REFORMATTING THE ENVIRONMENTAL, ENERGY, ECONOMIC AND FINANCIAL SPHERES OF UKRAINE IN THE EUROPEAN INTEGRATION CONDITIONS

TEXTBOOK



AS PART OF THE ERASMUS+ JEAN MONNET PROGRAM "REFORMATTING THE ENVIRONMENTAL, ENERGY, ECONOMIC AND FINANCIAL SPHERES OF UKRAINE IN THE EUROPEAN INTEGRATION CONDITIONS" (REGISTRATION NUMBER 101085182 - REEEFSUEIC).

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FOR STUDENTS OF THE SPECIALTY 076 "ENTREPRENEURSHIP AND TRADE", 101 "ECOLOGY", 072 "FINANCE, BANKING, INSURANCE AND STOCK MARKET" OF THE FIRST LEVEL OF HIGHER EDUCATION.

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for students of the specialty 076 "Entrepreneurship and trade", 101 "Ecology", 072 "Finance, banking, insurance and stock market" of the first level of higher education

(as part of the Erasmus+ Jean Monnet program " Reformatting the environmental, energy, economic and financial spheres of Ukraine in the European integration conditions" (registration number 101085182 - REEEFSUEIC))



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Explanations and recommendations on the topics of the lecture course (as part of the Erasmus+ Jean Monnet program " Reformatting the environmental, energy, economic and financial spheres of Ukraine in the European integration conditions " are presented (registration number 101085182 - REEEFSUEIC)). The manual contains a list of control questions. A thorough list of literature is provided for each topic. The textbook contains a list of control questions and a list of literature. The textbook was prepared with the aim of highlighting the problem of the future reform of the ecological, energy, economic and financial spheres of Ukraine based on European experience. The textbook is intended for students of economic and environmental specialties of higher education institutions, graduate students and teachers, students of business schools, specialists of enterprises, stakeholders, representatives of business, management bodies and local self-government.

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CONTENT

Introduction 4

Topic 1. Roadmap of the European Green Deal: reforms and adaptation course for Ukraine 6

Topic 2. Environmental transformations and ecological principles of the EU: opportunities for eco-innovation in Ukraine 13

Topic 3. Environmental reforms of Ukraine in the European integration conditions 26

Topic 4. Modern innovative trends of transformational changes in the European green economy: challenges for Ukraine 37

Topic 5. Implementation of the EU Sustainable Development Goals in the Ukrainian economy based on the criteria of smart specialization 45

Topic 6. Development of the creative economy: cooperation between Ukraine and the EU 70

Topic 7. Development of the financial sphere of Ukraine in the conditions of European integration 81

Topic 8. Digital integration of Ukraine's financial industry into the EU 103

INTRODUCTION

The purpose of the Jean Monnet module "Reformatting the environmental, energy, economic and financial spheres of Ukraine in the European integration conditions" is to acquaint the target group of Bachelor students of "Ecology", "Entrepreneurship and Trade", "Finance, banking, insurance and stock market" specialties with modern European guidelines for integrated development of environmental, energy, economic and financial spheres of our country. The topic is important because issues such as borrowing European experience of environmental development, ensuring an adequate level of energy security, transformational changes in the European green economy and finance, are becoming relevant for the country on the path to European integration. In line with the stated goal, the module provides a comprehensive study of the best European practices of EU environmental policy based on the Action Programs in the field of environmental protection Environment and the Environmental Directives, European approaches to energy saving and European practices of innovative development of the economic and financial system. It is planned to consider in detail: the stages of formation of modern environmental policy of the European Union, the principles of EU environmental policy; the main directions of the European Green Course and the Green Transition of Ukraine; prospects for sustainable development of the EU and Ukraine; the Creative Europe program and opportunities for the development of creative industries in Ukraine; mobility of the financial system in the European space; digital transformation of the financial industry in the context of integration processes.

The textbook "Reformatting the environmental, energy, economic and financial spheres of Ukraine in the European integration conditions" for students of the specialty 076 "Entrepreneurship and trade ", 101 "Ecology", 072 "Finance, banking, insurance and stock market" of the first level of higher education includes the main prelist of topics devoted to the European experience in reformatting environmental, energy, economic, financial spheres and their adaptation to modern changing conditions and gaining practical skills in adapting Ukraine's spatial development strategies based on

smart specializations, digitalization of the financial sphere, environmental protection, implementation of energy saving measures in cooperation with the EU audiences: youth, youth leaders, specialists of enterprises, organizations.

The textbook is prepared to highlight the European experience of reformatting the environmental, energy, economic, financial spheres, taking into account changing challenges and development prospects, spreading European values of environmental protection, building environmentally and socially oriented civil society. The textbook is designed for students of economic, environmental and financial specialties of higher education institutions, graduate students and teachers, students of business schools, private entrepreneurs, directors and managers of small and medium businesses, officials of public authorities and local governments, government agencies.

This textbook contains a summary of lectures, necessary explanations, questions for knowledge control and a list of used literature are also given.

The author's contribution to the manual in percentages: Chichulina K.V. (25%), Ph.D., Minyaylenko I.V. (25%), Skryl V.V. (25%). Maksiuta N.S. (25%).

TOPIC 1.
ROADMAP OF THE EUROPEAN GREEN DEAL: REFORMS AND ADAPTATION COURSE FOR UKRAINE

Analysis of the main tasks and key actions of the European Green Deal (climate change, energy, zero pollution, economy, finance) in creating new ways for Ukraine

What is the European Green Deal ? The European Green Deal is the so-called roadmap of measures designed to transform the European Union into an efficient, sustainable and competitive economy. Its main task is to develop and help member states implement changes that will help Europe become the world's first climate neutral continent [1].



Figure 1.1 – European Green Deal. Designing a set of deeply transformative policies

The purpose of its existence is not so much the actualization of the development of climate policy as the conceptualization of green modernization of the economy and

economic growth to ensure human life in harmony with the planet and its resources [2].

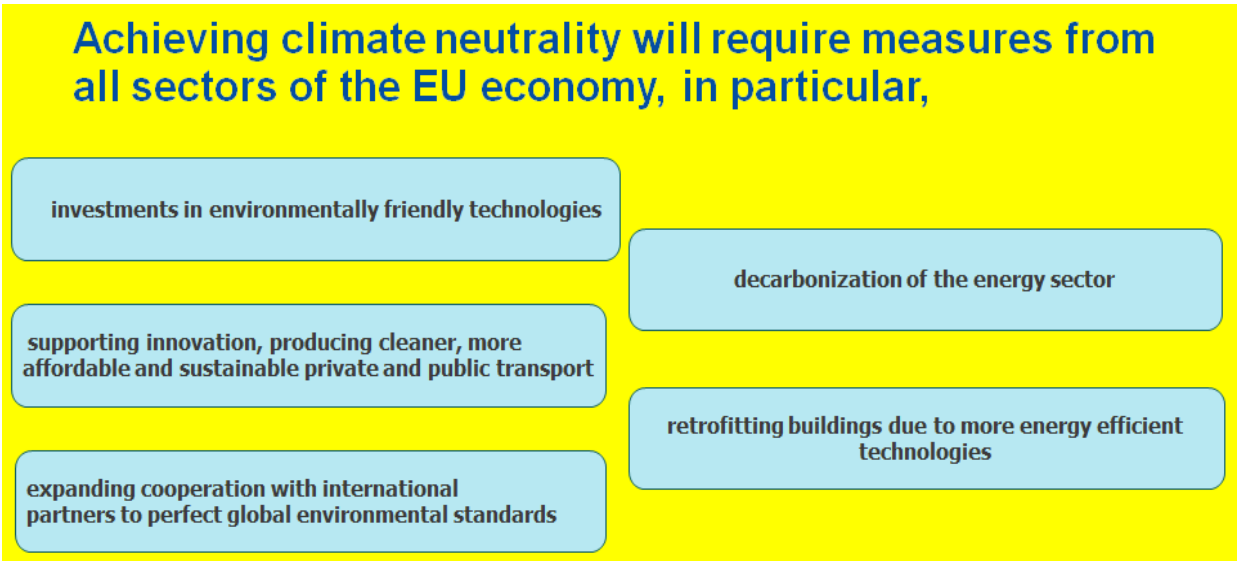


Figure 1.2 – Measures from all sectors of the EU economy

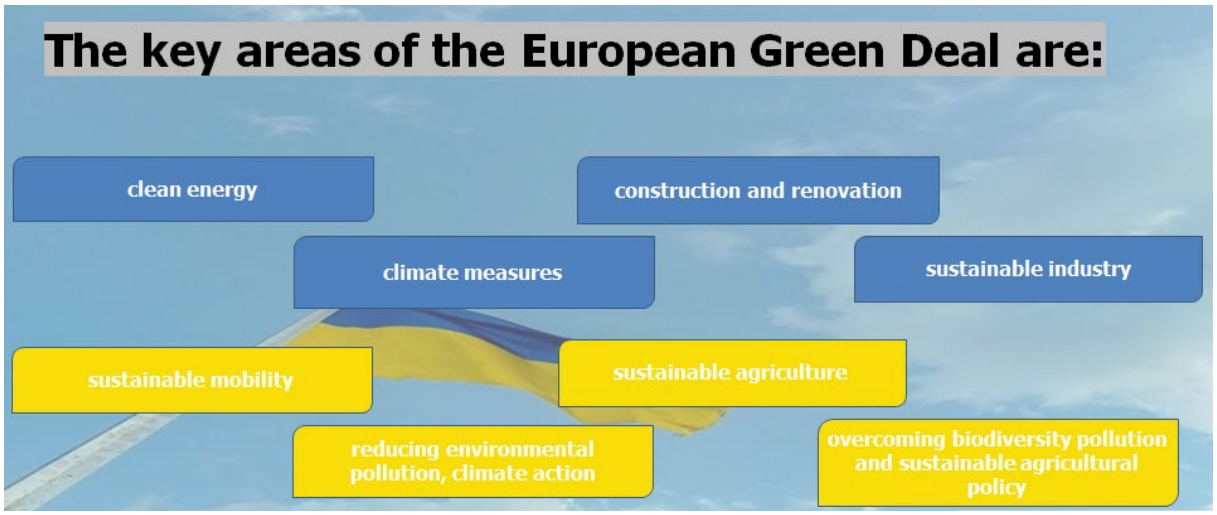


Figure 1.3 – The key areas of the European Green Deal [1]

