

## ECONOMIC MEASURES FOR MANAGING CRITICAL INFRASTRUCTURE FACILITIES IN UKRAINE

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**Abstract.** *Purpose.* This article defines the variety of economic measures for the management of critical infrastructure objects. Attention is paid to their nature and characteristics, and it is shown how they affect the area under study. The object of the article is social relations arising in the spheres of critical infrastructure. The *subject* is economic measures of management of critical infrastructure objects of Ukraine. *Research methods* are a system of ways of knowledge that allow to determine the concepts, types and characteristics of economic measures of critical infrastructure. A system of general and special scientific methods of knowledge was used in writing the article. It is about the dialectical method (used during the characterisation of the content of economic methods of public administration of critical infrastructure objects), the grouping method (used during the study of specific types of economic methods of public administration of critical infrastructure objects), the comparative legal method (it helped to compare economic methods of public administration of critical infrastructure objects), the method of documentary analysis (used to confirm the provisions on the facts of application of economic methods of public administration of critical infrastructure objects), the method of analysis (played a significant role in the formulation of the position and conclusions on the researched issues as declared in the article topic). The *practical implications* are that critical infrastructure facilities are of particular importance for the independence, economic stability and development of the state. *The value/originality* lies in the fact that the author gives the concept of economic measures of management of critical infrastructure objects of Ukraine and distinguishes their types. Examples of ineffective application of economic measures in the field of critical infrastructure are given. *Results.* The system of economic measures for the public administration of critical infrastructure objects requires attracting huge funds both from the state budget of Ukraine and from local budgets, as well as from the private sector – operators of critical infrastructure objects. Economic measures, depending on their result and impact on critical infrastructure objects, are divided into 1) those that have a positive meaning, i.e., ensure their development and protection, and 2) negative, i.e. those that contribute to the removal of critical infrastructure objects from the competence of the state and negatively affect their condition and controllability. In addition, the types of economic measures of management of critical infrastructure objects of Ukraine are: 1) categorisation of critical infrastructure objects; 2) assessment of the need to improve their protection and security; 3) involvement of private partnership in the development and modernisation of critical infrastructure facilities; 4) stimulation of sectoral bodies in the reconstruction and modernisation of critical infrastructure facilities; 5) planning measures to ensure the stability and protection of critical infrastructure facilities; 6) privatisation; 7) monopolisation.

**Key words:** critical infrastructure, economic management measures, categorisation of critical infrastructure facilities, public-private partnership, energy, oil and gas sector.

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## Introduction

Public administration is a system of state bodies and local self-government bodies. These subjects have the right to use imperative and dispositive methods, as well as to establish administrative and legal restrictions and prohibitions within the limits of their powers and competences. One of the imperative methods is the use of administrative and economic measures, which are different in nature, in their activities.

Critical infrastructure is the combination of networks, systems, facilities and technologies that enable the provision of essential services or support vital functions. Other definitions include institutional or organisational structures that support the provision of services (State of play in the governance of critical infrastructure resilience).

Administrative measures of public administration of critical infrastructure objects of Ukraine constitute a system of methods and techniques used by authorised subjects of public administration to manage critical infrastructure objects. They include: control, supervision, administrative responsibility. Another group of measures used by subjects of public administration in the field of critical infrastructure are economic measures.

When applying economic methods of management, the subject of management achieves the correct behaviour of the managed by influencing their material interests. For this purpose, the prospect of material benefits and the threat of material sanctions can be used equally (Kolpakov, 1999). It is expedient to use these methods to regulate the activities of institutions of the so-called non-profit sphere of activity, taking into account, for example, how rationally they spend their own material resources obtained from the rendering of paid services, leasing of state property and real estate (Ihnatchenko, 2009).

Their application ensures the satisfaction of financial and material interests of the objects of management through the activities of its subjects, which create favourable conditions for achieving the goals and objectives of management, for example, local governments within their competence may finance local programmes for the development and support of municipal healthcare institutions and, in particular, for the renewal of the material and technical base, major repairs, reconstruction, increase of salaries of healthcare workers (programmes of "local incentives"), as well as local programmes for the provision of medical services to the population, local public health programmes and other healthcare programmes (The Law of Ukraine "On State Financial Guarantees of Medical Care for the Population").

In order to determine the state of critical infrastructure and identify effective economic measures, it is necessary to conduct an inventory of assets through

the process of criticality and risk assessment, and also to establish national programmes to strengthen their resilience to shocks. Such programmes are usually based on a governance mechanism that allows information exchange between the government and critical infrastructure operators and includes a combination of policy instruments, ranging from regulation to incentive mechanisms, to support the implementation of critical infrastructure sustainability goals (Claudia Aradau, 2010).

