 2016; Shynkaruk et al., 2020).

However, with the development of agribusiness, the negative impact on nature, resources, etc. increases (Mura & Ključnikov, 2018), so the state needs to look for effective mechanisms to restore the balance between nature management and agribusiness in the digital age (Kvaterniuk et al., 2017; Mitryasova, 2017; Kwilinski et al., 2020; Prokopenko et al., 2020).

2. Agrarian business in Ukraine.

One of the most critical problems of the domestic economy is the development of a mechanism for the revival of agribusiness. There are many reasons for the decline of the Ukrainian countryside. They lie in the economic, as well as institutional and psychological planes: on the one hand, the state has only formed the legal basis for rural development, agricultural business and has provided little implementation in financial and institutional aspects, on the other – fragile public position of the rural population, low level of self-organization and the psychological stereotype of thinking that the state itself will do everything for their well-being.

Table 1. Economic accounts of agriculture (production account and income account), in actual prices; million hryvnias

EAA code ¹	Types/groups of products/activities	2015	2016	2017	2018	2019 ²
01	Cereals	163856	214155	226918	296578	288400
02	Technical crops	131191	170627	173845	207752	189748
03	Fodder crops	7268	8015	8562	9735	9087
04	Vegetable crops	33917	31883	33446	35700	45428
05	Potato	41095	41862	53515	53252	63698
06	Fruits, berries, grapes	18390	18262	23741	23547	24769
09	Other crop products	1902	2323	2608	2662	2821
10	Crop production (01 ÷ 09)	397619	487127	522635	629226	623951
11	Livestock (farm animals)	69056	70527	87933	106005	108451
12	Livestock products	65582	67931	84327	94930	92539
13	Livestock production (11 + 12)	134638	138458	172260	200935	200990
14	Production of agricultural products (10 + 13)	532257	625585	694895	830161	824941
15	Production of agricultural services	8256	8455	8998	12764	13097
16	Production of agricultural products (14 + 15)	540513	634040	703893	842925	838038
17	Non-agricultural secondary activities (integral)	3693	3751	3899	4662	4729
18	Agricultural output (16 + 17)	544206	637791	707792	847587	842767
19	Intermediate consumption	311838	367396	414115	499916	498519
20	Gross value added (18-19)	232368	270395	293677	347671	344248
21	Consumption of fixed capital	14010	16315	23162	29369	...
22	Net value added (20-21)	218358	254080	270515	318302	...
23	Remuneration of employees	34038	39731	52810	71483	...
24	Other taxes on production	3078	1934	2677	2862	...
25	Other subsidies on production	1732	1676	5841	3051	...
26	Factor income (22-24 + 25)	217012	253822	273679	318491	...
27	Net current income/mixed-income (22-24-23+25)	182974	214091	220869	247008	...

¹Indicators by types/groups of products/activities are formed following the codes of economic accounts of agriculture (EAA).

²Preliminary data.

Source: Research findings

Over the last 10 years, there has been a growing trend in Factor Income and Net Current Income (Fig. 1).

Figure 1. Dynamics and forecast of Factor income and net current income in the agrarian business, 2015-2019,

Source: Research findings

However, the forecast shows that a recession is expected with constant trends.

Studies of agricultural business development have shown the most acute problems (Fig. 2).

Figure 2. The most acute problems of agricultural business

PROBLEMS OF AGRICULTURAL BUSINESS		
lack of motivation to work	labour migration	decline of social structure
deepening demographic crisis		low efficiency of agrarian business
extinction of villages	imperfect structure of economic activities within rural areas	
low level of income of the rural population		unemployment
insecurity of rural residents with production and social infrastructure		poverty

Source: Research findings

Therefore, it is necessary to study the experience of agrarian business, in particular, rural areas in developed countries.