The European Green Deal is the EU's plan for the development of a sustainable economy, in which:

1) by 2050, greenhouse gas emissions will be reduced to zero (the intermediate goal is to reduce emissions by 50-55% compared to the level of the 1990s by 2030);

2) economic growth will be separated from increased resource use;

3) no one person or territory will be left out of the changes introduced.

Modernization in the context of cooperation with the EU:

1) EU support. The European Union provides financial and advisory support for the modernization of Ukraine.

2) Strategic Tasks. Modernization is aimed at improving the environment, infrastructure development and improving the living standards of the Ukrainian population.



Figure 1.4 – Important highlights in the European Green Deal

European Green Deal and Ukraine. On January 21, 2020, the Ministry of Energy and Environmental Protection presented a draft concept for the "green" energy transition of Ukraine until 2050. According to the ministry, the concept has realistic

measures of 6 energy transformations that are acceptable to the economy and society.

On January 24, 2020, at the initiative of the Ministry of Foreign Affairs of Ukraine, the Cabinet of Ministers of Ukraine created a special Interagency Working Group on Coordination of Combating the Effects of Climate Change within the framework of the EEC. The tasks of the group included, among other things, strengthening the institutional interaction between Ukraine and the European Commission in order to implement the EEC. The group is headed by Vice Prime Minister for European and Euro-Atlantic integration of Ukraine.



Figure 1.5 – Political position of the government of Ukraine

Why dialog with the EU is important? The EU supports its immediate neighbors within the European Green Deal, including the launch of several strong partnership initiatives in the framework of the Eastern Partnership. The European Green Deal introduces the carbon adjustment mechanism on imports and other non-tariff regulation measures, which should not create any new obstacles to the integration of Ukrainian exporters to the EU markets in the framework of overcoming the effects of the global climate crisis. Ukraine's involvement in the implementation of the European Green Deal policies should be carried out in the framework of updating the annexes to the Association Agreement in the relevant sectors. Also national and regional development strategies targeting various economy sectors should be synchronized in order to revise their climate-related ambitions.



Figure 1.5 – The Roadmap of Ukraine's participation in The European Green Deal

LONG-TERM GOALS. Principles and goals of the policy on joint transition to a green economy with appropriate financial instruments and investments.

SHORT- TERM ACTIONS. Priority initiatives to be implemented by Ukraine and the EU within 1-2 years, considering the current state of the Ukrainian economy, implementation and updating of the relevant Annexes to the Association Agreement.



Figure 1.6 – Directions of prospective cooperation

Tasks for individual work

1. Analyze the “green bond” market in Ukraine.
2. Build a step-by-step scheme for implementing the green course in Ukraine.
3. Describe the new EU strategy for adapting to climate change.
4. Clean, affordable and secure energy for Ukraine and the EU: opportunities to overcome barriers
5. Assess and review the Trans-European Network (energy regulation)?
6. Describe the EU industrial strategy for a clean and closed economy?
7. Legislative reforms on waste in Ukraine and the EU: opportunities and prospects.
8. Sustainable and smart mobility strategy: EU experience.

Control questions

1. What are the main areas of action of the European Green Deal?
2. Key indicators that the EU plans to achieve by 2030?
3. What areas of cooperation between Ukraine and the EU have been implemented in the field of green development?
4. What are the key positions of the green development roadmap in Ukraine?

Literature for topic 1

1. Communication from the commission. The European Green Deal. URL: https://eur-lex.europa.eu/ (date of application: 01.12.2024).

2. The European Green Deal Investment Plan and Just Transition Mechanism. URL: https://cutt.ly/3gIEoql (date of application: 03.11.2024).

3. Circular Economy Action Plan. URL: https://cutt.ly/CgIExj3 (Accessed: 03.05.2024).

4. Commission Communication on the Sustainable Europe Investment Plan. URL: https://cutt.ly/MgIEjJE (Accessed: 05.11.2024).

5. Proposal for a European climate law . URL: https://cutt.ly/agIElpy (date of application: 05.11.2024).

6. European Clean Hydrogen Alliance. URL: https://www.ech2a.eu/ (Accessed: 08.11.2024).

TOPIC 2.
ENVIRONMENTAL TRANSFORMATIONS AND ECOLOGICAL PRINCIPLES OF THE EU: OPPORTUNITIES FOR ECO-INNOVATION IN UKRAINE

Greening course for Ukraine and the EU common plans and goals. Climate ambition of the EU: Ukraine's development vector. Analysis of air pollution monitoring methods in the cities of Ukraine and Europe. The role of bioindication methods and indices in assessing the level of air pollution in Europe and their use in Ukraine. Application of European technologies of geographical information systems for analysing air quality in Ukraine's cities. Determination of the influence of meteorological factors on air pollution in the EU. European approaches for monitoring the air pollution level in Ukraine's ecology system: stationary posts for monitoring, and mobile stations for monitoring the state of atmospheric air. General proposals for Ukrainian ecological transformations on the European experience basis. Knowledge for transformation of socio-ecological systems in Ukraine and the EU.

Global challenges and international initiatives regarding the implementation of the European Green Course (EGC), announced by UNEP in 2009, are becoming an important stimulus for the orientation of Ukrainian state policy towards a green transition and achieving climate neutrality. This topic was the main one in the discussion between Ukraine and the EU at the end of September 2021. Joint agreements on green financing by international standards of decarbonization by 2030 provide an opportunity for Ukraine to actively join the EWC. For the Government of Ukraine, this also means global political prestige, the possibility of receiving external loans and writing off part of the debts under the scheme "exchange of debts for environmental assets" by international agreements.

At the current stage of state formation, the central paradigm is the implementation of the ideology of green growth. It is a concept that acts as an alternative for achieving high living standards, overcoming poverty, developing social

and natural values, as well as restoring and preserving the environment for future generations. In the context of solving issues related to European integration and accession to the EU, Ukraine should more carefully coordinate its national development strategy with European norms and international obligations, in particular within the framework of the goals of the European Economic Community and the Association Agreement between Ukraine and the EU. This includes monitoring, taxation and trading of greenhouse gas emissions, as well as the implementation of the provisions of such documents as the Concept of State Policy Implementation in the Field of Climate Change until 2030 and the Low-Carbon Development Strategy of Ukraine until 2050. With new approaches to decentralization and strengthening the role of local self-government, Ukraine needs to develop a clear and socially acceptable strategy for achieving green development goals. This includes implementing innovative best practices and tools. The main prerequisites for the development of green growth in Ukraine include:

a) Environmental and social prerequisites:

– The load on the environment in Ukraine significantly exceeds the level of developed countries and continues to grow; there is an environmental crisis;

- Life expectancy in Ukraine is 5-6 years lower than in post-Soviet European countries and 9-11 years less than in developed countries.

b) Economic prerequisites:

Ukraine focuses on exporting products with low added value, which causes low efficiency of the economy and a modest gross national income per capita. In terms of GDP per capita, Ukraine ranked 90th according to the IMF (13,442 USD in 2019, 13,110 USD in 2020) and 94th according to the World Bank (13,350 USD in 2019, 13,057 USD . USA in 2020).

c) Political prerequisites:

Ukraine seeks to integrate into the European space and actively cooperate with the EU to achieve sustainable development and a green economy.

At the international and European level, the theory and practice of green growth are actively promoted, but it has not yet been fully legally recognized in Ukraine. It is

necessary to improve the institutional foundations, transform social relations, introduce expert monitoring and harmonize state policy and legislation with the EU in the context of the goals of the European Green Course.

The retrospect of political decisions shows that the direction of "greening" the economy was announced in the National Report "Goals of Sustainable Development: Ukraine", which declares the principles of a "green" economy at the state level. This is also confirmed by the Action Plan of Ukraine developed by the Ministry of Economic Development and Trade in 2013 to implement the decisions and recommendations of the UN Conference on Sustainable Development "Rio+20". An important point of this plan is the development of the Concept of the state policy for the development of the "green economy", but this document is still missing. Despite this, there are positive trends in the implementation of European practices regarding strategies and tools of the green economy (the adoption of the law of Ukraine "On eco-audit ", "On SEO", "On OVD", etc.) [1].