## 1. Research Methodology

### 1.1. Scientific, Theoretical and Legislative Support for Economic Measures of Critical Infrastructure Management

The topic of critical infrastructure objects in general and economic measures of management of critical infrastructure objects of Ukraine, types of critical infrastructure objects in Ukraine in particular is gaining more and more popularity among scientists. V.V. Muzyka, B.V. Bohdan, S.S. Telennyk, O.O. Vergolyas, D.S. Biryukov and others touch upon it to some extent in their works.

The spectrum of legal acts, the norms and provisions of which are aimed at regulation of the researched issue, is also quite wide, but it does not fully ensure proper regulation of the relevant legal relations due to the lack of clear definition of economic measures of management of critical infrastructure objects of Ukraine, types of critical infrastructure objects.

Practice shows that the development of legal relations with regard to critical infrastructure objects of Ukraine and the identification of their types is quite specific, which is dictated by the appointment and competence of public management bodies in this field.

### 1.2. Methodological Peculiarities of the Study of Economic Measures of Critical Infrastructure Management in Ukraine

The methodological basis of this article was various scientific methods used for in-depth and comprehensive study of the given topic and formulation of well-founded conclusions. In particular, it refers to the dialectical method (used in the characterisation of the content of economic methods of public administration of critical infrastructure objects), the grouping method (used in the study of specific types of economic methods of public administration of critical infrastructure objects), comparative legal method (helped to compare the economic methods of public administration of critical infrastructure objects), method of documentary analysis (used to confirm the provisions on the facts of application of economic methods of public administration of critical

infrastructure objects), analytical method (played an important role in the formulation of the position and conclusions on the researched questions on the topic declared in the article).

However, it is important to note that the methods used in the study are not limited to those listed above.

## **2. Concept and General Characteristics of Types of Economic Methods of State Management of Critical Infrastructure Objects**

### **2.1. Concept of Economic Methods of State Management of Critical Infrastructure Objects**

Economic measures may also include material stimulation measures through a system of specially created funds that accumulate and distribute budgetary funds for health care together with private capital; determining the priority areas of funding and promoting the development of medical services for the population; providing funding for programmes of professional development and retraining of specialists who provide medical services to the population; to redistribute funds from state, local and other sources for the treatment of certain types of diseases; to establish a system of grants and targeted funds for the application of various mechanisms of control over the use of resources; to increase the volume of purchases of vaccines, medicines and other medical preparations, etc.

Thus, economic methods manifest themselves in the creation of such conditions for the development of subordinate objects, under the influence of certain material and financial incentives, where they can independently choose one or another variant of behaviour. However, this choice is still based on the traditional "residual" principle of state financing of the health sector, which unfortunately cannot be overcome in the near future. Economic methods can be applied to a relatively limited extent.

Sources of funding for works and measures to ensure the protection of critical infrastructure are funds from state and local budgets, own funds of critical infrastructure operators, bank loans, funds from international technical assistance and other sources not prohibited by law.

Council Directive 2008/114/EU defines the concept of critical infrastructure in the countries of the European Union as an object, system or part thereof located in the Member States, which is essential for the maintenance of vital public functions, health, safety, security or the economic or social well-being of the population, and the damage or destruction of which would have a significant impact in the Member State due to the inability of such infrastructure to support the aforementioned functions (Council Directive 2008/114/EU of 8 December 2008).

Critical infrastructure is a set of infrastructure facilities, systems, their parts and their aggregate that are important for the economy, national security and defence, the disruption of which may harm vital national interests (The Law of Ukraine "On Critical Infrastructure"; Kondratov, Bobro, Horbulin, 2017).

The protection of critical infrastructure is an integral part of Ukraine's national security.

The subjects of application of economic management measures of the Institute of Critical Infrastructure of Ukraine are sectoral bodies and local public administration authorities.

Sectoral authorities include: Ministry of Energy of Ukraine; Ministry of Digital Transformation of Ukraine; Ministry of Community and Territorial Development of Ukraine; Ministry of Economy of Ukraine; Ministry of Health of Ukraine; National Health Service of Ukraine; National Securities and Stock Market Commission; Ministry of Infrastructure of Ukraine; Ministry of Strategic Industries of Ukraine; Ministry of Internal Affairs of Ukraine; Ministry of Finance of Ukraine.