3. Research of foreign experience.

We believe that the most suitable and promising for Ukraine is the European model because it provides for the implementation of rural development policy, which is accompanied and supplemented by agricultural policy and policy to support the profitability of agricultural production. European policy has evolved as part of the development of the Common Agricultural Policy (CAP) from a policy addressing the structural problems of the agricultural sector to a policy focused on the multifunctionality of agribusiness and, in particular, the challenges facing rural development (Buckwell et al., 2019).

The first steps in shaping the policy of agricultural business development were measures to stimulate investment in agriculture and declining sectors. Support for processing and marketing is designed to integrate all components of the production chain from production to sale and contribute to the further improvement of agricultural structures and the competitiveness of the raw materials sector. The policy of stimulating the development of agriculture in the EU countries is aimed at ensuring high performance in agricultural production, socio-economic processes, the intensification of rural entrepreneurship (Tekin, 2013). The EU's common agricultural policy has significant benefits

for European farmers. We are talking about the allocation of subsidies from the multibillion-dollar budget of the European Union to support producers. In cases of drought, floods and other natural phenomena, losses are reimbursed from the funds of agricultural insurance credit funds. To assist farms in case of financial difficulties in the EU, there are special funds: the European Fund for Social Development, the European Social Fund, the European Equalization and Guarantee Fund. Direct payments to farmers are accrued according to mandatory and selective schemes. The basic scheme provides for equal payments per 1 hectare, regardless of the crops grown or livestock. Among the methods that have a positive impact on the climate and the environment are the so-called "green payments", which account for 30% of the national distribution of funds. Special subsidies are also provided to young farmers up to 40 years of age who started agricultural activity not earlier than 5 years before applying for the support (Feng, 2007; Nelson et al., 2019; Diakoulakis et al., 2020). European rural development policy helps EU rural areas to address a wide range of economic, environmental and social issues. This is provided for in the main basic principles of the CAP of the European Union (Fig. 3).

Figure 3. The basic principles of the EU's Common Agrarian Policy

Source: Research findings

However, the development of agribusiness leads to environmental pollution, and therefore the state needs to look for tools to manage nature and agribusiness in the digital age.

4. Results and discussion.

The mechanism of state management of nature management involves a comprehensive combination and use of administrative and legal, economic, financial and credit, socio-political, moral and psychological and other tools and incentives. The mechanism of nature management and ecological safety is a holistic set of management methods and tools, by means of which nature management processes are organized, regulated and coordinated in combination with production and socio-economic processes, the proper level of ecological safety of production and consumption is provided public good.

The main tools of state regulation the environmental management of natural capital conservation are shown in Fig. 4. To reduce the negative impact of agrarian business on environmental management is necessary to introduce information and computer technologies (ICT) (Fig. 4).

The formation of environmental management should be based on the basic principle that ecological security of the state has become an essential element and component of national security. The provisions that develop this principle have been enshrined in the Constitution of Ukraine, several other laws and bylaws. The essence of state nature management is determined by the ecological policy of the state, which aims to preserve safe for living and inanimate environment, to protect life

and health from the adverse effects of environmental pollution, to achieve harmonious interaction of society and nature, protection, rational use and reproduction of natural resources.

Figure 4. The main ways to reduce the negative impact of agricultural business on environmental management using ICT

Source: Research findings

The agricultural business has significant prospects for development, especially with the involvement of foreign partners and/or their capital. This type of cooperation can cause the most significant damage to nature, because foreign partners are usually in their own country and, if they

do not have a socially responsible consciousness, are not very confused about the state of the environment of other countries.

To prevent the negative impact of anthropogenic agribusiness on the environment, as well as the irrational use of natural resources in Ukraine, in addition to the above mechanism, the following environmental procedures should be applied: environmental expertise, environmental monitoring, ecological insurance and environmental audit. Environment.