We are in an era of active search for reliable tools to combat climate change. For almost fifteen years, the emissions trading system was considered the most effective mechanism. Its essence is that the government sets the maximum annual volume of greenhouse gas emissions, which is distributed among organizations that produce such emissions through their activities. These allowances can be bought and sold, encouraging polluting companies to use innovative solutions to reduce their emissions. This approach has helped the EU to significantly reduce its emissions since 2005 while ensuring economic growth. However, during this period, the climate ambitions of the EU increased significantly. This is how the concept of Green was born Deal, which in 2019 was officially declared the ideological basis of European development until 2050. It soon became clear that the emissions trading system had peaked at its efficiency in the initial phase, and additional instruments were needed to meet the new targets.

It is necessary to emphasize several key aspects. First, the emissions trading system (internal national carbon markets) is not implemented in all countries, which creates more favourable conditions for polluting industries in some countries. This leads to the phenomenon of "carbon leakage" (Carbon Leakage) when production

moves to jurisdictions with less stringent emission restrictions. Such displacement is globally harmful, as it is often accompanied by a decrease in environmental standards and does not reduce overall anthropogenic pollution.

Secondly, almost all states, when implementing emissions trading systems, simultaneously provide preferences for certain important carbon-dependent industries. Over time, reducing these preferences becomes more and more difficult. That is, the effectiveness of the emissions trading system at the level of an individual state is highest at the beginning of its implementation, and then gradually decreases and stabilizes, which requires constant revision. For example, the EU revised its ETS system in 2018.

Thirdly, national greening measures and the achievement of carbon neutrality lead to an increase in the cost of local products, giving a competitive advantage to imported counterparts. These factors, together with increasing climate targets, are pushing the EU to protect its market from cheap carbon-intensive imports. In response, on July 14, 2021, the European Commission presented a package of legislative initiatives " Fit for 55", which aims to accelerate the achievement of CO_2 reduction goals by 55% by 2030 (from 1990 levels). The carbon border adjustment mechanism (CBAM) was chosen as the most effective tool, which has both protective and stimulating properties.

Under the CBAM, the EU will require importers to buy carbon certificates for goods produced under less stringent emission standards than those in place in Europe. The prices of certificates will be linked to the prices of quotas within the framework of the emissions trading system. Only "authorized" importers will be allowed to import products subject to CBAM. To obtain this permit, importers will have to report annually on the "embedded emissions" of their products and submit the appropriate number of CBAM certificates, which will be purchased in advance. Importers without a verified carbon supply chain after the end of the transition period will have to buy CBAM certificates at a price equal to the average emissions of similar products in the EU during the transition period. [2]

The characteristics of the methods of assessing the quality of atmospheric air in

the cities of Ukraine were described earlier. However, it is worth noting that the latest changes in the field of atmospheric air monitoring relate to the Resolution of the Cabinet of Ministers of Ukraine dated August 14, 2019, No. 827 "Some issues of state monitoring in the field of atmospheric air protection". The main innovations include:

– implementation of air quality monitoring and management through the division of the territory of Ukraine into zones and agglomerations, with the formation of corresponding zones and agglomerations;

– appointment of responsible bodies in each zone and agglomeration for coordination of air quality monitoring and management activities, as well as preparation and implementation of air improvement plans and short-term action plans;

– establishing evaluation modes for each zone and agglomeration depending on the level of pollution;

– creation of an information and analytical system of data on air quality with timely information on the population;

– determination of indicators of air pollution levels, exceeding which requires taking measures to improve the air condition or minimize the negative impact on public health;

– mandatory monitoring of pollutants such as PM2.5, PM10 and ozone, given their significant harmful effects on human health, recommended by the WHO for measurement;

– creation of a new network of observation points that meet European monitoring standards;

– development of a monitoring program for zones and agglomerations every five years.

There are many ways to measure air quality, but most of them are quite complicated or expensive. The economic situation in Ukraine requires the search for alternative methods of assessing atmospheric air pollution. Therefore, bioindication methods are often used to study the state of air in cities, as they are much simpler and do not require large material costs. Thanks to these methods, it is possible to cover large areas of the city to monitor air quality, which is difficult and expensive in terms

of finances at stationary stations.

The main task of bioindication is to develop methods that adequately reflect anthropogenic impacts, considering complex pollution and diagnosing early disturbances in sensitive biota components. Bioindication is carried out at different levels of the biosphere: macromolecule, cell, organism, population, and biocenosis. Lichen-indication (lichens), bryo-indication (moss) and myco-indication (mushrooms) are widely used to determine air pollution. Licheno-indication occupies a special place, using epiphytic lichens to draw up maps of the contamination of territories.

Methods of lichen indication of the impact of pollution include:

Analysis of historical data.

Changes in the structure of lichen communities near the source of pollution.

Zoning of the territory:

a) lichen "deserts" with a sulfur dioxide level of 0.3 mg/m³;

b) "competition" zones with a sulfur dioxide level of 0.05–0.2 mg/m³ and resistant species of lichens (xanthoma, physcia);

c) "normal" zones with a level of sulfur dioxide below 0.05 mg/m³, dominated by natural species of lichens (pargelia, alectoria).

Lichen Transplantation – Relocation of organisms for pollution monitoring.

Brio-indication is the use of mosses to assess the state of the environment. Bryophytes are one of the most accurate indicators of the impact of anthropogenic factors on the environment, as they can demonstrate high sensitivity, neutrality or tolerance to such impacts. Bryophytes, or symbionts (Briobionta), belong to an ancient group of higher plants. In man-made ecosystems, bryobionts are often the first to occupy changed territories. The main criteria for bryo-indicative assessment include a systematic analysis of changes in the structure of the moss cover during its development on the studied man-made outcrops at different levels: by indicator species, syntaxons and comparison of partial bryoflora with standards. Atmospheric pollution can be determined by changes in the morphological and physiological characteristics of some species of mosses. Pohlia nutans (Hedw.) Lindb. Under the influence of gas emissions, it completely loses its colour, starting from the tops of the

stems. In Polytrichum piliferum Hedw. Due to gas emissions, the tips of the leaves die, and Polytrichum commune Hedw., which is sensitive to sulfur dioxide pollution, begins to die from the tips of the leaves, acquiring a red brown colour. Ceratodon purpureus (Hedw.) Brid. Stably withstands pollution by sulfur oxides and has high resistance to atmospheric pollution, although it can also lose its colour from the top of the stem under the influence of gas and smoke emissions. Funaria hygrometrica Hedw. acts as an indicator of the presence of lead and cadmium, which inhibit growth, cell division, spore germination, gametophyte bud development, and protonema growth.

Mycoindication is one of the directions in bioindication that uses fungi as indicator organisms. The properties of mushrooms for indication are quite promising in the research of biotechnological methods of biodegradation of phenolic compounds and other substances. Given this, it can be argued that bioindication is a necessary method for assessing the state of atmospheric air in the city, considering its economic feasibility. However, this method also has disadvantages. One of them is the lack or complete absence of green vegetation, which serves as a substrate for the distribution of bioindicative material, as well as their small age in the territories to be studied. The results of the application of bioindication also depend on the amount of material and the subjectivity of determining the types of habitats where species samples were collected or described. In addition, indicator plants should be neither too sensitive nor too inert to pollution. They should have a sufficiently long-life cycle and a small capacity for self-regulation. For example, when using lichen indication methods in complex conditions of atmospheric pollution, under the combined effect of motor vehicle exhaust gases, pollutants from the chemical industry, and dust from ash dumps, it is difficult to determine the dominant type of pollutants.

Geographic information systems (GIS) are software and technical complex that allows automated collection, processing, storage, analysis, display and distribution of geospatial information. Queries, samples and analytical calculations are provided in the form of clear map data that is easily accessible. There are many reasons for using GIS as an information base for environmental management systems.

In the field of environmental management, several GIS specializations find

practical applications:

- management;
- keeping cadastral records;
- monitoring;
- management of dangerous objects;
- dispatching services;
- applied solutions;
- reference and information solutions;
- geospatial databases;
- thematic and specialized databases;
- corporate systems.

The main stages of the technological process in GIS include data acquisition, input and pre-processing, data management, manipulation and analysis, and the creation of an information product. The development of GIS in Ukraine was largely thanks to grant projects of the European Union, which were then supported by state programs. The last decade has been marked by an increase in state support for GIS implementation projects in the fields of ecology and nature protection. For example, the governmental information and analytical system for emergencies in Ukraine was developed by specialists and researchers of the INTEKUkraine Centre on the order of the Ministry of Emergency Situations of Ukraine to ensure interdepartmental information interaction and analytical support for decision-making using modern methods of spatial analysis, modelling the development of emergencies and forecasting their consequences. Using GIS tools, this program package allows you to calculate and visualize the results of modelling the spread of emissions into the atmosphere, taking into account all inventory data of enterprises, with the possibility of their adjustment and forecasting when certain indicators change. Any geographic information system includes a hardware complex, software and an information block. In addition, the system includes developers and end users, without whom the functioning of the components is impossible. Thus, GIS consists of five main components.