Local executive authorities ensure the protection of critical infrastructure, the restoration of the functioning of important state objects of the national economy, critical infrastructure objects and objects ensuring the vital activities of the population, the increase of the resilience of communities to crisis situations caused by the termination or deterioration of the provision of important services for their vital activities or the termination of vital functions, the interaction between subjects of the national critical infrastructure protection system (The Law of Ukraine "On Local State Administrations"). While local self-government bodies take the necessary measures to protect critical infrastructure, restore the functioning of important state objects of the national economy, critical infrastructure objects and objects that ensure the population's livelihood, increase the resilience of communities to crisis situations caused by the termination or deterioration of the provision of services important for their vital activities or the termination of vital functions, interaction between subjects of the national critical infrastructure protection system taking into account the requirements of the Law of Ukraine "On Critical Infrastructure" (The Law of Ukraine "On Local Self-Government Bodies in Ukraine").

Having analysed the content of the powers of sectoral and local public administration bodies in relation to critical infrastructure objects, it is worth noting that they are largely administrative in nature, and their content is the implementation of control and supervision measures in the area under study. At the same time, with regard to measures of an economic nature, this duty is assigned primarily to the operators of critical infrastructure objects, as a

direct result of the performance of the tasks assigned to them, in particular 1) ensuring the protection of critical infrastructure objects, in particular creating, establishing and maintaining an effective system of physical security, operating system security and cyber security; 2) developing, updating and ensuring the implementation of object plans for measures to ensure the security and stability of critical infrastructure, rules for managing security risks, plans for localising and dealing with the consequences of accidents, as well as cyber protection measures; 3) conducting a risk assessment of critical infrastructure facilities and exchanging information on risks and threats with other subjects of the national system for the protection of critical infrastructure, as well as creating conditions for the proper performance of the tasks of law enforcement, intelligence and counter-intelligence agencies in the protection of critical infrastructure; 4) creation of a separate structural unit or appointment of a person responsible for organising the protection of critical infrastructure and ensuring constant communication with the relevant subjects of the national system for the protection of critical infrastructure; 5) prompt response to illegal actions, physical attacks aimed at disabling or damaging the operation of operating systems or systems ensuring the physical security of a critical infrastructure object; 6) organisation of measures to respond to incidents, crisis situations and elimination of their consequences at critical infrastructure objects in cooperation with other subjects of the national critical infrastructure protection system; 7) ensuring restoration of the functioning of critical infrastructure facilities in the event of accidents and other dangerous events, commission of illegal acts; 8) participation in measures to protect the airspace over certain critical infrastructure objects; 9) creation and use of necessary reserves of financial and material resources for responding to crisis situations and elimination of their consequences, and so forth (The Law of Ukraine "On Critical Infrastructure").

## 2.2. Types of Economic Methods of State Management of Critical Infrastructure Objects

According to the authors, the system of economic measures of the administration of the Institute of Critical Infrastructure of Ukraine, which are applied by sectoral bodies and local public authorities, should include:

- 1) categorisation of critical infrastructure facilities;
- 2) assessing the need to improve their protection and security;
- 3) engaging private partnerships in the development and modernisation of critical infrastructure facilities;
- 4) incentives from industry bodies for the reconstruction and modernisation of critical infrastructure facilities;
- 5) planning measures to ensure the stability and protection of critical infrastructure facilities;
- 6) privatisation of critical infrastructure;
- 7) monopolisation of critical infrastructure.

Consider some types of economic measures taken by the administration of the Institute of Critical Infrastructure of Ukraine.

*Categorisation of critical infrastructure facilities.* The category of a critical infrastructure facility is determined according to the following procedure: 1) a sectoral body in the field of critical infrastructure protection identifies all critical infrastructure objects in its sector (sub-sector) of critical infrastructure; 2) it defines the main services to be provided by this facility; 3) the sectoral body in the field of critical infrastructure protection, together with the critical infrastructure operator, assesses the criticality of the critical infrastructure object using sectoral and intersectoral criteria to determine the level of adverse impact; 4) the level of negative impact within the sector or sub-sector of the Critical Infrastructure Object is selected and a score corresponding to the level of negative impact is entered in the "RKi Score" column, the description of which characterises the consequences that may occur in the event of a malfunction of the Critical Infrastructure Object; 5) the level of negative impact is selected according to each criterion given in the form, and in the "RKi Score" column a score corresponding to the level of negative impact is set, the description of which characterises the consequences that may occur in the event of a malfunction of the critical infrastructure object; 6) sum up all the points obtained during the assessment of the critical infrastructure object according to the forms; 7) calculate a generalised normalised assessment of the level of criticality; 8) decide on the criticality category of the critical infrastructure object on the basis of a generalised normalised assessment of the level of criticality of the critical infrastructure object (Some Issues of Critical Infrastructure Objects).