Environmental expertise is one of the levers of government regulation. Environmental expertise covers sketches for the development and placement of productive forces, development of economic sectors, master plans of settlements, district planning schemes and other pre-design and pre-design documentation; feasibility studies and calculations of enterprises and other facilities, construction and reconstruction projects; drafts of educational and methodological and normative and technical acts and documents regulating economic activities; documents for the development of new equipment, technologies, materials and materials, including those purchased abroad; substances, materials, systems and facilities, the introduction and implementation of which may violate environmental safety standards and harm the environment.

Environmental monitoring includes the systematic collection, processing, transfer, storage and analysis of ecological information, forecasting its changes and the development of sound scientific recommendations for decision-making to prevent adverse environmental changes and comply with environmental safety requirements. Within the framework of ecological monitoring, the following activities are carried out: monitoring of the quality of air, water, soil; radiation monitoring; monitoring of biological resources, etc.

State control over compliance with the requirements of environmental legislation in the field of waste management, rational use of natural resources (except for subsoil and forests), the environment and its competence to combat radiation; compliance with the rules, norms, standards; compliance with permissive conditions, limits and quotas issued for particular uses of natural resources (except for subsoil and forests), emissions and discharges of pollutants into the environment and permissible levels of harmful effects of physical and biological factors on its condition, transboundary movement of plants and animals world; Compliance with environmental requirements and, within its competence for radiation protection, is carried out by the State Environmental (Ecological) Inspectorate.

One of the most important means of regulating state relations in the field of environmental protection and the agro-industrial complex is standardization and regulation, which should be mandatory and include:

- environmental safety standards (maximum permissible concentration of pollutants in the environment, maximum allowable levels of acoustic, electromagnetic, radiation and other harmful effects on the ground, maximum allowable levels of harmful substances in food);
- top permissible emission and discharge rates, levels of exposure to toxic physical and biological agents.

Environmental standards must be consistent with the requirements for protecting the environment and human health from the adverse effects of pollution. Today we can say that Ukraine has laid the foundations for the economic mechanism of environmental management.

Thus, the most critical tool for state management of relationships with nature and regulation of the agro-industrial complex in the digital era and solving environmental problems is the planning of a target program, the development and implementation of target ecological programs.

These programs must be adjusted for each area because they all have different potential for nature management and agricultural business. Accordingly, we propose the broadest target Program of environmental management (Fig. 5).

Figure 5. State program for environmental management in the region

Source: Research findings

The Program is a document that defines the main directions, priority tasks of the state policy of the region to improve the state of the environment. Besides, strategic management of natural resources should be carried out within the framework of the state program for environmental protection and rational use of natural resources.

The program should describe a set of measures aimed at solving priority tasks in the field of environmental protection and ensuring rational use of natural resources in the region, the implementation of which will contribute to ensuring ecological safety, sustainable functioning of biological, ecological systems, preserving biodiversity, protecting the territories and population of the region from negative the impact of all types of business, including agro, the improvement of the ecological situation, the provision of raw materials needs of the economic complex and the creation of conditions for increasing the efficiency of using the resources of the region and/or increasing the forest cover of its territory (where possible and necessary).

The choice of the Program activities should be based on an analysis of the environmental situation in the area, which identified the most acute problems; therefore it cannot be absolutely applicable to all areas without adjustment.

5. Conclusion.

State regulation of relations in the field of nature management plays a vital role in solving many environmental problems, namely, the preservation of biological diversity, depletion or overuse of non-renewable natural resources, disruption of unique ecosystems, conservation of natural capital.

The natural capital conservation management system has a complex multidisciplinary structure. Thus, the creation of an effective management system for nature conservation is possible provided the best international experience of developed countries in combination with national characteristics, the formation of a single methodological framework of normative indicators with their legislative consolidation, attracting economic incentives for natural capital conservation (grants, awards, eco-grants, eco-grants, eco-grants), emissions trading, implementation of green economy instruments). The involvement of incentive tools for the preservation of natural capital will form an effective mechanism for state regulation of agrarian business development in the digital age and its impact.

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