Given the above, it is possible to implement a set of scientific and practical

measures to create a "Register of stationary sources of emissions of pollutants into the atmosphere" within the framework of GIS. This will allow the implementation of the accounting subsystem and at the same time provide the analytical subsystem for the assessment of atmospheric air pollution with the necessary information resources.

Tasks in air quality management systems are classified as follows.

- The task of modelling and forecasting pollution levels.
- The task of determining the relationship between pollution and public health.
- The task of monitoring harmful impurities and their sources.
- The task of planning measures to reduce the risk of harmful substances and informing the public.

Statistical analysis is actively used in various fields of science, including the protection of the air environment. Although such data are usually aggregated and average, they provide only the facts and do not consider the conditions affecting the results. However, combining them with the methods of calculating air pollution indices, GIS technologies and taking into account meteorological factors (for example, through modelling) allow for creating a more complete picture of the state of the air environment and predicting changes. The main task is to find the optimal combination of these stages: collection of pollution data, their analysis, linking to meteorological conditions, mapping and forecasting.

To determine whether there is a direct relationship between a city's weather conditions and its pollution levels, it is important to use up-to-date data. At the regional and local levels, meteorological information collection and processing systems and a network of weather stations are used to solve this problem. The meteorological data collection and processing system belongs to the fields of meteorology and environmental monitoring. It is designed to control atmospheric parameters such as temperature, pressure, humidity, wind direction and speed, and other air characteristics. Statistical methods, including correlation and spectral analysis or stochastic equations, help to relate various meteorological indicators, underlying surface properties, and air quality parameters. Such methods include:

a) regression models that use a regression equation to predict the level of air

pollution by sulfur dioxide (SO2). These models take into account the concentration of SO2, the regression function, the complex meteorological index, the pressure and geopotential differences at the ground level and the height of 850 hPa, the vertical temperature gradient;

b) autoregressive models analyzing the temporal change of meteorological parameters or atmospheric pollution indicators, where the value of each parameter at a particular moment in time depends on its previous values. This autoregression approach is simple to calculate and widely used in forecasting air pollution levels considering several impurities simultaneously;

c) Gaussian models built based on the theory of Gaussian statistical distributions. These models determine the local variance, and their analytical solutions apply to stationary and non-stationary distributions.

Air pollution depends on the direction and speed of the wind, which is determined by the type of basic formation. Other factors also affect the concentration of impurities in the urban atmosphere, in particular air temperature, which affects the vertical rise of flue gases and the operation of enterprises. A temperature inversion, when the air temperature increases with height, prevents the development of updrafts and promotes the accumulation of pollutants, especially in combination with weak winds. Air stagnation is often associated with anticyclones, where weak winds are observed. Elevated inversions also limit vertical air exchange, contributing to the accumulation of impurities above emission sources.

Systematic monitoring of air pollution in Poltava is conducted at 4 stationary posts "POST-2A". The main tasks of the State Hydrometeorological Service include:

conducting and summarizing hydrometeorological and ecological observations;

weather forecasting, water regime, yield, natural phenomena;

Informing state bodies, economic sectors, the population, and the Armed Forces about hydrometeorological conditions, environmental conditions, forecasting natural phenomena and their prevention.

Table 2.1 presents a comparative analysis of state and municipal air quality monitoring systems that highlights the arguments in favour of implementing municipal

systems. [3]

Table 2.1 – Characteristics of state and municipal systems for assessing atmospheric air quality

State system	Municipal system
Mostly stationary observations	Expediency of mobile control
Availability of processed, averaged and indexed information based on the results of observations	The need to obtain maximum concentration based on the results of single measurements
Obtaining the values of meteorological parameters from a single centre and at stationary posts	The need for situational control of meteorological parameters in the surface layer at observation sites
Orientation to ensure the authorities and subjects of the monitoring system	Advantage in current informing of citizens and local authorities
Providing strategic long-term forecasting	Prioritize short-term planning and forecasting
Operational response is not a system priority	The priority is prompt response to the requests of community members

The atmospheric air quality monitoring system must be constantly functioning, covering not only systemic (routine) observations at stationary control posts, but also being able to carry out operational and episodic observations, by the specified requirements. Thus, routine studies are conducted to obtain data on single concentrations every day at 7-, 13- and 19-hours local time. It was established that within the framework of the system of monitoring the quality of atmospheric air in the territory of the technogenically loaded city, which has already been formed historically, i.e. the characteristics of most stationary sources of pollution are known, as well as the traffic of road transport on the main highways and streets, the basis for the organization of operational observations is the application residents of the city to the municipal "hot" line with reports of a possible exceedance of the air pollution level. The organization of episodic observations with the help of mobile municipal environmental laboratories (MEL) involves a more detailed and specific study of the state of air pollution directly near the sources of negative impact. Initial conditions for the organization of such studies include: appeal of citizens; the list of air-polluting objects, from which citizens' appeals are most often received; the results of routine observations with PMEL and system stationary observations, during which exceedances of the MPC are recorded; the results of operational observations from PMEL, during which exceedances of MPC were also detected.

In other words, the practical implementation of the monitoring programs proposed by the authors will help to ensure effective monitoring of atmospheric air

quality in the city. This will include both systematic (routine) monitoring of the general level of pollution and assessment of the contribution of specific sources of ecological danger through the organization and conduct of operational and regular observations at the boundaries of the sanitary protection zones of these facilities.

The main goal of management in the field of environmental security of the state is to create an organized and directed influence on the part of authorized subjects on social relations regarding the use of the natural environment, as well as interactions related to the detection, prevention and neutralization of real or potential threats to environmental security. This includes eliminating the prerequisites for the deterioration of the ecological situation and the emergence of danger to human health. The principles of management of this sphere constitute the main mechanism of state regulation, which is the basis of its functioning and is a key factor in achieving the effectiveness of the implementation of relevant state functions. The quality and clarity of the principles of activity in this area, together with their consistency, determine the success of the state environmental policy and the state of environmental security in the country. Therefore, both the administrative and legal principles and the environmental safety management itself should be closely related and focused on ensuring the rights, freedoms and legitimate interests of citizens in the environmental sphere following the best European standards of its administration [4].

Tasks for independent work

1. Analyze the EU's main goals and plans for sustainable development.

2. To characterize the climate ambitions of the EU and how they affect the development vector of Ukraine.

3. Identify the advantages and disadvantages of air pollution monitoring methods used in Ukrainian cities.

Control questions

1. of bioindication methods and indices in assessing the level of atmospheric air pollution in Europe, and how can they be applied in Ukraine?

2. How can European technologies of geoinformation systems be used to analyze atmospheric air quality in Ukrainian cities?

3. What is the impact of meteorological factors on the state of atmospheric air pollution in the EU, and how can this knowledge be used in Ukraine?

4. What European approaches to monitoring the level of atmospheric air pollution can be implemented in the ecological system of Ukraine, including stationary posts and mobile monitoring stations?

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TOPIC 3.
ENVIRONMENTAL REFORMS OF UKRAINE IN THE EUROPEAN INTEGRATION CONDITIONS

European tendencies of the Environmental system reformation in Ukraine. Reform of the environmental control. Industrial Pollution Reduction and Air Quality Monitoring Reform. Waste Management Reform YF. Sustainable Water Resources Management. Forestry Reform. Subsoil reform. Public Administration Reform. Green Deal matters and Climate policy implementation. Atmospheric air monitoring in European cities today. Public monitoring in the territories of Ukraine and the EU. Automated air pollution control systems in the European Union: an innovative solution for Ukraine.

- Environmental management and integration of environmental policy into other sectoral policies:

1. Directive 2003/4/EC of the European Parliament and the Council of 28.01.2003 on public access to information on the natural environment and the repeal of Council Directive 90/313/EC.

2. Directive 2001/42/EC of the European Parliament and the Council of 27.06.2001 on the assessment of the consequences of certain plans and programs for the environment.

3. Directive 2003/35/EC of the European Parliament and the Council of 26.05.2003 on public participation in the development of certain plans and programs related to the natural environment and amending Council Directives 85/337/EEC and 96/61/ EU on public participation and access to justice.

4. Directive of the European Parliament and Council 2011/92/EU dated 13.12.2011 on the assessment of the impact of certain public and private projects on the environment (the Directive was supplemented by Directive 2014/52/EU dated 16.04.2014).

Guaranteeing transparency and openness: wide public access to information about the natural environment, which contributes to increasing the level of

transparency in environmental management and stimulates active public participation in decision-making. Ensuring the sustainable use of resources: increasing public awareness of the state of the environment, which aims to promote the rational and sustainable use of natural resources and the preservation of ecosystems. Mandatory impact assessment: conducting an environmental impact assessment for individual plans and programs, which allows for the implementation of sustainable and environmentally sound decisions in the planning and development process. Involvement of the public in the decision-making process: the participation of the public and stakeholders in the impact assessment process contributes to increasing openness and transparency in environmental management and ensures that diverse interests are taken into account in decision-making. Ensuring access to justice: public access to justice in cases related to environmental impact assessment, which allows for more effective protection of public interests and helps ensure fair resolution of environmental disputes. Regulation of the assessment of the impact of projects on the environment: the procedure for the assessment of the impact of individual projects that may have a significant impact on the environment is established, which contributes to the implementation of sustainable decisions in the field of development and ensures environmental protection.

