

ACCOUNTING ENSURE OF BUSINESS MANAGEMENT IN THE CONDITIONS
OF MARTIAL LAW AND UKRAINE'S NATIONAL ECONOMIC RECOVERY



University of Security Management in Košice

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In this monograph, the authors summarized and supplemented the results of many scientific justifications and developments. Considerable attention is paid to the study of accounting and taxation issues in the context of modern management concepts and risks of martial law in Ukraine.

The materials of the monograph reflect the results of research carried out as part of the research work “Improvement of accounting and taxation of business entities in the conditions of modern concepts of management and global challenges” (state registration number: 0122U201989).

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SECTION 2 ²

ACCOUNTING OF COSTS FOR THE REPAIR AND IMPROVEMENT OF FIXED EQUIPMENT IN THE ELECTRICAL ENERGY INDUSTRY

2.1. Costs for repair, restoration and improvement of fixed assets as an economic category and object of accounting

Electricity is the basis of our high-tech and digital world. It provides progress and makes our life comfortable.

On February 24, 2022, our entire country began to live in a new reality caused by the full-scale military aggression of the Russian Federation. Currently, military operations are being conducted on the territory of Ukraine, energy facilities are seized by the army of the aggressor country, and the infrastructure of power grids is being destroyed and destroyed. Today, it is difficult to determine the amount of networks and equipment that needs to be restored, and it is impossible to accurately estimate the extent of the destruction. After all, part of this infrastructure is located in the temporarily occupied territory, and the property located in the territory under the control of Ukraine is constantly damaged as a result of rocket attacks. Today's conditions require the work of power engineers to restore power grids in extremely difficult conditions, often under shelling and bombing. In the territories liberated from occupation, the energy workers work together with the teams of the Ministry of Emergency Situations and sappers. Their main tasks are the restoration of highway networks in the liberated territories and in other regions of Ukraine; repair and restoration work on power lines (removal of broken wires, replacement of supports and insulation, installation of new equipment at substations, reconstruction of walls and roofs). It is clear that in order to restore and repair networks under conditions of limited funding, a significant increase in the cost of resources and the lack of complete information about the volume and cost of damaged infrastructure, it is necessary to implement a set of measures, including the organization of proper information at all levels of management of these processes.

The electrical networks of Ukraine were mostly built during the

² Ishchenko Ya.P.
<https://doi.org/10.5281/zenodo.7674889>

USSR and are a classic example of the use of “manual control”. All networks are controlled by dispatchers, and almost all switching is done manually by operational personnel. This negatively affects the SAIDI indicator (duration of interruptions in electricity supply), which in general in Ukraine in 2020 increased from 682 minutes to 816 minutes, compared to 2019. For comparison, the SAIDI indicator in 2019 was 193 minutes in Croatia, 179 minutes in Romania, and 12 minutes in Germany.

Taking into account the technical shortcomings of the energy infrastructure, not only its repair and restoration, but also modernization is foreseen. That is, speaking in accounting terms, repair works and works related to the improvement of facilities are expected.

Organizational and legal aspects of the repair, restoration and modernization of energy infrastructure in the conditions of martial law are not left out of the attention of domestic scientists and practitioners. The mentioned problems were considered in the works of A. Zorkin (Zorkin, 2007). A team of scientists from the Vinnytsia National Agrarian University made a significant contribution to the development of issues of the use of renewable energy sources. The work is devoted to the study of the use of bioenergy crops to solve energy problems H.M. Kaletnik, D.M. Tokarchuk (Kaletnik, Tokarchuk, 2021), I.V. Honcharuk (Honcharuk, 2020), N.H. Zdyrko. (Zdyrko, 2018).

However, in relation to the scientific and applied issues of work accounting and restoration of the domestic energy system under martial law conditions and its joining to the EU energy system, there are practically no achievements. Accounting and control of costs for repairs of fixed assets are studied in the works of V.V. Kirichenko (Kyrychenko, 2013), R.L. Tseben (Tseben, 2009) and others.

However, it should be noted that in the vast majority of the studies of the mentioned authors, they are aimed at the development of general methodological support, accounting and control, and do not take into account the specific conditions of the functioning of the energy system of Ukraine in modern conditions. Therefore, a number of problems of the organization and methods of accounting and control of costs for the repair of fixed assets in the conditions of martial law and joining the EU energy system require further research and scientific

development.

Fixed assets play a special role in the electric power industry of Ukraine, as they form the basis of the economy of electric power enterprises and the assessment of the efficiency of the energy system.

The key criterion for identifying fixed assets as accounting objects and displaying them as assets is the receipt of future economic benefits from their use, in connection with which it is recommended to clarify the definition of fixed assets given in NP(S)BO 7 “Fixed Assets”. After all, the definition of the term “fixed assets” in this NP(S)BO differs from its interpretation in IAS 16 “Fixed Assets” and does not fully take into account the scope and purposes of using the object of fixed assets to obtain added value, that is, its ability to bring economic benefits to the enterprise (income) in the future.

According to NP(S)BO 7, fixed assets are tangible assets that the company holds for the purpose of using them in the process of production or supply of goods and services, leasing to other persons or for the performance of administrative functions, the expected period of useful use (exploitation) of which is more than one year (or operating cycle if it is longer than one year).

Along with that, International Accounting Standard 16 “Fixed Assets” contains a definition: fixed assets are tangible objects that are held for use in the production or supply of goods or services, for leasing to others or for administrative purposes; expected to be used for more than one reporting period.

The Tax Code of Ukraine defines fixed assets as tangible assets, including reserves of minerals provided for the use of subsoil plots (except for the value of land, unfinished capital investments, library and archival funds, tangible assets, public roads, the value of which does not exceed 20,000 hryvnias, non-productive fixed assets and intangible assets) designated by the taxpayer for use in the taxpayer’s economic activity, the value of which exceeds 20,000 hryvnias and gradually decreases due to physical or moral wear and tear and the expected period of useful use (exploitation) of which from the date of entry into operation is more than one year (or the operating cycle, if it is longer than one year).

The system of accounting support for the management of fixed assets is a component of the general system of enterprise management.

In Fig. 2.1 shows the main functions of the information support for the management of fixed assets.

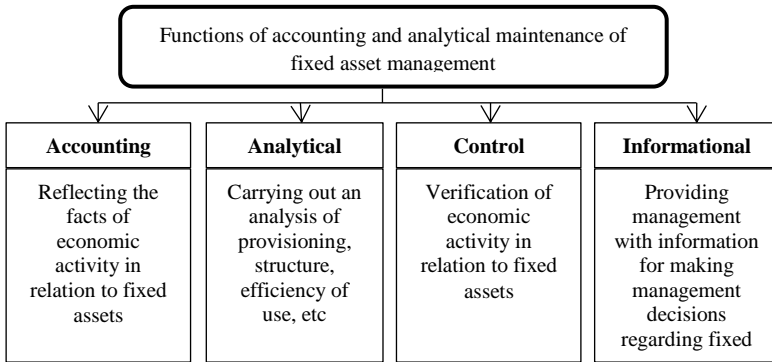


Fig. 2.1. Functions of information management of fixed assets

Source: generated by the author

The accounting system acts as a source of economic information, which is necessary for the management chain of the enterprise to respond in a timely manner to the influence of the external environment. Fixed assets occupy an important place in the assets of energy supply companies, and their leading objects – electric networks – differ in the specificity of operation and are characteristic in the vast majority only for these enterprises. Effective use of fixed assets necessitates the introduction of a scientifically based fixed asset accounting system at the enterprise, which would meet management requirements.

In the conditions of the economic crisis, the role and importance of accounting is increasing as a significant lever of economic activity management. For the production, transmission, supply, use of electric energy or the performance of other functions, energy enterprises own basic means. The conducted analysis of the share of fixed assets in the total value of assets of energy companies of Ukraine shows that fixed assets in some enterprises of the electric power industry of Ukraine make up 92.8%, which indicates their dominant share in the assets of these enterprises. Fixed assets are the basis of the material and technical base of electric power enterprises and the electric power industry as a whole. The place, composition and structure of the fixed assets of

energy supply companies in the production process of the electric power industry are of particular importance.

The totality of power plants, electric networks, and other electric power facilities united by a common mode of production, transmission and distribution of electric energy under centralized management of this mode form the unified energy system of Ukraine (hereinafter – UES of Ukraine).

Electric power enterprises are the components of UES of Ukraine. Electric power companies are business entities that perform one of the following functions: production, transmission, and distribution, supply of electric energy to the consumer or trading activity.

Electric energy producer (hereinafter referred to as the producer) is a business entity that produces electric energy.