Assessment of the need to improve their protection and resilience. The need to improve the protection and resilience of critical infrastructure in Europe and to reduce the level of vulnerability of critical infrastructure is recognised. It underlines the importance of the key principles of subsidiarity, proportionality and complementarity, as well as dialogue between stakeholders.

Involvement of private partnership in the development and modernisation of critical infrastructure facilities Council Directive 2008/114/EU defines the participation of the private sector in the implementation of measures in the field of critical infrastructure management. Since different sectors have specific experience, expertise and requirements for the protection and safeguarding of critical

infrastructure, the Community approach to the protection and safeguarding of such infrastructure must be developed and implemented taking into account sectoral specificities and available sectoral instruments, including those available at Community, national and regional level, as well as, where appropriate, cross-border mutual assistance arrangements between owners/operators of critical infrastructure. Given the significant involvement of the private sector in monitoring and risk management, business continuity planning and emergency response, the Community approach should encourage the full involvement of the private sector (Council Directive 2008/114/EU of 8 December 2008).

Public-private partnership in the field of critical infrastructure protection is carried out by: 1) exchange of information between state bodies, local executive bodies (military-civil administrations – if established), local self-government bodies, operators of critical infrastructure, public associations, employers' organisations and citizens on threats to critical infrastructure and response to crisis situations; 2) determining the powers and responsibilities of state bodies and operators of critical infrastructure in the field of ensuring the security and stability of critical infrastructure; 3) determining the order of interaction between state bodies and operators of critical infrastructure in different modes of operation of critical infrastructure facilities; 4) creating a system for training personnel in the field of critical infrastructure protection; 5) increase of comprehensive knowledge, skills and abilities of personnel and management of critical infrastructure operators, personnel of economic entities performing activities related to ensuring the security of critical infrastructure objects, on issues of response to crisis situations at such objects; 6) involvement of expert potential of scientific institutions, professional and public associations in the preparation of industrial projects and regulatory acts in the field of critical infrastructure protection; 7) participation in the performance of tasks to ensure the sustainable functioning of critical infrastructure objects by business entities performing activities related to ensuring the security of critical infrastructure objects, public associations and professional organisations; 8) provision by state bodies of advisory and practical assistance to operators of critical infrastructure on issues of response to crisis situations at critical infrastructure objects; 9) organisation of ensuring the protection of personnel of critical infrastructure facilities against possible threats; 10) ensuring the reservation of basic resources for the operation of critical infrastructure facilities in various modes; 11) organisation of a system of informing the population and business entities about incidents and crisis situations at critical infrastructure facilities;

12) creation of a system of self-assessment of the classification of critical infrastructure facilities according to the criteria defined by this Law, creation of information resources to increase the level of knowledge on the protection of critical infrastructure facilities; 13) creation of mechanisms for self-regulation, exchange of information between operators of critical infrastructure in a given sector; 14) creation and support for the development of certification and conformity assessment systems in critical infrastructure sectors (The Law of Ukraine "On Critical Infrastructure").

Public-private partnership in the field of critical infrastructure protection shall be carried out taking into account the specificities of the legal regime established by the legislation for certain critical infrastructure objects and certain types of activities.

Article 4 of the Law of Ukraine "On Public-Private Partnership" defines the areas in which public-private partnership projects may be implemented in the field of critical infrastructure: production, transport and supply of heat and distribution and supply of natural gas; construction and/or operation of highways, roads, railways, runways, bridges, overpasses, tunnels and subways, sea and river ports and their infrastructure; engineering; collection, purification and distribution of water; health care; ensuring the functioning of irrigation and drainage systems; waste management, with the exception of collection and transport; production, distribution and supply of electrical energy; production and implementation of energy-saving technologies; construction and capital repair of residential buildings totally or partially destroyed as a result of hostilities in the territory of the anti-terrorist operation; electronic communications (The Law of Ukraine "On Public-Private Partnership", Article 4).