- *Ambient air quality:*

5. Directive of the European Parliament and Council 2008/50/EC of 21.05.2008 on atmospheric air quality and cleaner air for Europe.

6. Directive 2004/107/EC on the limitation of emissions of volatile organic compounds through the use of organic solvents in certain paints and varnishes and vehicle polishing products and amending Directive 1999/13/EC.

7. Directive 2004/42/EC of the European Parliament and Council dated 21.04.2004 on limiting emissions of volatile organic compounds due to the use of organic solvents in certain paints and varnishes and products for vehicles and amending Directive 1999/13/EC.

8. Council Directive 1999/32/EC dated 26.04.1999 on reducing the sulfur content in certain types of liquid fuels and amending Directive 93/12/EC.

9. Council Directive 98/70/EC dated 21.05.1998 regarding the quality of gasoline and diesel fuel and amending Council Directive 93/12/EC.

10. Directive 94/63/EC of the European Parliament and Council dated 20.12.1994 regarding the control of emissions of volatile organic compounds (VOCs) arising from gasoline storages and during its transportation from terminals to service stations.

Setting ambient air quality standards for various pollutants to help control and reduce air pollution levels to protect human health and the environment. Reducing emissions of volatile organic compounds (VOCs) by limiting the use of organic solvents in paints, varnishes and vehicle polishing products, aimed at improving air quality and protecting human health and the environment. Establishing standards and requirements for minimizing air pollution and reducing the impact of industry on the environment by regulating VOC emissions. Reducing emissions of volatile organic compounds (VOCs) by limiting the use of organic solvents in paints, varnishes and vehicle polishing products, aimed at improving air quality and protecting human health and the environment. Establishing standards and requirements for minimizing air pollution and reducing the impact of industry on the environment by regulating VOC emissions. Reducing the sulfur content in liquid exhaust fuels reduces emissions of harmful substances into the air and improves the quality of the environment. Creation of a single system for regulating sulfur content in fuel to ensure the same air quality standards in all countries of the European Union. Establishing quality standards for gasoline and diesel fuel to reduce emissions of harmful substances and improve air quality. Regulation of the content of octane and sulfur in fuel to ensure ecologically clean production and protect the health of the population. Establishing standards and requirements for controlling emissions of volatile organic compounds (VOCs) from gasoline storage facilities and during their transportation to reduce environmental pollution and improve air quality. Regulation of VOC emissions to ensure safe and environmentally friendly processing.

- *Waste and resource management:*

11. Directive of the European Parliament and the Council 2008/98/EC dated

19.11.2008 on waste and repeal of certain Directives.

12. Council Directive 1999/31/EC dated 26.04.1999 on waste disposal as amended by Regulation (EC) 1882/2003.

13. Directive of the European Parliament and Council 2006/21/EC dated 15.03.2006 on the management of waste from mining enterprises, which amends Directive 2004/35/EC.

Creation of a European strategy for waste management: creation and implementation of a single strategy for waste management throughout the European Union, aimed at reducing the amount of waste, recycling it and using it as a resource. Implementation of the principles of "security" and "expansion of the production cycle": principles that encourage producers and other subjects to collect and process waste, as well as to minimize the impact on the environment. Regulation of the process of waste disposal to ensure safety and protection of the environment: standards and requirements for the process of waste disposal to minimize the negative impact on the environment and human health, including technical aspects of the construction and management of landfills. Promotion of alternative methods of waste management: the development of alternative methods of treatment and use of waste that does not involve landfilling, encouraging the search for a more sustainable and environmentally sound approach to waste management. Standards and requirements for waste management of extractive enterprises: obligations and standards for waste management arising from the activities of extractive enterprises to reduce the negative impact of these activities on the environment and human health. Amendments to Directive 2004/35/EC: amendments concerning mandatory measures to prevent and reduce pollution, as well as measures to compensate for damage caused by environmental pollution.

- Water quality and management of water resources, including the marine environment:

14. Directive 2000/60/EU of the European Parliament and the Council of 23.10.2000 on establishing the framework of the Community's activities in the field of water policy.

15. Directive of the European Parliament and the Council 2007/60/EU dated

23.10.2007 on the assessment and management of flooding risks.

16. Directive 2008/56/EC of the European Parliament and the Council of 17.06.2008 establishing the framework for Community activities in the field of marine environment policy (Marine Strategy Framework Directive).

17. Council Directive 91/271/EEC of 21.05.1991 on urban wastewater treatment.

18. Council Directive 98/83/EC dated November 3, 1998, on the quality of water intended for human consumption.

19. Council Directive 91/676/EEC of 12.12.1991 on the protection of waters against pollution caused by nitrates from agricultural sources.

Establishing a single framework for the protection of water resources in the European Union aimed at achieving and maintaining a sustainable state of water ecosystems and ensuring appropriate water quality for all uses. Establishment of mechanisms for assessment and management of risks related to flooding to prevent and reduce possible losses due to natural and anthropogenic factors. Creation of a single framework for the protection of the marine environment of the European Union aimed at ensuring the sustainable use and preservation of marine resources. Establishing standards and requirements for the treatment of urban wastewater to prevent pollution of water resources and preserve the health of the population. Establishing standards for the quality of water intended for human consumption to protect the health of citizens and ensure the safety of drinking water. Establishment of measures to prevent water pollution by nitrogen compounds from agricultural sources and reduce the impact of agriculture on the quality of water resources.

- *Nature protection:*

20. Directive of the European Parliament and the Council 2009/147/EC dated 30.10.2009 on the conservation of wild birds.

21. Council Directive 92/43/EEC dated 21.05.1992 on the protection of natural habitats and wild flora and fauna.

Protection and conservation of biodiversity: mechanisms and measures for the conservation of wild birds, contributing to the preservation and restoration of diversity

in natural ecosystems. Creation of a network of specially protected areas: creation and management of a network of specially protected areas for wild birds, ensuring their protection and conservation at the national and international levels. Control and Regulation of Industrial Harvesting: Limits and regulations on the industrial harvesting of wild birds, promoting the conservation of populations and preventing their overexploitation. Protection and conservation of species and typical habitats: measures to protect and conserve species and typical habitats that are important for the preservation of biodiversity and the functioning of ecosystems. Cooperation and coordination of national measures: cooperation between the member states of the European Union and coordination of their measures in the field of protection of natural environments and preservation of wild flora and fauna to achieve common goals of biodiversity conservation.

- *Industrial pollution and technogenic threats:*

22. Directive 2010/75/EC of the European Parliament and the Council of 24.11.2010 on industrial emissions (integrated pollution prevention and control).

23. Council Directive 96/82/EC of 09.12.1996 on the control of risks of accidents caused by dangerous substances.

Integrated pollution prevention: mechanisms and requirements for integrated prevention of pollution by industrial emissions aimed at preventing environmental pollution and preserving air quality. Control and monitoring of industrial emissions: procedures and requirements for the control and monitoring of industrial emissions, including requirements for the development and implementation of pollution control and reporting programs. Setting standards and limits for industrial emissions: air quality standards and standards for industrial emissions, as well as requirements for the development and implementation of emission reduction plans to achieve acceptable levels of pollution. Establishing a system of control and risk management: mechanisms and requirements to control the risks of accidents involving dangerous substances, including the responsibilities of investors in the field of safety and requirements for the development and implementation of risk management plans. Creation of safety standards and accident prevention: safety standards and accident prevention

requirements, including the need to conduct risk analysis and implement measures to minimize possible negative consequences. Ensuring protection for the public and the environment: measures to protect the public and the environment from the possible consequences of accidents, including requirements for informing the public and preparing evacuation and rescue plans.

- *Climate change and protection of the ozone layer:*

24. Directive 2003/87/EC of the European Parliament and the Council dated 13.10.2003 on the establishment of a scheme to reduce greenhouse gas emissions by trading within the Community and amending Council Directive 96/61/EC.

25. Regulation of the European Parliament and the Council of the EU No. 842/2006 dated 17.05.2006 on certain fluorinated greenhouse gases.

26. Regulation of the European Parliament and the Council of the EU No. 2037/2000 of 29.06.2000 on substances that destroy the ozone layer.

Creation schemes reduction emissions greenhouse gases: mechanisms and principles for creation schemes reduction emissions greenhouse gases into the atmosphere. This scheme aims to promote the achievement goals of reducing pollution atmosphere and fighting against global warming Regulation of trade emissions greenhouse gases within the Community: rules and conditions for trade emissions greenhouse gases within the European Union, which allows attracting market mechanisms for reduction emissions and contributes creation innovative technologies and approaches to reduction pollution atmosphere Regulation emissions fluorinated greenhouse gases: mechanisms and limitations for control and reduction emissions fluorinated greenhouse gases which are considered particularly harmful to the ozone layer and contribute considerable contribution to the global warming Promotion using less harmful alternatives: use less harmful alternatives to fluorinated ones greenhouse gases and accelerates the transition to technologies and products that do not have such a negative impact on the climate and environment. Prohibition of production and use of substances that destroy the ozone layer: ban on production and use of substances known for their harmful impact on the ozone layer, such as chlorofluorocarbons (CFCs), halons, brominated fluorocarbons and others. Assistance preservation of the

ozone layer and protection of human health: preservation of the ozone layer, which is important for filtration of harmful ultraviolet radiation and protecting people's health from its negative impact, contributing to a healthy environment and reducing risks to climate and biodiversity.