The operator of the transmission system is a legal entity responsible for the operation, dispatching, maintenance, development of the transmission system and interstate power lines, as well as for ensuring the long-term capacity of the transmission system to meet reasonable demand for the transmission of electric energy.

The operator of the distribution system is a legal entity responsible for the safe, reliable and efficient operation, maintenance and development of the distribution system and ensuring the long-term capacity of the distribution system to meet reasonable demand for the distribution of electric energy, taking into account the requirements for environmental protection and ensuring energy efficiency (On the electricity market: Law of Ukraine dated 04/13/2017. No. 2019-VIII).

Local (local) electrical networks are connected electrical networks designed to transmit electrical energy from the main electrical network to the consumer. Local (local) electric networks are the object of accounting for fixed assets in energy supply companies of Ukraine (Fig. 2.2).

In the system of regulatory regulation of accounting at the enterprise, the accounting policy occupies a significant place, since the choice of principles, methods and procedures should ensure the maximum effect of accounting. R.L. Tseben singles out the optimal accounting policy options for energy supply companies of Ukraine in terms of fixed assets (Table 2.1).

According to the study, among the elements of the accounting policy of most operators of the electricity distribution system, there

are no norms regulating the accounting of costs for repairs, restoration and improvement of fixed assets. This reduces the effectiveness of managing such operations due to the formation of information that does not take into account the specifics of the industry and today's operating conditions of power grids.

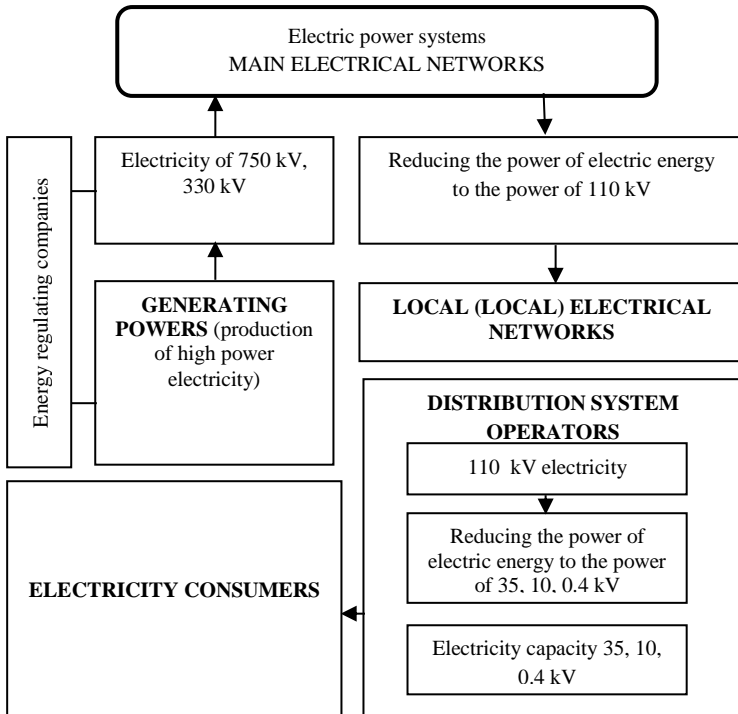


Fig. 2.2. The place of fixed assets in the production process of the electric power industry

Source: (Tseben, 2009)

The classification of fixed assets is important in the accounting of fixed assets, as it ensures the achievement of the final goal in the analysis, interpretation and provision of useful accounting information. The main assets of electric power enterprises are quite heterogeneous in their composition and structure. The current classification of fixed assets according to NP(S)BO 7 “Fixed assets” is typical for all enterprises and therefore cannot satisfy the

requirements for accounting information of the management of electric power enterprises of Ukraine. Thus, in the structure of fixed assets, objects of such a group as “Buildings, structures and transmission devices” reach 96.7%. We consider it expedient to allocate a separate group “Transmission devices” as part of this group for the accounting needs of electric power companies, which will allow obtaining more detailed information about the objects that form the basis of the means of activity of such entities.

Table 2.1

Elements of the accounting policy regarding fixed assets of energy supply companies of Ukraine

Element of accounting policy	The option that is used most often
Method of calculating depreciation of fixed assets	Rectilinear
Establishing the value limit of allocation to fixed assets	The price is higher than UAH 20,000. per unit
Materiality threshold for revaluation of fixed assets	Revaluation of fixed assets if the residual value of this object differs from its fair value on the balance sheet date by 10%

Source: (Tseben, 2009)

Therefore, we propose to set aside a separate section as part of the elements of the accounting policy of electric power enterprises to determine the classification of fixed assets. Accordingly, in the Working plan of the accounts of such enterprises, provide for the corresponding accounts of the third and fourth order for analytical accounting of operations with the specified objects (Table 2.2). In particular, we suggest introducing a separate subaccount 102 “Transmitting devices”. Due to the specifics of the activity of electric power enterprises, such standard sub-accounts for synthetic account 10 “Fixed assets” as “Capital costs for land improvement”, “Animals”, “Perennial plantations”, due to the insignificant specific weight of such objects, or their complete absence, are expedient to be recorded as part of sub-account 109 “Other fixed assets”.

The use of these analytical accounts in the practical activities of electric power enterprises will increase the informativeness of accounting.

During the operation of fixed assets, they require certain costs for their maintenance (depreciation, current maintenance, technical inspections, current and major repairs, reconstruction, conversion,

completion, inventory, passporting, conservation, security and fire protection, insurance costs, etc.). Such costs, depending on their economic essence and purpose, can be divided into costs related to the use of fixed assets and costs related to the maintenance of fixed assets.

Table 2.2

A fragment of the working plan of accounts for displaying the fixed assets of electric power enterprises

Subaccount	Analytical account
102 Transmission devices	1021 Overhead power lines with a voltage of 0.4 kV 1022 Overhead power lines with a voltage of 10 kV 1023 Overhead power lines with a voltage of 35 kV 1024 Overhead power lines with a voltage of 110 kV 1025 Cable lines of power transmission with a voltage of 10 kV 1026 Cable power transmission lines with a voltage of 0.4 kV
103 Buildings and structures	1031 Industrial buildings 1032 Non-production buildings 1033 Production buildings 1034 Non-production buildings
104 Machines and equipment	1041 110/35/10 kV substations 1042 35/10 kV substations 1043 Distribution devices 1044 Means of relay protection and automation 1045 Means of dispatching and technological management

Source: formed by the author based on (Tseben, 2009)

An enterprise whose balance sheet includes objects of fixed assets in practice distinguishes the following types of work aimed at maintaining and restoring the functionality of objects of fixed assets, as well as improving their technical characteristics: maintenance, current repairs, capital repairs and improvements (completion, retrofitting, reconstruction, modernization, modification, etc.).

If we summarize all of the above, the following definitions can be derived:

- maintenance – work aimed at maintaining the operability of the fixed assets object (for example, changing the oil in a car);
- ongoing repair – works aimed at ensuring and restoring the functionality of the object of fixed assets by eliminating minor damages and malfunctions, replacing and/or updating individual parts of the object;
- overhaul – works aimed at the complete recovery of resources and characteristics of the object by replacing or renewing its main parts. In

the process of replacement, new parts of the fixed asset object can be more durable and more economical than the old ones. In this case, the capital repair will lead to an increase in future economic benefits from the use of the fixed asset object, and therefore, such repair should be considered an improvement and be reflected in the accounting records accordingly;

- improvement is work on modernization, modification, extension, retrofitting, reconstruction, etc., similar to an object of fixed assets, which lead to an increase in the future economic benefits originally expected from the use of the object (including an increase in the period of its useful operation) (para. 14 NP(S)BO 7).

In order to reveal the essence of repairs, it is necessary to consider their types, which, depending on the complexity, nature and periodicity of their implementation, have different purposes. When dividing repairs into types, different signs are taken as a basis. The classification of repairs of fixed assets, which makes it possible to raise the scientific level of the theoretical directions of the economic essence of repair production, is presented in Table 2.3.

Table 2.3

Classification of repair types

No	Classification sign	Types of repairs
1	Depending on the goal pursued by the enterprise	Technical inspection; repair; improvement
2	On technical grounds	Current repairs; average repairs; capital repairs
3	Depending on the method of implementation	Economic; subordinate; mixed
4	In relation to the plan	According to the plan; unpredictable
5	In relation to economic activity	Repairs of production assets; repairs of non-production fixed assets
6	Including repair costs	To the initial cost of fixed assets; to the cost structure
7	According to the ownership of fixed assets	Own; leased
8	By quality improvement of fixed assets	Reconstruction; modernization; modification; additional equipment; technical rearmament

Source: (Kuchirka, 2010)

According to the Order of the Ministry of Energy and Coal Industry of Ukraine “On Approval of the Methodology for Determining Fees for Access to the Infrastructure Elements of the Electric Power Plant”

dated 10.12.2018 No. 622, the concept of repair is defined as a set of operations to restore the facility to its working condition or operational capacity and restore resources entities or their constituent parts.