State support for the implementation of public-private partnership may be provided through construction (new construction, reconstruction, restoration, capital repair, technical re-equipment) by state, municipal enterprises, institutions, organisations and/or economic companies, 100% of shares (parts) of which belong to the state, the Autonomous Republic of Crimea or a territorial community, objects of adjacent infrastructure (railways, roads, electronic communication networks, means of heat, gas, water and electricity supply, engineering communications, etc.), which are not the subject of the public-private partnership but which are necessary for the performance of the contract concluded under the public-private partnership (The Law of Ukraine "On Public-Private Partnership", Article 18).

For example, according to the Kyiv School of Economics (KSE), the losses of the Ukrainian energy sector due to Russian aggression exceeded \$8 billion. Russia has shelled all thermal power plants (TPPs) and hydroelectric power plants (HPPs) under

Ukrainian control, as well as 13 combined heat and power plants (CHPs). KSE notes that the cost of restoring lost TPP capacity may significantly exceed the estimated value due to significant physical wear and technological obsolescence of damaged and destroyed equipment.

Under the Net Billing public-private partnership project, a household or supermarket with a rooftop solar installation can sell excess electricity back to the grid and pay only for the difference between what it consumed and what it supplied. In about 40% of the SPPs installed by households, electricity consumption was close to zero (less than 10 kWh per month) and all the energy was sold to the network at an inflated "green" tariff. In other words, net metering makes it possible to simultaneously promote the development of renewable energy sources and increase the reliability of energy supply to households, small businesses and the utilities sector, without putting additional pressure on the budget. There is already one successful project in this direction – the renovation of the outpatient clinic in Gorenka, Kyiv Oblast, where a heat pump and solar station were installed. The clinic now operates without interruption and saves more than 70% of the cost of cooling agents. Another example: the team of the NGO "Ekoclub-Rivne" has developed 30 preliminary technical justifications for the installation of solar panels for hospitals, water utilities and other critical infrastructure facilities. In December, a solar station was installed in a hospital in the town of Zvyahel, Zhytomyr Oblast, and nine more such projects are planned to be implemented by the end of 2023 (Phoenix Rising from the Ashes: How "Green" Generation Will Restore Energy).

*Incentives from industry bodies for the reconstruction and modernisation of critical infrastructure.* The Ministry of Energy of Ukraine proposes to adopt a law on contracts for difference. Under this scheme, producers of electricity from renewable energy sources will be able to receive compensation from the "guaranteed buyer" in the form of the difference between the "green" tariff or auction price and the market value of the electricity. This will make it possible to attract producers to the electricity market and reduce the amount of necessary reserves in the system. According to the explanatory memorandum to the bill, around 78% of renewable energy systems in Germany currently operate under the feed-in premium model (contracts for difference). In 2020, the share of "green" electricity generation in the country will reach 50%, which indicates the success of such a model (Phoenix Rising from the Ashes: How "Green" Generation Will Restore Energy; On Approval of the Draft Law of Ukraine).

The planning of measures to ensure the stability and protection of critical infrastructure objects includes the activities of public administration bodies, whose

management areas include critical infrastructure objects, to develop and approve appropriate plans and programmes for responding to crisis situations.

At the state level, a National Plan for the Protection and Provision of Security and Stability of Critical Infrastructure is being developed and approved by the Cabinet of Ministers of Ukraine. At the sectoral (industry) and regional levels, state authorities develop and approve sectoral and regional plans and programmes to counter threats to critical infrastructure, including contingency plans, crisis response plans, interaction plans, recovery plans for critical infrastructure facilities, training plans and training (The Law of Ukraine "On Critical Infrastructure").

At the local level: local executive bodies (military-civilian administrations – when they are formed), local self-government bodies ensure the development, approval and implementation of local programmes to increase the resilience of territorial communities to crisis situations caused by the cessation or deterioration in the quality of services important for their vital activities or the cessation of vital functions. Such programmes include measures to ensure the security and stability of critical infrastructure, the interaction of the subjects of the national critical infrastructure protection system, and the restoration of the functioning of critical infrastructure assets. At the asset level: Critical infrastructure operators at each critical infrastructure asset shall develop and ensure the implementation of an asset protection and resilience plan that includes measures for physical protection, countering threats, effective mitigation and control of security risks, and ensuring information and cyber security at critical infrastructure assets (The Law of Ukraine "On Critical Infrastructure").

Thus, as part of the implementation of economic measures for critical infrastructure objects, the following measures have been financed in the State Budget of Ukraine for 2021–2023 (Table 1).

In total, for 2021, the State Agency for Infrastructure Projects of Ukraine was allocated 142,2107.1 thousand UAH from the general fund and 1,400,690.0 thousand UAH from the special fund from the State Budget of Ukraine (Table 2).