- *Genetically modified organisms:*

27. Directive of the European Parliament and the Council 2001/18/EC dated 16.12.2002 on intentional release into the environment environment genetically modified organisms, which repeals Council Directive 90/220/EEC.

28. Regulation of the European Parliament and the Council No. 1946/2003 dated 15.07.2003 on cross-border transportation of genetically modified organisms.

29. Directive of the European Parliament and the Council 2009/41/EC dated 06.05.2009 on limited using genetically modified microorganisms.

Regulation intentional release of genetically modified organisms (GMOs) into the environment: rules and procedures for the intentional release of genetically modified organisms into the environment to regulate and control their impact on human health and the environment Software security and protection environment: protection of human health and the environment by establishing standards security and monitoring release of GMOs, as well as reduction risk negative consequences for biodiversity and ecosystems. Regulation cross-border transportation of GMOs: rules and procedures for transboundary transportation genetically modified organisms for provision security and protection health of people and the environment environment. Regulation use of GMOs: restrictions on conditions for the use of genetically modified microorganisms for the protection health of people and the environment environment.

Monitoring atmospheric air quality in Ukraine is regulated by the following documents: the Law of Ukraine "On Atmospheric air ", the Law of Ukraine "On Protection of the natural environment ", the Law of Ukraine "On metrology and metrological activity " and the Resolution Cabinet ministers of Ukraine No. 391 "On approval Regulations on the state monitoring system environment ". Importantly note that the last changes in the field of quality control air were fixed in the decree Cabinet dated August 14, 2019 No. 827 " Some question implementation of state monitoring in

the industry protection of atmospheric air ". According to this resolution, several existing problems were identified in systems monitoring: absence monitoring hanging particles, in particular, PM2.5 and PM10; limitation data on pollution, which cover only separate areas of cities (agglomerations) and do not reflect general situations; monitoring pollution air at stationary observation posts is carried out a maximum of 4 times a day; absence systems informing the public about the state of the air, especially regarding PM2.5 and PM10 pollution; absence of automated analysis systems quality air, at the same time monitoring carried out by the method of sampling.

The main purpose of creating a network of public atmospheric air monitoring of the city is to conduct independent supervision of the level of pollution, guided by such directives and regulatory documents as Directive 2008/50/EU and the Procedure for State Monitoring in the Field of atmospheric air protection. In contrast to state surveillance, public monitoring will contribute not only to informing the population and its active involvement in the process monitoring, but will also increase ecological consciousness and responsibility of society, and will also become an additional means of quality control air environment.

The need to create public monitoring of atmospheric air is due to four main problems:

At the state level, this contributes to the implementation of the state monitoring program in the field of atmospheric air protection by the Resolution of the Cabinet of Ministers on the procedure for monitoring;

At the enterprise level, it helps to identify the impact of emissions from neighbouring industries in the city;

At the public level, it provides accessible and independent monitoring of air quality in urban areas;

At the scientific level, it helps scientists and other interested organizations to obtain up-to-date information on atmospheric pollution for further analysis, research and reporting. [1]

The main drawback of the existing air monitoring system in the city is the lack of automatic registration of air quality. To correct this, the system should be

modernized by retrofitting or creating new observation posts with gas analyzers for continuous monitoring. Among the main pollutants in Poltava are PM2.5 and PM10 particles, nitrogen oxides NO and NO2, as well as carbon monoxide.

Tasks for independent work

1. To analyze the main European trends in the reform of the ecological system in Ukraine and how they affect the national policy.

2. Describe the branches of environmental control in Ukraine and what are its main stages.

3. Identify the measures taken to reduce industrial pollution and monitor air quality in Ukraine.

Control questions

1. What are the main aspects of the waste management reform in Ukraine and how do they meet European standards?

2. How is a sustainable approach to water resources management implemented in Ukraine?

3. What changes are taking place in the reform of forestry and subsoil in Ukraine in the context of European integration?

4. What innovative solutions are used for automated air pollution control systems in the European Union and how can they be applied in Ukraine?

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TOPIC 4.
MODERN INNOVATIVE TRENDS OF TRANSFORMATIONAL CHANGES IN THE EUROPEAN GREEN ECONOMY: CHALLENGES FOR UKRAINE

Implementation of the European Green Deal in Ukraine. The main directions of the European Green Course. Opportunities for the development of Ukraine's hydrogen economy in cooperation with the EU. Clean energy and the impact of climate change on the transformation of the structure of the economy of Ukraine and the EU. Sustainable industry, reduction of environmental pollution, sustainable agricultural policy.

In January 2020, the European Union launched the European Green Deal, a comprehensive programme for the transition to new environmental standards in all sectors of the economy with the aim of making Europe the first carbon-neutral continent. Given Ukraine's European ambitions, it is important for it to understand the requirements of the Green Deal and assess the possibilities of taking these requirements into account in the post-war reconstruction of Ukraine. [1]

The year 2023 was marked by the continued reforms aimed at the implementation of the European Green Deal (EGD) principles in Ukraine.

At the same time, some negative trends have become noticeable, creating obstacles to the effective implementation of reforms in Ukraine and ensuring conditions for the green recovery.

The insufficient level of transparency in the energy sector in terms of information about market operation, recovery dynamics, as well as development of decisions and national strategic documents remains a significant obstacle to the effective implementation of reforms [2].

Understanding the objective obstacles in providing access to information and engagement in decision making under martial law, we call for increased access to information and inclusiveness of the decision-making process, taking into account stakeholders from the civil society and expert circles. Such an increase in transparency of key EGD-related areas is necessary to ensure high quality decisions, enable effective

support for reforms, and set priorities for green recovery [2].



Figure 4.1 – Prospects for the implementation of the European Green Deal in various areas (environment and climate change, energy sector, energy efficiency of buildings)



Figure 4.2 – EU's sustainable development policy

On February 01, 2023, the European Commission published an analytical report to the Communication from the Commission to the European Parliament, the European Council and the Council and the Opinion of the European Commission on Ukraine's application for membership in the European Union of June 17, 2022 (the "Report"). This Report provides an overview of the situation as of July 2022 and aims to outline:

- first, the main recommendations for working on the clusters of social, political, and economic life of Ukraine identified by the EU in order to harmonize them with the EU acquis (the term "cluster" comes from the English word "cluster", which means "bunch, swarm, cluster". Clusters are a group of related areas that are interdependent and complementary);

- second, critical issues that Ukraine needs to work on as a priority (e.g., institutional issues), as the latter are a threat/obstacle to the successful harmonization of national legislation with the EU acquis and, accordingly, Ukraine's progress towards the next stages of EU.

Ukraine demonstrates an initial level of preparation, so the European community suggests the following steps to improve the rating

Ukraine demonstrates an initial level of preparation, so the European community suggests the following steps to improve the rating:

1) eliminating significant shortcomings in labor legislation;

2) harmonization with the EU acquis on occupational health and safety, which is limited at the time of the Report preparation;

3) regulating unofficial employment and wage arrears; improving social dialogue (provisions of the Law of Ukraine "On Social Dialogue in Ukraine" and their implementation);

4) harmonization with EU legislation on gender equality;

5) further harmonization with EU legislation on non-discrimination in employment;

6) improving the system of labor inspections.

The Sustainable Development Strategy of Ukraine until 2030 is focused on the vectors defined in the Sustainable Development Strategy:

development vector - ensuring sustainable development of the country, implementing structural reforms, ensuring economic growth in an environmentally sustainable manner, creating favorable conditions for doing business;

security vector – ensuring the security of the state, business and citizens, protection of investments and private property, peace and border protection, fair and impartial justice, immediate cleansing of the government at all levels and implementation of effective anti-corruption mechanisms.

vector of responsibility - ensuring guarantees for every citizen, regardless of race, color, political, religious and other beliefs, gender, ethnic and social origin, property status, place of residence, language or other characteristics, to have access to high-quality education, healthcare and other services in the public and private sectors;

the vector of pride - ensuring mutual respect and tolerance in society, pride in one's own country, its history, culture, science, and sports.

The perspectives for sustainable development of Ukraine's social sector lie in the introduction of innovative approaches that will improve the provision of social services. An important step is to implement quality standards that will guarantee a high level of these services for citizens. The public should also be actively involved in the management of the social sector to ensure a more efficient and transparent system.