To determine the type of work, it is advisable:

- study the technical documentation for the object of fixed assets;
- if the works are related to real estate or cars – read List No. 150 or Regulation No. 102, respectively (these documents contain an approximate list of works of each type, you can use their provisions to defend your position regarding the display of one or the other type of repair costs in accounting);
- to involve specialists who have appropriate qualifications in determining the type of work (it is desirable to form a commission from them). In accounting, the following works are distinguished:
 - aimed at improving the technical and economic characteristics of the object (modernization, modification, completion, retrofitting, reconstruction), which will lead to an increase in the economic benefits from its use in the future (this is an improvement for us);
 - carried out to maintain the facility in a usable condition and the ability to receive a predetermined amount of future economic benefits from its use (this is maintenance and repairs).

Restoration of trunk networks is underway. In particular, repairs and restoration works are actively being carried out throughout the country. To restore the energy sector and ensure the stable operation of the energy system, Ukraine needs a large amount of various equipment: generators, transformers, cables, distribution devices, etc. Since the beginning of the war, the Ministry of Energy has agreed with international partners to obtain the necessary equipment for emergency repairs. In particular, the Ministry of Energy has started working with the Secretariat of the Energy Community and the European Commission. Permanent partners of Ukraine, in addition to the EU, are also the USA, Canada, Australia, Great Britain and other countries. Since the beginning of the full-scale war, 166 batches of various equipment with a total weight of thousands of tons have been delivered to Ukraine. As part of this aid, Ukraine received more than a thousand generators, hundreds of kilometers of cables and other equipment from Poland, the Baltic countries, Germany, France, and Austria. Thus, at the end of November, the Government of Lithuania decided to allocate an additional financial tranche to Ukraine for the

reconstruction of the energy sector, damaged as a result of Russian shelling (Repair of power grids, power outages and Western aid: how the restoration of Ukraine’s energy system is proceeding, 2022).

2.2. Organizational and technological features of the electric power industry and their influence on the formation of the accounting system of costs for repairs of fixed assets

In 2021, the volume of electricity production by power plants of Ukraine totaled 156,575.7 million kWh, which is 7,719.5 million kWh or 5.2% more than in 2020. The main share in the total production in 2021 is the production of nuclear power plants – 55.1%, thermal power plants and thermal power plants – 29.3%, and the production of hydroelectric power plants and hydroelectric power plants – 6.7%. In 2020, the share of production of nuclear power plants, thermal power plants and thermal power plants and hydroelectric power plants and gas power plants was 51.2%, 35.2% and 5.1%, respectively (Table 2.4).

Table 2.4

Structure of electricity production

Electricity production	2020 is the year		2021 is the year		Deviation	
	million kWh	%	million kWh	%	million kWh	%
In total	148856,2	100,0	156575,7	100,0	7719,5	5,2
TPP and CHP, of which:	52360,8	35,2	45834,0	29,3	-6526,8	-12,5
TPP GK	39562,4	26,6	37224,9	23,8	-2337,5	-5,9
CHP and cogeneration plants	12798,4	8,6	8609,1	5,5	-4189,3	-32,7
HPP	7583,9	5,1	10445,8	6,7	2861,9	37,7
nuclear power plant	76202,6	51,2	86205,4	55,1	10002,8	13,1
WHERE	10862,0	7,3	12519,7	8,0	1657,7	15,3
Block stations	1846,9	1,2	1570,8	1,0	-276,1	-14,9

Source: Electricity production in Ukraine in 2021

Since the beginning of the war, the electricity market has been most affected by the drop in electricity consumption due to the fact that about 3.5 million citizens were forced to leave Ukraine, and up to 7 million people became forced internal migrants and largely lost their ability to pay. Likewise, most of the citizens who remained in their

places of residence lost their income due to the shutdown of production facilities and also have difficulties with payment.

Considerable damage to the Ukrainian energy system was caused by the occupiers, who are deliberately destroying it through rocket and cannon fire. About 970 settlements in which more than 700,000 consumers live remain without power. During the shelling of the Zaporizhzhia Nuclear Power Plant (ZAEP), Russian terrorists damaged many objects on its territory. The total damage caused by the ZNPP exceeds UAH 18 billion.

The energy system of Ukraine has been working stably as part of the European ENTSO-E network for more than half a year. All types of power plants continue to operate according to schedule. On June 30, Ukraine started exporting electricity to Romania, which is the beginning of the commercial exchange of electricity between Ukraine and the EU. The initial export volume is 100 MW. The export potential of Ukrainian electricity to Europe is up to 2.5 GW. Under such a scenario, the state will be able to receive more than UAH 70 billion per year.

Electricity has the prospect of becoming one of the drivers of the recovery of the Ukrainian economy, as it has already become a driver of integration into the EU. After the initial stage, the trade capacity is planned to be gradually increased based on considerations of stability and security of the energy system. Electricity trading on other connections (Ukraine-Slovakia, Ukraine-Hungary and Moldova-Romania) is expected to start later.

Given the peculiarities of the electric power industry, the conclusion follows that the operational activity of energy supply enterprises also has its own peculiarities.

For a year now, the world has been watching how constant shelling by the Russian Federation destroys energy facilities and critical infrastructure of Ukraine. The actions of the aggressor encourage countries dependent on Russian energy carriers to accelerate the search for solutions for their own energy security. The European Commission has developed REPowerEU – an action plan based on the approaches of the European “green” course and includes increasing energy efficiency, increasing energy consumption from renewable energy sources, developing hydrogen and biomethane technologies, and switching from gas to electricity.

If the EU has time for a planned transition, then Ukraine is forced to respond quickly to the challenges of the war, because its energy sector functions in conditions of large-scale destruction of heat and electricity generation facilities. However, at the same time as current measures, the country is developing an action plan for the future reconstruction of the energy sector, and it is doing so according to the principles of maximum energy security and environmental protection.

The recovery of Ukraine has a focus on energy independence and the “Green” course, and requires significant funding. According to the calculations of the Ukrainian side, over the next 10 years, Ukraine will need 750 billion US dollars to restore the country. At the same time, about 130 billion US dollars will be needed to strengthen energy independence and implement the “Green” course. Specifying measures for the future “green” reconstruction in the Recovery Plan, the state proposes to build 3.5 GW of hydroelectric power plants and pumped hydroelectric power plants, to localize the production of RES equipment, such as wind towers, transformers, cables, electrolyzers, batteries. In addition, there are plans to build more than 30 GW of RES capacity for H2 production and develop biofuel production.

In general, since 2019, investments in new renewable energy projects in Ukraine have been consistently higher than in fossil fuel projects. In the last 10 years alone, leading international and Ukrainian RES investors have attracted more than USD 12 billion of foreign direct investment into the economy of Ukraine, and the share of foreign investors in the installed RES capacity as of the end of 2021 has reached more than 35%, which characterizes the Ukrainian RES sector as quite competitive and open. Today, the list of the largest international creditors and investors in the RES sector in Ukraine includes: the European Bank for Reconstruction and Development, the Black Sea Bank for Trade and Development, the American International Development Finance Corporation (DFC), the Federal Land Bank of Bavaria BayernLB, the Investment Fund for Developing Countries (IFU), the Northern Environmental Finance Corporation (NEFCO) and many others. Thus, the geography of investments in the construction of Ukrainian renewable energy power plants extends to organizations or individual investors from China, the USA, Great Britain, Germany, the Netherlands, Sweden, Denmark, Norway,

France, Luxembourg, Belgium, Spain, Canada, Turkey, etc.

In 2021, all RES power plants produced 12,804 million kWh of clean electricity, which was 1,941.9 million kWh or 17.8% higher than last year's figures:

- Ukrainian wind power plants produced 3,866 million kWh or 614.4 million kWh more than in 2020, which is 2.97% of total electricity production;

- SPPs produced 7,670 million kWh or 4.8%, which is 1,065.4 million kWh more than the amount of electricity produced in the same period of 2020;

- mHP generation increased by 56.1 million kWh, reaching 276 million kWh or 0.17% of the total balance;

- Ukrainian bioelectric power plants generated 992 million kWh or 0.6%, which is 206 million kWh more than the production level of the previous year.