In total, for 2022, the State Agency for Infrastructure Projects of Ukraine was allocated 154,9056.7 thousand UAH from the general fund and 2,460,041.1 thousand UAH from the special fund from the State Budget of Ukraine (Table 3).

In total, in 2023, the State Agency for Infrastructure Projects of Ukraine was allocated 1250731.0 thousand UAH from the general fund from the State Budget of Ukraine.

Negative economic measures against critical infrastructure: privatisation and monopolisation.

Privatisation of critical infrastructure. The Law of Ukraine "On Critical Infrastructure" does not define

Table 1

**Types of economic measures of critical infrastructure objects in the State Budget of Ukraine in 2021**

2021			
№	Type of economic measure	Expenditure from the State Budget of Ukraine (thousand UAH)	
		General Fund	Special Fund
1.	Implementation and coordination of municipal infrastructure development projects, activities in the district heating sector of Ukraine, the Emergency Credit Programme for Ukraine and the Municipal Infrastructure Development Programme of Ukraine	93547,4	Consumption expenses – 86407,0 Development costs – 7140,4
2.	General management and governance of infrastructure	206809,0	
3.	Construction of a railway and motorway bridge over the Dnipro River in Kyiv (with approaches) on the Kyiv-Moskovsky-Darnytsia section	500000,0	500000,0
4.	Ensuring the operational and safe condition of shipping locks	125299,3	125299,3
5.	Implementation of measures to support the implementation of the transport strategy of Ukraine		3325,0
6.	Renewal of rolling stock for passenger transport and modernisation of railway infrastructure for the development of passenger transport		4025878,1
7.	Financial support for airport infrastructure development		1000000
8.	Design and execution of works on the restoration of the European-style 1435 mm wide railway track from Chop station to Uzhhorod station with adjacent platform of Uzhhorod railway station	5000,0	5000,0
9.	Replenishment of the authorised capital of Boryspil International Airport State Enterprise	200000,0	200000,0
10.	Replenishment of the authorised capital of the State Aviation Enterprise "Ukraine"	200000,0	200000,0

Table 2

**Types of economic measures of critical infrastructure facilities in the State Budget of Ukraine for 2022**

2022			
№	Type of economic measure	Expenditure from the State Budget of Ukraine (thousand UAH)	
		General Fund	Special Fund
1.	Implementation and coordination of municipal infrastructure development projects, activities in the district heating sector of Ukraine, the Emergency Credit Programme for Ukraine and the Municipal Infrastructure Development Programme of Ukraine		Consumption expenses – 90515,6 Development costs – 3031,8
2.	General management and governance of infrastructure	289712,0	
3.	Construction of a railway and motorway bridge over the Dnipro River in Kyiv (with approaches) on the Kyiv-Moskovsky-Darnytsia section	706000,0	
4.	Ensuring the operational and safe condition of shipping locks	39039,7	125299,3
5.	Implementation of measures to support the implementation of the transport strategy of Ukraine		100,0
6.	Renewal of rolling stock for passenger transport and modernisation of railway infrastructure for the development of passenger transport	4300000,0	897325,7
7.	Financial support for airport infrastructure development	3550000,0	
8.	Design and execution of works on the restoration of the European-style 1435 mm wide railway track from Chop station to Uzhhorod station with adjacent platform of Uzhhorod railway station	7302,0	
9.	Ensuring, organising and performing letter carriage by aircraft	299148,9	
10.	Replenishment of the charter capital of Joint Stock Company "Ukrainian National Airlines"	1000000	

Table 3

**Types of economic measures of critical infrastructure facilities in the State Budget of Ukraine for 2023**

2023			
№	Type of economic measure	Expenditure from the State Budget of Ukraine (thousand UAH)	
		General Fund	Special Fund
1.	Development of municipal infrastructure and measures in the district heating sector of Ukraine, development of the water supply and sewerage system in Mykolaiv, reconstruction and development of the municipal water supply system in Chernivtsi	3948434,4	
2.	Development, construction, restoration and maintenance of stable transport links of road infrastructure	1115940,0	
3.	Repayment of funds provided to Ukrhydroenergo on a repayable basis for the implementation of social and economic development projects	-174731,3	
4.	Reconstruction of Ukrhydroenergo's hydroelectric power plants	1008000,0	
5.	Improving the reliability of electricity supply in Ukraine	3181879,6	
6.	Construction of 750 kV substation at Rivne NPP – Kyiv	420053,8	
7.	Construction of a 750 kV overhead line Zaporizhzhia – Kakhovka	1050240,8	
8.	Improving the efficiency of electricity transmission (modernisation of substations)	25000,0	
9.	Reconstruction of transformer substations in eastern Ukraine	1160608,7	

critical infrastructure. However, the Law of Ukraine "On Privatisation of State and Communal Property" stipulates that state-owned enterprises and objects necessary for the state to perform its main functions, to ensure the defence capability of the state, as well as objects belonging to the Ukrainian people, property, which constitute the material basis of Ukraine's sovereignty, are not subject to privatisation. However, there are cases of violation of this prohibition.