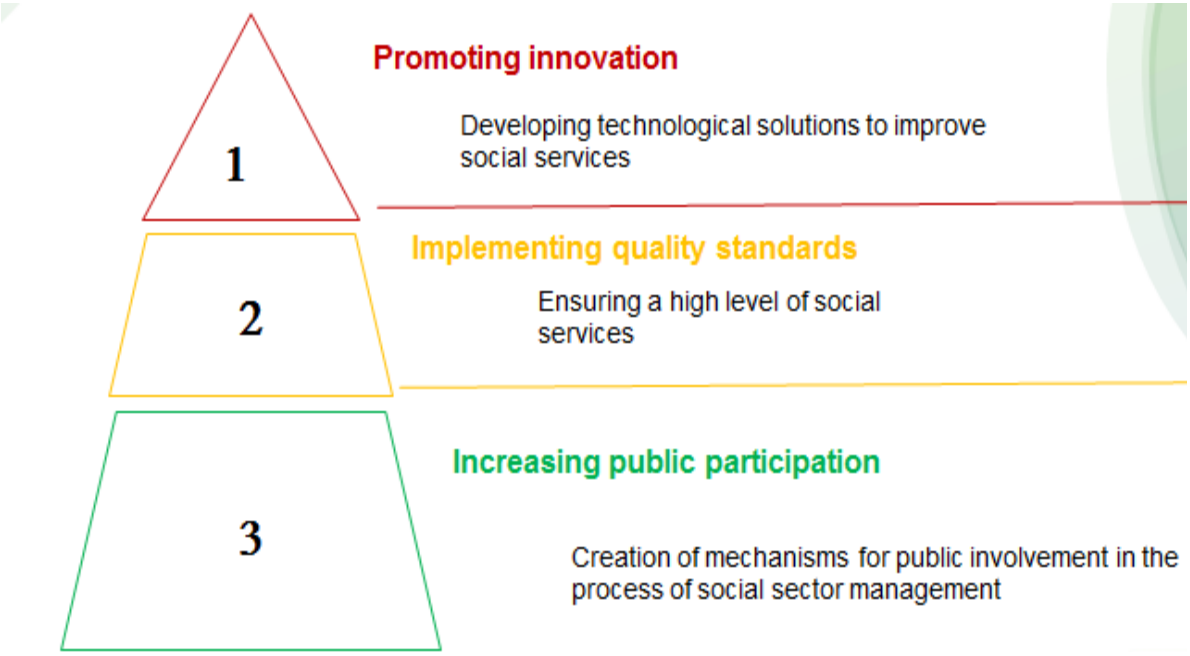


Figure 4.3 – Perspectives and recommendations for Ukraine

In the context of Ukraine's integration into the European space, there is a need to revise the fundamental principles of the policy of increasing the socio-economic potential of sustainable development [3] of the country as a whole and its regions in order to accelerate the documentary and actual implementation of the European Union directives relating to certain areas of life and requiring the use of new methods and forms of expanded reproduction of national wealth. The socio-economic, technical, technological and production-economic state of the national economic system in the current economic environment with resource constraints and increasing external and internal socio-political threats to sustainable development actualizes the task of updating the theoretical and methodological foundations of sustainable development potential formation. Given the diversity of the latter's component composition, the necessity of using the methods of geometric econometrics and fractal graphs to break the most irrational relationships between individual potentials is proved.

Ukrainian readiness for the transformational changes of the Green Deal.

The task is to ensure that Ukrainian products comply with the new deal and its standards. The EU emphasizes that not everyone will start from the same place: the just transition mechanism should provide assistance to regions with a carbon-intensive economy.

The green economy is seen worldwide as the only way to ensure stable economic growth and a response to global challenges caused by the global food crisis, the consequences of climate change, and the shortage of fresh water. This creates a unique opportunity for a radical restructuring of the economies of the world in the direction of sectoral greening, that is, it acts as a powerful factor for countries with different levels of economic development.

Important for Ukraine is the participation of the EU in the reconstruction and modernization of its transport infrastructure, further integration into the European transport system, and the introduction of modern technologies and practices in this area. In turn, strategic prospects in the European integration direction are opened by the successful process of digitalization of Ukraine, which, on the one hand, within the framework of e-governance provides a feedback dialogue between the authorities and society. On the other hand, it expands the possibilities and areas of e-commerce. The urgent task is to deepen the partnership between Ukraine and the EU in the field of ecology to ensure environmental protection in Ukraine and Europe, minimize and overcome the losses caused to the ecosystem of Ukraine during the war. It is clear that this is not the end of the list of sectoral cooperation. On the agenda of European integration is strengthening cooperation with the EU in the field of justice and human rights, finance, agriculture, education, science, etc. Progress in these areas contributes to Ukraine's advancement towards a united Europe and brings a new phase of European integration closer - negotiations on accession to the EU.

Task for individual work

1. To conduct an analysis of the industry, the process of reducing environmental pollution

2. Identify the challenges related to agricultural policy in Ukraine (determine the prospects for the implementation of the EEC for the agricultural sector).

3. To analyze the main environmental barriers for Ukraine in the context of climate policy.

4. Consider possible transformative changes in the economy and society based

on the EU experience.

5. Determine the possibilities of financing green projects.

Control questions

1. Main directions of the European Green Deal?

2. Ukraine's plans for the development of renewable energy sources.

3. List the measures for adaptation to the requirements of the European Green Deal?

4. Name the conditions for increasing energy efficiency in accordance with the Law "On Energy Efficiency"?

5. Formulate the main environmental challenges?

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TOPIC 5.
IMPLEMENTATION OF THE EU SUSTAINABLE DEVELOPMENT GOALS IN THE UKRAINIAN ECONOMY BASED ON THE CRITERIA OF SMART SPECIALIZATION

Creatively about the goals of sustainable development of the EU. Principles of the concept of sustainable development. Strategies for sustainable business development: taking into account transformational changes in the economy of Ukraine. Components of the economic, social, ecological aspect of sustainable development. Indicators of business sustainability. The concept of smart specialization. The application of European experience in the implementation of smart strategizing in the justification of priority areas of the economy of Ukraine, taking into account the Goals of sustainable development. Criteria of smart specializations.

The sustainable development of enterprises is an important component of the global concept of sustainable development, which provides for the balanced development of economic, social and ecological components of activity, which leads to the improvement of the quality of life of current and future generations.

In the context of enterprises, sustainable development policy includes strategies and practices that allow the company not only to achieve economic goals, but also to make a positive impact on society and the environment. This involves the introduction of innovative technologies, rational use of resources, reduction of emissions into the atmosphere, responsible treatment of consumers and employees, and other measures.

So how is the term "sustainable development" explained. The concept of "sustainable development" has many interpretations. Each researcher in this area offers his own understanding of this concept, which depends on the specifics of his specialization.

According to V. Kukhar, sustainable development is such development that supports itself and represents the ideology of rational and balanced human activity that exists harmoniously with nature and creates conditions for a better life for oneself and

future generations [1].

According to L. Hryniv, sustainable development consists in ensuring the stable operation of the ecological and economic system by implementing the concept of the noosphere.

Z. Gerasimchuk considers sustainable development as a process that ensures the activity of the territorial system according to certain parameters in specific conditions for the necessary period of time. This process contributes to the harmonization of production factors and the improvement of the quality of life of current and future generations, while ensuring the preservation and gradual restoration of the integrity of the environment.

O. Latysheva believes that sustainable development includes the achievement of economic security, while taking into account the social and environmental aspects of the potential. She claims that the balance between these components can be achieved through a system of effective management and regulation at different levels of the hierarchy [2].

And the Sustainable Development Strategy "Ukraine - 2020" provides the following definition: "Sustainable development is the process of creating a state, based on mutual agreement and harmonization of social, economic and environmental competencies to meet the needs of current and future generations."

As a summary, the term "sustainable development" can be interpreted as the organization of economic and social progress in such a way as to meet the needs of the modern world, taking into account future development trends. This approach involves a balanced combination of three main components: economic growth, environmental sustainability and social justice.

Sustainable development requires economical and efficient use of land, water resources, minerals, reducing air pollution, protecting biodiversity and supporting economic development that improves the quality of life for all without discrimination. At the same time, it involves the development of technologies and infrastructure that reduce the impact on the environment and promote social integration and justice.

In September 2015, within the seventieth session of the UN General Assembly

in New York, the UN Summit on Sustainable Development was held. The result of the meeting was the adoption of the Summit document "Transforming our world: the agenda in the field of sustainable development until 2030", which formulated 17 Sustainable Development Goals and 169 tasks [3].

At the state level, Ukraine focused on achieving the Sustainable Development Goals in 2019. This happened thanks to two key steps:

1. The President of Ukraine issued a decree supporting the Sustainable Development Goals and adapting them to the needs of the country. The adapted goals were outlined in the National Report "Sustainable Development Goals: Ukraine";

2. The Cabinet made changes to the Regulations in December 2020. According to these changes, the Sustainable Development Goals are now necessarily taken into account in the formation and implementation of state policy.

Therefore, the Sustainable Development Goals were established at the state level as a guideline for the development of program and forecast documents [4].

Figure 5.1 shows the 17 Sustainable Development Goals.



Figure 5.1 - Sustainable development goals

According to the statement of the authors Balabanov and Dudin [5], the sustainable development of business structures is not only a new scientific and practical concept, but is also critically important for ensuring the continuous evolution of the

national, socio-economic and global system. Scientists emphasize that the integration of social and economic aspects is a key part of the methodology of sustainable development at the macroeconomic and microeconomic levels.