From the very first hours after the invasion, Russian troops have been massively shelling not only Ukrainian cities and towns, but also trying to destroy critical energy infrastructure facilities: high-voltage networks, transformer substations, control centers, as well as directly power plants, including renewable energy facilities. In general, after nuclear power facilities and power lines, renewable energy power plants became the second priority of destruction for the Russian invaders.

As already mentioned, before the war in Ukraine, a number of regulatory documents and national strategies were adopted, which determine the future direction of the development of renewable energy sources in Ukraine during this and future decades. Thus, in particular, the Energy Strategy of Ukraine until 2035 “Security, energy efficiency, competitiveness” envisages the possibility of achieving a 25% share of RES in the total primary energy supply by 2035, since according to the text of the Energy Strategy “RES will develop at the most dynamic pace compared to other types of generation”. The Energy Strategy also substantiates the need for the development of distributed generation from RES, in particular the development and start of implementation of the plan for the implementation of “smart” energy networks (Smart Grids).

The economic strategy of Ukraine until 2030 also defines decarbonization, the development of RES and the circular economy in

accordance with the European Green Course, and increasing energy efficiency as one of the guidelines for the development of the national economy. According to the Economic Strategy of Ukraine, the share of RES in the total production of electricity should increase to 25% by 2030. The Economic Strategy also focuses on the need to increase the amount of energy storage capacity, consider the possibility of hydrogen production, and regulate the operation of localized generation from RES.

The concept of the “Green Energy Transition of Ukraine” until 2050, presented by the Government of Ukraine in 2020, states that “Ukraine is quite capable and economically expedient to achieve a 70% share of RES in electricity production by 2050. And a significant part (up to 15%) should be electricity production at the expense of rooftop solar power plants in households and businesses”.

The important role of renewable energy sources is also determined by the National Strategy for Low-Carbon Development of Ukraine until 2050 and the Second Nationally Determined Contribution to the Paris Agreement.

However, in the conditions of a full-scale war with the Russian Federation, the provisions of the Recovery Plan of Ukraine until 2032, presented by the Government of Ukraine in July 2022 at the international donors’ conference in Lugano, gained priority importance for the further development of RES. Taking into account the current trends, the post-war development of Ukraine’s economy will take place in accordance with this Plan, and the sector of renewable energy sources is no exception. Thus, by 2032, it is planned to build 5-7 GW of new solar and wind power plants to expand Ukraine’s export capacity, 30+ GW of RES facilities for the production of renewable hydrogen, and 3.5 GW of hydroelectric and pumped hydroelectric plants. Additionally, over the next 10 years, the Plan provides for the commissioning of 1.5-2 GW of peak power, 0.7-1 GW of batteries, and 15 GW of electrolysis capacity. The volume of future investments in the national program “Energy Independence and Green Course” is currently estimated at 130 billion dollars.

At the same time, it should be emphasized that the targets for expansion of RES generation presented by the aforementioned Plan do not take into account the full potential of renewable energy sources. So, for example, according to the Ukrainian Wind Energy Association,

the wind energy sector of Ukraine has the opportunity to add at least 7 GW of new wind turbines to the current installed capacity by 2030. This is explained by the fact that, firstly, as of the end of 2021, 4 GW of new wind energy projects had already received construction permits and most of them were to be commissioned by 2024-2026, and, secondly, the average unit capacity of wind turbines proposed for operation at new wind farms, starting in 2021, is 6 MW and above, which makes the possibility of achieving this goal quite real.

As for the further development of solar energy, under the current market realities in Ukraine and in accordance with the goals set in the RePowerEU Plan, the sector of small solar generation will gain active development, namely the installation of photovoltaic systems on the roofs of buildings and households.

In addition, the Recovery Plan of Ukraine until 2032 does not set specific goals for the development of offshore wind energy, i.e. offshore wind turbines. At the same time, it should be noted that according to the World Bank, Ukraine has one of the best technical potentials for the development of offshore wind energy in the Black Sea among all the countries of the Black Sea region. The theoretical technical potential of offshore wind energy in the Black Sea and in the shallow waters of Ukraine is as much as 250 GW, when the total theoretical potential of all Black Sea countries is 435 GW.

Taking into account the experience of EU and Energy Community member states that have access to the Black Sea and demonstrate high indicators of wind energy development and reduction of greenhouse gas emissions, the launch of the offshore wind energy market in Ukraine is one of the best options for accelerating the achievement of the goals of the European Green Course and RePowerEU. In addition, Ukraine should consider the possibility of building offshore wind farms, as it is a participant in regional cooperation in the context of the Joint Maritime Agenda for the Black Sea, which includes the stimulation and development of blue economy sectors, namely the development of offshore wind and wave technologies.

Operational activity is the main activity of the enterprise, which is related to the production and sale of products (works, services), provides the main share of income and is the main purpose of creating the enterprise.

The operational activity of distribution system operators is the

main type of activity and it is connected from the first to the last stage at the enterprise, i.e. from the receipt of electricity from the market to its distribution on power grids and provides the enterprise with a significant part of the income for its further functioning.

The operational activity of the enterprise is determined by the specifics of the economic sector to which it belongs, in our case it is the energy sector. The main priority of the company's activity is operational activity, so other auxiliary activities can have only secondary importance. The operational activities of energy enterprises focus their attention on the energy consumer market, the production and transmission of electricity by enterprises, which requires significant labor costs and regular business operations.

The main tasks of enterprises-operators of the electricity distribution system are determined by the specificity of the industry, the continuous process, the limited possibilities of creating reserves, the simultaneity of its production and consumption, and are reduced to the following (Regularities of planning, creation and effective use of the organization's operating system):

- obtaining the main types of energy for general industrial purposes (electricity, steam, etc.);
- transformation of energy voltage and its preparation for use;
- efficient distribution of energy between units and its supply to workplaces;
- supervision of the implementation of the rules of operation of energy equipment;
- carrying out repair works;
- ensuring functional connections between units.

NP(S)BO 16 states that the costs of operating activities are the costs of the main activity of the enterprise (except investment and financial). The following definition: costs of operational activity – costs of the enterprise related to its main (directed to the production or sale of products, goods, works, services, which is the main purpose of the creation of the enterprise and provides the main share of its income) activity, as well as operations, which provide it or are caused by it.

The classification of operating expenses of enterprises-operators of the electricity distribution system is presented in the Table 2.5.

Table 2.5

Classification of operating expenses of enterprises-operators of the electricity distribution system

No.	Signs of classification	Type of operating expenses
1	By type and volume	- general - one-time
2	By place of origin	- electricity supply costs - administrative expenses
3	By functional purpose	- operating expenses - expenses from financial activities - expenses from investment activity
4	By degree of homogeneity	- elemental - complex
5	By the method of transferring costs to the cost of production	- straight lines - indirect
6	According to the degree of dependence on the volume of production	- constant - variables
7	By content and purpose	- costs by economic elements - expenses according to costing items
8	By periods	- expenses of the current period – costs of future periods
9	According to the possibility of control	- controlled - uncontrolled
10	By target affiliation	- production - administrative
11	By degree of priority	- priority - secondary

Source: (Bokhonko, 2015)

Bohonko I.V. suggests that the operating expenses of enterprises-operators of electricity distribution systems should be allocated by purpose: production expenses are expenses for fuel, energy, contract work, raw materials and auxiliary materials; administrative expenses – expenses related to maintenance of administrative personnel, expenses for transport, business trips. According to the degree of priority: first priority – expenses for wages, expenses for repairs; secondary – utility payments.

Therefore, at enterprises-operators of the electricity distribution system, repair costs are the costs of operational activities, which are priority costs according to the degree of priority. According to the requirements of NP(S)BO 16 “Costs” and NP(S)BO 7 “Fixed Assets”,

repair costs are operational costs included in the cost of products, goods, works, and services.

On the basis of the well-known classification of costs of the company's operational activities, it is possible to consider the costs of enterprises-operators of the electricity distribution system in more detail. Classification of costs of production cost for energy supply enterprises:

1. Production services:
 - maintenance of air lines;
 - maintenance of relay protection and automation;
 - maintenance of computer equipment;
 - maintenance of measuring equipment;
 - the cost of the services of third-party organizations for the technical maintenance of motor vehicles and special mechanisms;
 - disposal of industrial waste.
2. Expenses for labor protection and safety equipment.
3. Raw materials and auxiliary materials.
4. Fuel from the side.
5. Energy from the side.
6. OP expenses.
7. Depreciation.
8. Other expenses:
 - business trips (maintenance, training);
 - traveling nature of works.