For example, the Energy Strategy of Ukraine until 2030 stipulates that the following facilities may be subject to privatisation:

- on condition of maximum privatisation and improvement of the efficiency of mines, as well as further closure of non-privatised unprofitable mines;
- thermal power plants, thermal power stations and distribution networks will be fully privatised by the end of 2014. The purpose of the privatisation of the aforementioned electric power facilities is to attract owners to increase the efficiency of the companies' operations and to attract non-governmental investment for the development of the sector. The privatisation is aimed at attracting strategic investors;
- coal companies and the use of public-private partnership mechanisms (leases, concessions, etc.);
- increasing the efficiency of coal mining companies means creating conditions for attracting significant investments into the industry, which can be achieved through privatisation of the industry and the use of public-private partnership mechanisms (e.g., raw material loans, joint production activities, provision of industrial services for coal mining, etc.);
- lease or concession of all state-owned mines, regardless of profitability;

– or long-term lease of distribution networks to companies that are not involved in gas supply, after the actual functioning of legislation to ensure equal access to gas distribution infrastructure.

Despite the fact that the law prohibits the privatisation of critical infrastructure assets, interested parties still find ways to remove a particular asset from the category of "critical infrastructure" and privatise it.

For example, investigators from the State Bureau of Investigation are looking into the involvement of officials from the State Property Fund of Ukraine in the illegal privatisation of the country's critical infrastructure. As part of the pre-trial investigation, employees of the State Bureau of Investigation are examining information on the illegal privatisation of a strategic enterprise in the Cherkasy Oblast. The package of shares in the state-owned company is to be auctioned off at a price far below its market value – around 6 billion UAH. Such a privatisation would also deprive the state of a guaranteed annual profit of at least 180 million UAH. Despite warnings from law enforcement and state authorities, officials of the State Property Fund of Ukraine continued preparations for the privatisation of the strategic enterprise. During operational and investigative activities, employees of the State Bureau of Investigation seized documents confirming the illegal activities of representatives of the State Property Fund of Ukraine (Illegal privatisation of a critical infrastructure facility).

According to the authors, the privatisation of critical infrastructure is a rather complex procedure, which requires clear legal regulation. Thus, a legal loophole



is the absence of a provision in the Law of Ukraine "On Critical Infrastructure" that directly prohibits the privatisation of critical infrastructure objects. At the same time, the prohibition is mentioned in the Law of Ukraine "On Privatisation of State and Municipal Property".

Monopolisation of critical energy. In addition to privatisation of critical infrastructure, the existence of monopolies is also prohibited. Unfortunately, in practice they do exist.

A clear example of this is the unrecognised monopoly of DTEK, which occupies a particularly influential place in Ukraine's energy system. First of all, thanks to a well thought-out policy of asset acquisition. The group did not try to pick up everything at once. Attention has been focused on the most important, without which the system cannot function. Namely, shunting capacity (thermal and coal), which, unlike the same "Energoatom", makes it possible to adjust the amount of electricity supplied to the network when demand falls, or to increase it when it rises.

Ukraine's energy system will not work without DTEK's thermal power plants and mines. It doesn't matter how many nuclear units are in operation or what the volume of imports will be. DTEK will still have the last word.

DTEK should have received the "monopolist" label from the Antimonopoly Committee of Ukraine in 2010–2012. During this period, the company gained control over 70% of heat generation and 80% of coal mining, thanks to permits from the Antimonopoly Committee of Ukraine and "proper" privatisation. Subsequently, DTEK was granted permission by the Antimonopoly Committee of Ukraine to acquire control over heat generation companies:

- Zakhidenergo PJSC (decision No. 661-p of 09.11.2011);
- PJSC "Dniproenergo" (decision No. 778-p of 21.12.2011).

As well as the largest regional energy supply companies:

- PJSC "Kyivenergo" (decision No. 662-p of 09.11.2011);
- PJSC "Donetskoblenergo" (decision No. 779-p of 21.12.2011);
- PJSC "Dniprooblenergo" (decision No. 167-p dated 14.03.2012).