The cost structure of electricity distribution system operators that transmit and supply electricity shows that 90% of operating costs are related to electricity transmission, and only 10% of operating costs are related to supply (Bokhonko, 2015).

Operational costs of electricity transmission are costs related to the repair of power networks, reconstruction, modernization and technical re-equipment of networks, costs for technical personnel, depreciation of fixed assets.

Operating costs from the supply of electricity are costs related to commercial activities, costs for contractual work, printing bills for consumed electricity, wages for employees involved in commercial activities, and other operating costs (Fig. 2.3).

According to the Rules for the organization of maintenance and repair of equipment, buildings and structures of power plants and

networks, the system of maintenance and repair of electrical networks provides for the performance of a complex of works, which are carried out with a certain frequency and sequence, aimed at ensuring the working condition of electrical equipment, its reliable and economical operation at optimal labor and material costs.

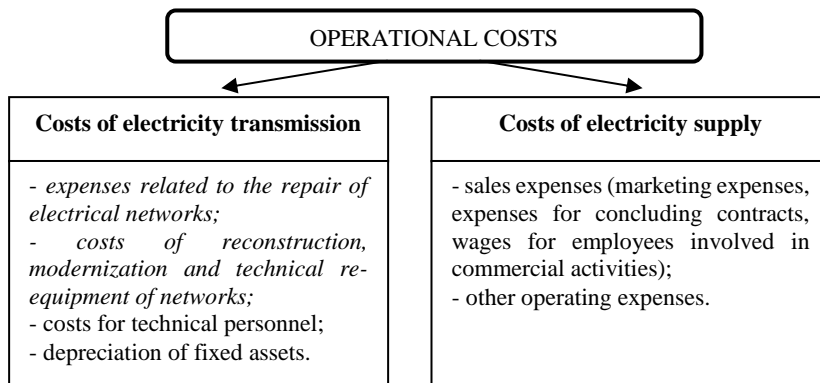


Fig. 2.3. The place of expenses for repairs and improvements of fixed assets in the operating expenses of enterprises-operators of the electricity distribution system

Source: generated by the author

The complex of works mainly includes:

1. Clearly organized maintenance of electrical equipment;
2. Establishing the optimal periodicity of major repairs of electrical equipment;
3. Introduction of progressive forms of organization and management of electrical equipment repair;
4. Introduction of specialization of repair works;
5. Quality control of work during the repair process;
6. Timely supply of repair works with materials, spare parts and equipment;
7. Analysis of parameters of the technical condition of the equipment before and after repair.

Maintenance of electrical networks (hereinafter referred to as maintenance) is a method of maintenance in which all necessary works of a set of works are performed, aimed at maintaining efficiency and preventing premature failure of elements of the electrical network

object, which is achieved by inspections, performing preventive checks and measurements and individual types works with replacement of malfunctioning parts and elements of electrical networks, repair of damages.

Overhaul of electrical networks (further – overhaul) is a repair method in which a set of measures is simultaneously carried out aimed at maintaining or restoring their initial operational characteristics, which is achieved by repairing damaged parts and elements or replacing them with more reliable and economical ones, which in turn in turn, will significantly improve the operational characteristics of objects.

Provision of technical maintenance and repair, maintenance of electrical networks in a working condition is entrusted to operators of the distribution system (hereinafter – Oblenergo), PJSC “National Energy Company “Ukrenergo” and its separate units – electric power systems.

Maintenance and overhaul of 220-800 kV overhead lines, 220-800 kV electric substations are mainly performed by separate units, separate divisions of the electric power system of PJSC “National Energy Company “Ukrenergo”. Contracting organizations are engaged to perform large volumes of capital repairs and reconstruction works related to the mass replacement of the main elements of overhead power lines, transformer substations, cable power lines, or emergency restoration works.

To ensure capital repairs and maintenance, it is advisable to create repair and production bases (RVB), repair and mechanical stations (RMS), repair and operation points (REP), as well as stocks of equipment and materials in case of emergency repair work (AVR).

It is advisable to carry out maintenance and repair of electrical network facilities using a comprehensive method their performance is grouped in a complex by nomenclature and periodicity. At the same time, the work is carried out by centralized service teams, which perform the full scope of work at the facility.

During the complex implementation of the works, mechanization means and personnel are concentrated on the repaired object. The method of complex performance of works in the operational maintenance of electrical networks allows:

1. To move from selective and seasonal work to planned and

orderly maintenance;

2. To increase the productivity of personnel by eliminating non-productive time spent on preparatory and final operations (preparation of tools and materials, organization of workplaces, switching off and on electrical installations), transitions and relocations, increasing the level of mechanization of work by concentrating mechanisms on the object;

3. To reduce the total time of repair and maintenance, including idling of power grid objects in the switched off state;

4. To raise the level of technical management, to improve the organization and working conditions of personnel, control over compliance with safety measures;

5. To ensure the quality of work, detection and elimination of defects in equipment, elements and structures of electrical networks;

6. Rationally use labor and material resources.

Centralized service teams must be provided with:

1. Vehicles, special mechanisms and machines, means of mechanization, protection, rigging, tools and inventory;

2. Means of communication;

3. Necessary technical documentation and instructions;

4. A complex of buildings (warehouses, workshops, garages, laboratories, etc.).

Special mechanisms, machines, devices and other equipment are attached to teams that constantly use these mechanisms. Responsible for their technical condition, timely repair and testing are the divisions of the power system. The choice of the method of repair and maintenance is made on the basis of technical and economic justification, taking into account local conditions, including the provision of material resources, means of mechanization, transport, qualification and number of personnel and other factors.

The periodicity and duration of repair and maintenance of electrical network objects is established by regulatory and technical documentation, depending on the technical condition of the object, local operating conditions.

During the repair and maintenance of electrical network facilities, it is necessary to comply with the requirements of regulatory, technological and design documents:

1. Overhead power lines with a voltage of 35 kV and above –

Operating instructions, technological maps;

2. Maps of labor organization;

3. Schemes.

The management of Oblenergo is responsible for the organization of maintenance and repair of electrical networks with a voltage of 0.4-150 kV. Responsibility for the organization of maintenance and repair of electrical networks with a voltage of 220-800 kV is carried out by separate units of NEC “Ukrenergo”.

Long-term (perspective) and annual plans, schedules for the repair and maintenance of electrical network facilities with a voltage of 0.4-150 kV are developed by the relevant production services of REM and the production and operation services of Oblenergo, agreed and approved by their management, and for electrical networks with a voltage of 220- 800 kV – separate subdivisions of NEC “Ukrenergo”.

Plans for material and technical supply must correspond to plans and schedules for the repair and maintenance of electrical network facilities.

Repair and reconstruction works on electrical network facilities located on agricultural land should be carried out in agreement with the land user.

Maintenance work and elimination of accidents, or elimination of an emergency situation at the facility, which threatens people’s lives, is allowed to be carried out at any time, without agreement with the land user. After the completion of the works, the executor is obliged to restore the land to its previous state. The owner of the object compensates the land user for the damages caused during these works.

To ensure prompt elimination of emergency situations in electrical networks, it is necessary to create an emergency stock of electrical equipment, materials and products. The volume of the emergency stock and the conditions for its storage and replenishment are determined on the basis of regulatory documents “Standards for the emergency stock of equipment and materials for mainline electrical networks with a voltage of 220-750 kV” 34.10.383, “Standards for the emergency stock of electrical equipment, building structures and materials for high-voltage electrical networks 0.38-150 kV”. The cost of repairs and maintenance at electrical facilities is determined by estimates compiled on the basis of regulatory documents “Time standards for repair and maintenance of electrical networks”.

For work not specified in the above-mentioned documents, estimates are made on the basis of state norms and estimates for construction, installation and repair work of electrical equipment or local norms of time and calculations. To determine the cost of repairs and maintenance of electrical networks, it is advisable to use an automated system for calculating budget and financial documentation based on the above-mentioned regulatory documents.

2.3. Accounting for the repair of fixed assets of enterprises-operators of the electricity distribution system

Electricity has the prospect of becoming one of the drivers of the recovery of the Ukrainian economy, as it has already become a driver of integration into the EU. After the initial stage, the trade capacity is planned to be gradually increased based on considerations of stability and security of the energy system. NP(S)BO 7 “Fixed assets” typifies the classification of fixed assets that cannot satisfy the information requirements of the management of electric power enterprises of Ukraine. Due to the technological specificity of such business entities, the objects belonging to the fixed assets of the group “Buildings, structures and transmission devices” in the structure of this type of assets have the largest specific weight. As an example, let’s present the structure of fixed assets of JSCo “Vinnytsiaoblenergo” (Table 2.6).

This group of property of this enterprise for the analyzed period is in the range from 48% to 52%. At the same time, the basis of the “Buildings, constructions and transmission devices” group consists of power lines, that is, transmission devices. We consider it expedient for the needs of providing information requests of information users of electric power enterprises to allocate a separate group “Transmitting devices”, which will allow obtaining more detailed information about the objects that form the basis of the means of activity of such subjects.

As part of the elements of the accounting policy of electric power enterprises, we propose to allocate a separate section to determine the classification of fixed assets. Accordingly, in the Working plan of accounts of such enterprises, it is necessary to provide for the corresponding accounts of the third and fourth order for analytical accounting of operations with the specified objects. In particular, we suggest introducing a separate subaccount 102 “Transmitting devices”. Due to the specifics of the activity of electric power

enterprises, such standard sub-accounts for synthetic account 10 “Fixed assets” as “Capital costs for land improvement”, “Animals”, “Perennial plantations”, due to the insignificant specific weight of such objects, or their complete absence, are expedient to be recorded as part of sub-account 109 “Other fixed assets”.

Table 2.6

The structure of fixed assets of JSCo “Vinnytsiaoblenergo”

Group of fixed assets	2018 p.		2019 p.		2020 p.		Deviation, +/- 2020 to 2018	
	thousand hryvnias	%	thousand hryvnias	%	thousand hryvnias	%	thousand hryvnias	%
Ground section	-	-	2483	0,1	2483	0,1	+2483	+0,1
Buildings, structures and transmission devices	950817	52,1	1023632	49,6	1067559	48,3	+116742	-3,8
Machinery and equipment	619513	33,9	749907	36,4	874507	38,5	+254994	+4,6
Vehicles	66675	3,7	70270	3,4	75945	3,3	+9270	-0,4
Tools, appliances, inventory (furniture)	88395	4,8	97242	4,7	103593	4,6	+15198	-0,2
Other fixed assets	99439	5,5	118684	5,8	118684	5,2	+19245	-0,3
In total	1824839	100	2062218	100	2269442	100	289807	-

Source: created by the author based on information from the financial statements of JSCo “Vinnytsiaoblenergo”

Today, the electric power industry of Ukraine requires significant costs for the repair and restoration of fixed assets. Unfortunately, in the conditions of military operations and the negative consequences in the economy caused by the war, electric power companies practically abandoned the system of scheduled and preventive repairs, which negatively affected the maintenance and use of fixed assets.

The organization of accounting for repairs and improvements of fixed assets requires not so much the separation of the classification features of the fixed assets themselves, but the division of costs incurred during the period of their operation.

During the operation of fixed assets, they require certain costs for maintaining their functional properties (technical characteristics) and improving them. In accounting, such expenses are divided into two groups:

- expenses incurred to maintain the facility in a usable condition and the possibility of obtaining a predetermined amount of future economic benefits from its use;
- expenses aimed at improving the technical and economic characteristics of the object.

The first include expenses for maintenance of fixed assets and their repairs (current, capital). The second group includes expenses, the implementation of which leads to an increase in future economic benefits originally expected from the use of the object (modernization, modification, completion, retrofitting, reconstruction, etc.).

That is, the main criterion when assigning costs to one or another group is the future economic benefits from the use of the object. If, after incurred expenses, it is expected to receive a predetermined amount of future economic benefits, this means that the enterprise has performed repair work. If, as a result, the future economic benefits, compared to the originally expected ones, increase, this is an improvement.

According to international accounting standards, the procedure for displaying costs for repair and improvement of fixed assets and disclosing information about them in financial statements is determined by IAS 16 “Fixed Assets”. According to paragraph 24 of IAS 16 “Fixed Assets”, subsequent expenses related to an object of fixed assets that have already been recognized should be added to the book value of this asset when it is probable that future economic benefits that exceed the initial the estimated level of productivity of the existing asset will be provided to the enterprise. All other subsequent expenses should be recognized as expenses of the period in which they were incurred.

According to the specified classification of costs, the method of their accounting differs. Repair costs (current, capital) should be included in the current costs of the enterprise, depending on the functional purpose of the object. Expenditures for improvements to fixed assets are capitalized and increase the original cost of the objects. According to the “Methodical recommendations for accounting of fixed assets”, the decision on the nature and signs of repair work carried out by the enterprise is made by the head of the enterprise independently, taking into account the results of the analysis of the existing situation and the materiality of such costs. Regarding the

definition of the categories “current repair” and “capital repair”, it should be noted that there are no clear definitions in the current legal acts. Definitions of the terms “maintenance” and “overhaul” for certain accounting objects are given in the normative legal acts that regulate certain fields of activity (Table 2.7).

Table 2.7

**Interpretation of the terms “maintenance” and “overhaul”
according to regulatory and legal acts**

Type of repair	Definition
Rules for maintaining residential buildings and outbuildings	
Current	A complex of repair and construction works, which involves systematic and timely maintenance of operational qualities and prevention of premature wear of structures and engineering equipment
Capital	A complex of repair and construction works related to the restoration or improvement of the operational indicators of the building, with the replacement or restoration of load-bearing or enclosing structures, engineering equipment and fire protection equipment without changing the construction dimensions of the object and its technical and economic indicators
Regulations on maintenance and repair of road vehicles of road transport	
Current	Repairs that are performed to ensure or restore the functionality of the product and consist in the replacement and (or) restoration of individual parts (can be performed upon request or based on the results of diagnostics by aggregate, impersonal and other methods)
Capital	Repairs that are performed to restore the serviceability and full or near full recovery of the product resource with the replacement or restoration of any parts, including basic

Source: (Rules for maintaining residential buildings and outbuildings, 2005; Regulations on maintenance and repair of road vehicles of road transport, 2008)

The interpretation of current and capital repairs is also given in the Methodological recommendations for the formation of the cost of production (works, services) in industry, approved by the order of the Ministry of Industrial Policy of Ukraine dated 07.09.2007 No. 373. They define that current repairs are carried out to ensure or restore operational qualities equipment and consists in the performance of small works on the correction and partial replacement of individual parts of production and lifting and transport equipment, workshop transport and tools, devices and devices from the composition of the main production facilities.

Overhaul according to the Regulation on maintenance and repair of road vehicles of road transport is treated separately for production transport equipment and equipment. Overhaul of production and lifting and transport equipment, workshop transport means repair carried out to restore serviceability and complete or near complete restoration of the object's resource and consists in performing works related to the replacement or restoration of its most important responsible parts or basic structures. For equipment, a major repair is considered a repair in which the unit is completely disassembled, replacement or restoration of worn parts and components, repair of basic other parts and components, assembly, adjustment and testing of the unit. The specified methodological recommendations are used for planning, keeping records and calculating the production cost of products (works, services) at enterprises that produce industrial products and refer to fixed assets involved in the production process.

Therefore, the methodological base for accounting for fixed assets does not contain a universal definition of the concepts "current repair" and "capital repair", and scientific approaches are characterized by multiplicity. The responsibility of identifying the type of repair rests with the head of the enterprise. Such a decision is made taking into account the results of the analysis of the existing situation and the materiality of such costs. However, in practice, not all managers have the appropriate skills for such an assessment. Therefore, the validity and expediency of the decision regarding the identification of the type of repair may be questioned. Without having the appropriate skills, the managers of the enterprise will be forced to attract third parties with technical qualifications and bear additional costs for payment of their services.

In order to ensure the reliability of the display in the accounting and reporting of repair costs, it is necessary to make additions to the methodological recommendations on the accounting of fixed assets in the part of the categorical apparatus, clarifying the concepts of "current repair" and "capital repair". The main feature for identifying the type of repair is its purpose: maintenance of the technical and operational characteristics of the object of fixed assets in working condition or improvement of operational indicators. During the current repair, maintenance or restoration of technical and operational characteristics of the object of fixed assets is carried out on a

systematic basis or in case of need and does not provide for the receipt of economic benefits in the future.

The purpose of major repairs is to improve the operational characteristics of the fixed asset object, which can be implemented by replacing or restoring any part of the fixed asset without changing the geometric dimensions, functional purpose and without improving technical and economic indicators. Otherwise, major repairs will have signs of improvement: reconstruction, modernization, retrofitting or additions. Overhaul should be carried out if necessary: in case of destruction, replacement of a part of the main asset, complete wear and tear of a part of the main asset, etc.

Thus, the signs that have an impact on the identification of the type of repair are the purpose, the systematicity of the work, and the change in geometric shapes.