And coal mining companies:

- "Bilozerska" Mine (decision No. 815-p of 27.12.2011);
- SE "Dobropillia" (decision dated 12.23.2010 No. 704-p);
- SE "Rovenkyanratsyt" (decision No. 568-p dated 05.10.2011);
- SE "Sverdlovanratsyt" (decision of 05.10.2011 No. 569-p).

The mere fact that DTEK was recognised as a monopolist would significantly limit the opportunities

for pressure, discipline the management and reduce the owner's appetite. So, if DTEK were to be recognised as a monopolist, then:

- for abusing the company's monopoly position, it faces forced separation from the Antimonopoly Committee of Ukraine;
- fines for violations will amount to billions of UAH, instead of the 1.7 million imposed by the National Energy and Utilities Regulatory Commission;
- the Antimonopoly Committee of Ukraine will not grant them any more permits to acquire new assets;
- the Antimonopoly Committee of Ukraine would apply stricter regulation (behavioural obligations): what can be done, what cannot be done, what needs to be approved and what practices need to be changed;
- the state should constantly and strictly control the company's activities;
- any of its unlawful actions will be considered from the perspective of antitrust law (DTEK Country).

The Resolution of the National Commission of State Regulation in the sphere of energy and communal services "On the Settlement of Certain Issues of Determination of Tariffs for the Services of Natural Monopoly Enterprises in the Oil and Gas Sector during the Period of Martial Law in Ukraine" establishes that during the period of martial law in Ukraine and taking into account the provisions of the Resolution of the National Commission of State Regulation in the sphere of energy and communal services of 26 March 2002 No. 349 "On the Protection of Information, which in the Conditions of Martial Law can be Classified as Information with Limited Access, including on Objects of Critical Infrastructure", on the necessity of establishing tariffs for the services of natural monopoly enterprises in the oil and gas sector and their changes, as well as on projects of relevant decisions of the National Commission, which carries out state regulation in the field of energy and communal services (On Regulation of Certain Issues of Setting Tariffs). This means that there is a direct ban on revising and increasing tariffs in the oil and gas sector. It would be logical to adopt a similar resolution prohibiting the revision of electricity tariffs for the period of martial law, which was not implemented. And as a negative result, DTEK increased the price of electricity for consumers from 1 June 2023.

## Conclusions

Therefore, the economic measures of management of critical infrastructure objects of Ukraine are a set of planned and forecasted actions of sectoral bodies, local public administration bodies and operators of critical infrastructure objects aimed at protection,

modernisation, restoration and increase of efficiency of functioning of critical infrastructure objects at the expense of state and local budgets.

Economic methods manifest themselves in the creation of such conditions for the development of subordinate objects, under the influence of certain material and financial incentives, where they can independently choose one or another variant of behaviour. However, this choice is still based on the traditional "residual" principle of state financing of the health sector, which unfortunately cannot be overcome in the near future. Economic methods can be applied to a relatively limited extent.

The protection of critical infrastructure is an integral part of Ukraine's national security.

The subjects of application of economic management measures of the Institute of Critical Infrastructure of Ukraine are sectoral bodies and local public administration authorities. Sectoral authorities include: Ministry of Energy of Ukraine; Ministry of Digital Transformation of Ukraine; Ministry of Community and Territorial Development of Ukraine; Ministry of Economy of Ukraine; Ministry of Health of Ukraine; National Health Service of Ukraine; National Securities and Stock

Market Commission; Ministry of Infrastructure of Ukraine; Ministry of Strategic Industries of Ukraine; Ministry of Internal Affairs of Ukraine; Ministry of Finance of Ukraine. Local executive authorities ensure the protection of critical infrastructure and the restoration of important state facilities.

The national economy, critical infrastructure and facilities that ensure the livelihood of the population, and increasing the resilience of communities to crisis situations.

Therefore, the system of economic measures of the administration of the Institute of Critical Infrastructure of Ukraine, which are applied by sectoral bodies and local public authorities, should include: 1) categorisation of critical infrastructure objects; 2) assessment of the need to improve their protection and security; 3) involvement of private partnership in the development and modernisation of critical infrastructure objects; 4) stimulation of sectoral bodies in the reconstruction and modernisation of critical infrastructure objects; 5) planning measures to ensure the stability and protection of critical infrastructure objects; 6) privatisation in the field of critical infrastructure; 7) monopolisation in the field of critical infrastructure.

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