Plans for material and technical supply must correspond to plans and schedules for the repair and maintenance of electrical network facilities.

Repair and reconstruction works on electrical network facilities located on agricultural land should be carried out in agreement with the land user.

Maintenance work and elimination of accidents, or elimination of an emergency situation at the facility, which threatens people's lives, is allowed to be carried out at any time, without agreement with the land user. After the completion of the works, the executor is obliged to restore the land to its previous state. The owner of the object compensates the land user for the damages caused during these works.

The process of forming the necessary accounting information in general, and information about the repair of fixed assets in particular, goes through several stages, namely: initial observation, generalization (i.e. data processing) and presentation of reporting data. The first and most important point in the accounting of fixed assets is the documentation of transactions with them. Primary documents must contain sufficient information characterizing the object and must be the basis for accounting records. At the same time, the documents must serve as a legal basis for proving the existence of objects and carrying out various operations with them.

Acceptance of completed repair works (current, capital) is formalized by the act of acceptance and delivery of repaired, reconstructed and modernized objects of form No. OZ-2 or its

modernized analogues, the forms of which were approved by the order of the Ministry of Finance dated 09/13/2016 No. 818 (para. 28 of methodological recommendations No. 561). At the same time, the enterprise can use other primary documents, the forms of which differ from those established by law, but which contain the necessary details for the primary document.

The act, signed by an employee of the enterprise, authorized to accept fixed assets, and a representative of the repair service of the enterprise that performed the repair or improvement, is transferred to the accounting department of the enterprise. After that, the act is signed by the chief accountant and approved by the head of the enterprise, organization or authorized persons.

If the repair is carried out by a third-party organization, the act is drawn up in two copies. Then the second copy is given to the company that performed the repair.

Information about repairs/improvements is entered in the inventory cards of fixed asset accounting.

If the repair work is performed by a contractor, when drawing up a statement of defects (during repair) or a statement of maintenance work (during maintenance), or another document provided for by the parties to the contract, the scope of work is agreed upon, the cost of which is also established in the relevant contract (art. 843 of the Civil Code of Ukraine). In practice, a cost estimate is most often made.

If the contract provides for the use of the customer's materials, then such materials are transferred to the contractor according to the act of acceptance and transfer, while form No. M-11 (approved by order No. 193) is drawn up for their transfer from the warehouse to the workshop where the equipment is repaired. There is no standard form of the act of acceptance and transfer drawn up between the customer and the contractor, but when developing "your" act, you can use the standard form No. M-23 "Act on consumption of delivery materials" as a template.

Documentary support for accounting for repairs of fixed assets at the stage of its organization is of fundamental importance in terms of cost control. The distribution of documents according to the method of carrying out repair work will allow the head of the enterprise to make alternative decisions based on the materiality of such costs (decisions such as: carrying out repairs to maintain the object in a usable condition or obtaining the desired amount of future economic benefits from its use). Due to the above, we propose to classify the

documents recording the recognition of expenses by economic and contractual method, by marking them with the mark “repair method” or adding the requisites (columns) “repair method”. We also suggest that the costs of repair of fixed assets be distributed according to the method of repair, by specifying in the names of the analytical accounts “Business method of repair” and “Contractual method of repair”.

Analytical accounting of repairs is carried out in sections defined at the enterprise level. The main feature of the organization of analytical accounting of repair costs is that the primary feature in them is not the approach to the division of fixed assets by groups, types and types, but the approach to the division of repair costs.

The order and features of displaying the mentioned operations on accounting accounts depends on the method of carrying out improvements: economic, contractual or mixed.

Performing repairs in the first way involves the implementation of construction and installation works or other improvement works with the help of direct forces (specialized repair units, teams created within the enterprise) and the funds of the organization, without the involvement of other contracting organizations. Under such conditions, design and estimate documentation for construction, repair and construction works, and reconstruction must be drawn up. In turn, with this method, the accounting of asset repair operations depends on the organization of its implementation: by the forces of repair and mechanical, repair and construction and other workshops or crews or individual workers of the same divisions where the facility of fixed assets is operated.

The next method of repair works is contracting, according to which the customer chooses a specialized construction and repair organization and concludes a contract with it. According to it, the general contractor undertakes to perform the works stipulated in the contract within the agreed time. The methods of conclusion of the contract are determined by the customer, taking into account the complexity of the operations, the features of the object.

Under the mixed method, contracting and economic methods are combined. At the same time, some works are performed by the forces of subcontractors, highly specialized in complex works, and others by the forces of the enterprise (mass simple operations). In order to prevent unnecessary costs for repair operations, in accordance with the developed and approved plans (schedules) and the established duration and periodicity, maintenance and repair of equipment should

be provided.

Regardless of the type of repair (current, capital), the costs of its implementation should be included in the current costs of the enterprise (production, administrative, sales costs, etc.). According to the current method, the costs of improving facilities are preliminarily reflected in capital investments, and after the completion of the work, they are included in the original cost of fixed assets. The accounting display of costs for repair and improvement of fixed assets is presented in Table 2.8.

Table 2.8

Correspondence of invoices for the accounting of costs for repair and improvement of fixed assets (according to the current methodology)

No	The content of the business transaction	Correspondence of accounts	
		debit	credit
1	The costs of repair (current, capital) of fixed assets are shown:	23	66, 65, 205, 207, 209, 131, 63 etc.
	- production facilities		
	- objects of general production purpose	91	
	- objects of administrative purpose	92	
	- sales facilities	93	
	- objects of social purpose	949	
2	Expenses for the improvement of fixed assets are shown	151, 152	
3	The cost of improvements is attributed to the original cost of the fixed asset object	10	151, 152

Source: generated by the author

If the enterprise keeps records according to national standards, then it must:

1) starting from the month following the month of transfer of the object of fixed assets for reconstruction, modernization, completion, retrofitting, stop charging depreciation;

2) renew the calculation of depreciation from the month following the month in which the object of fixed assets became suitable for use – put into operation after improvement. To calculate depreciation for the period after the improvement, the new original value of the object should be taken, that is, taking into account the costs of the improvement.

At the same time, if the work on the improvement of fixed assets

is carried out within one calendar month (the beginning and the end fall on the same month), then the accrual of depreciation is not stopped.

Also, in our opinion, if only a part of the fixed asset object will be improved and the object itself will not be decommissioned, then the depreciation of fixed assets should not be suspended. NP(S)BO 7 does not establish the obligation to suspend the accrual of depreciation or change its amount during the reconstruction of a part of the object.

When improving fixed assets, the period of useful use of objects can be revised upwards.

Depreciation of the fixed asset object, in respect of which the period of use has been changed, is already calculated based on the new period of useful use and the new residual value of the fixed assets. At the same time, accrual of depreciation according to the new rules begins with the month following the month of the change in the period of useful use of the improved object.

The conducted research shows that among the elements of the accounting policy of most operators of the electricity distribution system, there are no norms regulating the accounting of costs for repair, restoration and improvement of fixed assets. This reduces the effectiveness of managing such operations due to the formation of information that does not take into account the specifics of the industry and today's operating conditions of power grids. We suggest that in the working plan of accounts to distinguish information by types of repairs, to determine the total amount of repair costs (calculation of the cost of repair works), separate sub-accounts to account 23 "Production": 233 "Current repair of fixed assets"; 234 "Overhaul of fixed assets". The debit of these sub-accounts should reflect all costs related to the corresponding types of repairs of fixed assets. On credit, after signing the acts on the completion of repair work, debiting the costs to the debit of the relevant accounts depending on the functional purpose of the objects being repaired.

As research has shown, despite the difficult conditions of the industry's operation, it is necessary to plan expenses for repairs, especially capital repairs of electric power enterprises. If these subjects are located territorially in the zone of active hostilities, of course, planning is unlikely to be discussed. If it is a relatively calm region, such as the Vinnytsia region, the company can plan an annual

budget for repair costs and form monthly budgets. This will make it possible to provide repair work with material resources in a timely manner and evenly distribute costs by period.

To ensure prompt elimination of emergency situations in electrical networks, it is necessary to create an emergency stock of electrical equipment, materials and products. The volume of the emergency stock and the conditions for its storage and replenishment are determined on the basis of Norms of emergency stock of equipment and materials for trunk and interstate electric networks, Norms of emergency stock of electrical equipment, building structures and materials for electrical networks with a voltage of 0.38-150 kV. The cost of repairs and maintenance at electrical facilities is determined by estimates compiled on the basis of regulatory documents “Time standards for repair and maintenance of electrical networks”. However, the specified normative documents do not take into account, firstly, the extreme conditions of the operation of the electric power industry during full-scale military operations; secondly, the conditions of integration of the Ukrainian electricity industry in the EU.

Ukraine’s energy system is the sixth largest in Europe, behind France, Germany, Italy, Spain and Great Britain. Synchronization of the UES of Ukraine with ENTSO-E requires the synchronization of information flows for the management of the energy system of Ukraine within the framework of the unified energy system of Europe. This requires the application of international standards for accounting and financial reporting.

International standards of accounting and financial reporting are a tool for harmonizing the formation of information flows, the main purpose of which is to ensure transparency and comprehensibility of information about the activities of business entities. The use of international accounting and financial reporting standards ensures:

- risk reduction for creditors and investors;
- reduction of costs of each country for the development of its own standards;
- the deepening of international harmonization and unification of accounting and, as a result, an unambiguous understanding of financial reporting and the growth of trust in its indicators throughout the world.

As a result, the business entity receives not only the necessary information for making management decisions, but also ensures the

comparability of reporting with other entities, regardless of which country they are a resident of and in which territory they conduct economic activity. The formation of accounting information according to the rules of international standards makes it possible to attract foreign investments and loans, and also ensures trust on the part of potential partners.

The introduction of modern information and technical technologies will allow balancing the energy system in real space, automating the accounting and financial calculations of market entities, accounting for electricity, controlling payments, and ensuring the proper quality of UES dispatching.

Taking into account the significant amount of costs for the capital repair of facilities, the long-term nature of the work and the negative consequences of the war (unplanned costs for repair and restoration due to damage to electrical infrastructure facilities), we consider it necessary to create a reserve for capital repair and restoration of fixed assets. Since the costs of major repairs under P(S)BO 7 “Fixed assets” are attributed to the expenses of the period, the formation of reserves for repairs is also logically attributed to these costs. The size of the reserve should be differentiated according to the degree of risk, depending on the location of the enterprise. At the same time, the formation and use of the reserve for the capital repair and restoration of fixed assets should be recorded in separate analytical accounts to subaccount 474 “Provision of other costs and payments”, in particular 4741 “Provision of costs for capital repair of fixed assets”, 4742 “Provision of costs for the restoration of damaged and destroyed objects”.

The proposed method of accounting for repair costs is shown in (Table 2.9).

The domestic electricity industry in the conditions of martial law and joining the EU energy system needs significant investments. Objects operated today by electric power companies are often physically and morally worn out. When restoring destroyed objects, significant investments will be required for their modernization and large-scale reconstruction. Ukraine has the potential and can develop and improve both traditional and renewable electricity. Thus, the European Commission published a study of the needs for the development of the energy system and renewable electricity in Central and South-Eastern

Europe. The commission concluded that Ukraine has an extremely high potential of renewable electricity sources thanks to the total potential of solar generation of 416 GW and the technical potential of onshore wind generation of 134 GW. The solar potential is three times the current installed European capacity, and the wind potential is about 60% of the current installed capacity across the EU. The export of renewable electricity was recognized as an extremely important element of Ukraine's post-war recovery.

Table 2.9

The proposed correspondence of the accounting of costs for the repair of fixed assets

No	The content of the business transaction	Correspondence of accounts	
		debit	credit
1.	A reserve of costs for capital repairs and restoration of fixed assets has been created	23, 91	4741
		92	4742
		93	
2.	Costs for repair work are hown: - current repair - overhaul	233	13, 20, 23, 63, 65, 66,
		234	685
3.	After signing the acts on the completion of repair works, the costs of current repairs are debited to the costs of activities in accordance with the functional purpose of the objects being repaired: - production facilities - administrative objects - sales facilities		233
		23, 91	
		92	
		93	
4.	Capital repair costs were written off at the expense of the created reserve	4741	234
		4742	

Source: generated by the author

Planning and management of such complex processes requires proper information support. In P(S)BO 7 “Fixed assets”, capital investments in non-current tangible assets are defined as costs for construction, reconstruction, modernization (other improvements that increase the original (revalued) value), manufacturing, acquisition of objects of tangible non-current assets (including non-current material assets intended to replace existing ones and equipment for installation), carried out by the enterprise.

The procedure for displaying in the system of accounting accounts such type of capital investments as costs for reconstruction, modernization and other improvements that increase the original

(revalued) value of fixed assets by Instruction No. 291 “On the Application of the Plan of Accounts for Accounting of Assets, Capital, Liabilities and economic operations of enterprises and organizations” is not regulated to date. In order to rationally organize the synthetic and analytical accounting of the mentioned costs, it is advisable to open sub-account 156 “Costs for the improvement of fixed assets” in account 15 “Capital investments”. Analytical accounting on the specified sub-account should be kept according to the types of improvements.

This separation of costs for improvements and other types of capital investments in accounting will make it possible to obtain separate information about the costs of completion, reconstruction, modernization, restoration of objects, which will be used by the company’s management for planning and managing these processes.

CONCLUSIONS TO CHAPTER 2

On the basis of a theoretical study of the peculiarities of the organization of repair works and works related to the improvement of facilities of fixed assets of electric power enterprises in the conditions of war and integration into energy systems, we can generalize the following:

Electricity has the prospect of becoming one of the drivers of the recovery of the Ukrainian economy, as it has already become a driver of integration into the EU. Given the peculiarities of the electric power industry, the conclusion follows that the operational activities of enterprises in the industry also have their peculiarities. The place and composition of costs for repair and improvement of fixed assets in the composition of operating costs of enterprises-operators of the electricity distribution system have been determined.

As a study, among the elements of the accounting policy, there are no standards that regulate the accounting of costs for repair, restoration and improvement of fixed assets. This reduces the efficiency of managing such operations due to the formation of information that does not take into account the specifics of the industry and today’s operating conditions of power grids.

As a study among the elements of the accounting policy, there are no rules governing the accounting of costs for repair, restoration and improvement of fixed assets to provide operators of electricity

distribution systems. This reduces the efficiency of managing such operations due to the formation of information that does not take into account the specifics of the industry and today's operating conditions of power grids.

The current classification of fixed assets according to NP(C)BO 7 "Fixed Assets" is typical for all enterprises and therefore cannot satisfy the requirements for accounting information of the management of electric power enterprises of Ukraine. Thus, in the structure of fixed assets, objects of such a group as "Buildings, structures and transmission devices" reach 96.7%. We consider it expedient to allocate a separate group "Transmission devices" as part of this group for the accounting needs of electric power companies, which will allow obtaining more detailed information about the objects that form the basis of the means of activity of such entities.

It is proposed to allocate a separate section as part of the elements of the accounting policy of electric power enterprises, where to determine the classification of fixed assets. We suggest that in the Working plan of accounts of such enterprises, appropriate accounts of the third and fourth order should be provided for analytical accounting of operations with the specified objects. In particular, we suggest introducing a separate subaccount 102 "Transmitting devices". Due to the specifics of the activity of electric power enterprises, such standard sub-accounts for synthetic account 10 "Fixed assets" as "Capital costs for land improvement", "Animals", "Perennial plantations", due to the insignificant specific weight of such objects, or their complete absence, are expedient to be recorded as part of sub-account 109 "Other fixed assets".

On the basis of the generalization of the theoretical research, the classification of operations on the use and maintenance of fixed assets as objects of accounting and control at electric power enterprises is proposed according to the criterion of change in economic benefits.

Documentary support for accounting for repairs of fixed assets at the stage of its organization is of fundamental importance in terms of cost control. The distribution of documents according to the method of carrying out repair work (commercial, contract) will allow the head of the enterprise to make alternative decisions based on the materiality of such costs. We suggest adding the details (column) "repair method" in the documents recording the recognition of expenses.

Taking into account the significant amount of expenses for capital repairs, the long-term nature of the works and the negative consequences of martial law, we consider it necessary to create a reserve for capital repairs and restoration of damaged objects. Since the costs of major repairs under P(S)BO 7 “Fixed assets” are attributed to the expenses of the period, the formation of reserves for repairs is also logically attributed to these costs. The size of the reserve should be differentiated according to the degree of risk, depending on the location of the enterprise. At the same time, the formation and use of the reserve for the capital repair and restoration of fixed assets should be recorded in separate analytical accounts to subaccount 474 “Provision of other costs and payments”, in particular 4741 “Provision of costs for capital repair of fixed assets”, 4742 “Provision of costs for the restoration of damaged and destroyed objects”.

The procedure for displaying in the system of accounting accounts such capital investments as costs for reconstruction, modernization and other improvements that increase the original (revalued) value of fixed assets is proposed.

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