In the work of A.M. Verguna and I.O. Tarasenko [6] considers a systematic approach to sustainable development, which involves the interaction of social, economic and ecological aspects within the framework of a single social-ecological-economic system of a specific territory, such as a country or region. According to the authors' views, for each individual industry, enterprises need to develop specialized strategies that take into account the interaction and impact on various biological, geographical, economic and social elements. These elements should be considered as an inseparable component of the socio-ecological-economic system, which develops in a balanced way. Sustainability and harmonious development of individual subsystems are key to achieving sustainability in the system as a whole. An imbalance between the components of the system indicates non-compliance with the principles of sustainable development. In addition, effective economic development in such a system must satisfy not only material needs, but also a wider range of human needs, including spiritual, social and environmental aspects.

Baumgartner's research [7] emphasizes the importance of sustainable development for companies and highlights the key contextual factors influencing this process. Recognizing external demands and assessing the impact of the corporation's activities are important for identifying opportunities and threats that affect its stability. Contextual factors are divided into three groups: factors of the general business environment, sectoral factors and factors emanating from stakeholders. The factors of the general business environment cover political, legal, economic, social, technological and environmental aspects. Sectoral factors are based on Porter's five forces model and include elements such as competition, threat of new products, buyer and supplier power, and barriers to entry. Stakeholders contribute their requirements, which may differ from the company's internal assessment of the importance of these factors, emphasizing the importance of understanding external perspectives on sustainability.

Business has the opportunity to choose the following sustainable development

strategies [7] (Table 5.1):

Table 5.1 – Strategies for sustainable business development

Sustainable development strategy	**Characteristics**
Entry strategy	Focuses on minimizing risks through compliance with legislation and external standards, particularly in the areas of environmental and social issues
Extrovert strategy	It is aimed at expanding external relations and ensuring legitimation through obtaining the necessary licenses
Conservative strategy	Focused on increasing environmental efficiency and implementing clean technologies in production
Insightful strategy	Integrates sustainability principles into all aspects of business, providing competitive advantage through innovation and differentiation that benefits stakeholders and customers

Choosing a sustainable development strategy provides business benefits in the form of reduced costs, reduced business risks, improved market positions, increased brand reputation and increased overall competitiveness. Also, this algorithm contributes to solving some environmental and social problems, benefiting both society and the environment.

A study by Dillick and Muff [8] highlights that the concept of business sustainability at the level of Business Sustainability (BST) 1.0 (i.e. refined shareholder value management) is effectively illustrated by the definition from SAM Group and Pricewaterhouse-Coopers (2006), where corporate sustainability is considered as a business -a strategy that generates shareholder value by exploiting opportunities and managing risks associated with economic, environmental and social aspects Although the integration of sustainable development into business practices has positive consequences for certain aspects of sustainability, the main objectives of such activities

remain economic. These include reducing costs, minimizing business risks, improving reputation, attracting new and retaining existing talent, meeting changing customer needs and, as a result, growing profits, strengthening market positions, improving competitiveness and increasing shareholder value.

The concept of business sustainability BST 2.0 (Managing the Permanent Bottom Line (Trinity Concept)) has a deeper and broader meaning than simply recognizing the importance and necessity of responding to social and environmental challenges on a par with economic ones. In this context, business sustainability means not only broadening the perspective of stakeholder interests, but also applying an integrated approach to management that goes beyond creating value solely for shareholders and includes social and environmental aspects. Companies generate value not only through their economic activities, but also through specialized programs and initiatives that address specific sustainability issues or engage with stakeholders. These aspects are often described in a three-pronged approach: people, planet and profit.

Authors Dillick and Muff point out that a truly sustainable business (BST 3.0) is marked by radically different strategic approaches to management. Such a business rethinks its strategy, striving not only to minimize the negative impact of its activities, but also to actively create a significant positive impact in critical areas for society and the planet, such as economic, social and environmental. The traditional introspective approach in such companies shifts to an extrospective one, similar to the approach used in social business. Enterprises analyze current problems of sustainable development of society and are included in the development of new strategies and business models that use their resources, competences and experience to solve these challenges. Thus, the benefits of solving sustainability problems are realized not only for the environment and society, but also for the companies themselves, which significantly affects their strategies and operations.

Domestic researchers Kyrych, Melnyk and Pohaidak [9] describe sustainable development as "a process of continuous, permanent (regular), irreversible (guaranteeing stable existence) and clearly defined (targeted) changes in the object."

Ukrainian enterprises face an urgent need to improve the assortment policy and

improve the quality of their products, modernize the technical and technological base of production, as well as apply the latest management approaches and methods for all types of resources, which is possible only through innovation. Successful implementation of innovations requires economic entities to have appropriate internal potential and create favorable external conditions. These conditions must be supported through legislative and regulatory acts both at the national and regional levels and in individual sectors. In particular, the innovative vector of development is key in the Sustainable Development Strategy of Ukraine until 2030. These strategic documents also include provisions on supporting the development of small and medium-sized businesses.

The main subjects of entrepreneurship play a prominent role in solving issues of sustainable development at various levels of socio-economic systems. This sector of the economy effectively creates new opportunities for solving the issue of employment in the state, actively implements innovations, contributes to the creation of a healthy competitive atmosphere, enriches local and state budgets, supports the development of local communities, helps to reduce the unemployment rate and increase the income of the population.

To achieve sustainable development, the enterprise must cooperate not only with other economic agents, but also with local authorities, educational and scientific institutions, as well as public organizations. One of the examples of such cooperation is the creation of the Lviv Industrial Hub, initiated by the Lviv Regional State Administration in 2018. Industrial enterprises, vocational and technical education institutions and scientific institutions join forces in this hub. The cooperation of industrial enterprises with professional and technical institutions will contribute to solving the problem of providing qualified workers. This initiative is particularly relevant because a significant number of the population has migrated abroad for employment and residence. Although such losses of professional qualified workers will negatively affect the sustainable development of Ukraine.

Fulfillment of the established goals with the participation of all interested parties at different levels of society will first of all allow solving the current problems of today:

creating new jobs, improving the quality of professional education, increasing wages, reducing the migration of workers abroad, the introduction of environmentally safe technologies and the transition to production products that meet modern requirements.

Sustainable development of the enterprise requires the creation of an effective management system based on system-forming and partial principles (Fig. 5.2).

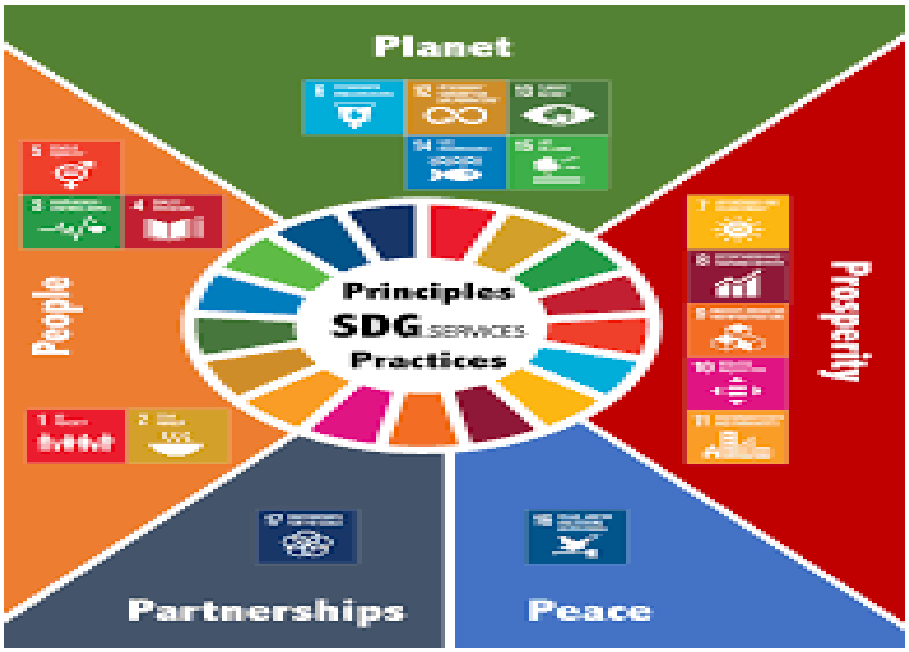


Figure 5.2 – Classification of principles of sustainable development

Defining and clarifying the principles of sustainable business development is key to understanding this concept, as well as clarifying the strategic goals, functions and responsibilities of enterprises.

On the basis of systematic analysis and generalization of scientific approaches, the following definition of sustainable development of the enterprise can be formulated: it is such a development that ensures the stable growth of the enterprise, restoration of its subsystems and obtaining benefits from activities in three aspects: economic, ecological and social. This is achieved due to effective internal management and application of modern economic and legal regulation mechanisms at the state level.

As for the economic aspect of sustainable business development, its essence can be explained through the components of maintaining stable rates of economic growth, adaptation to changing conditions of competition and consumer needs, implementation

of structural changes in industry, resource conservation [10].

Sustainable development of the enterprise is a key part of its global concept, which involves a balance between economic, social and environmental components. This contributes to the improvement of the quality of life of both current and future generations.

Sustainable development of the enterprise includes the introduction of innovative technologies, rational use of resources, reduction of emissions, responsible attitude towards consumers and employees.

The balance between economic growth, environmental sustainability and social justice is critical. Rational use of resources, reduction of pollution, protection of biodiversity and support of economic development contribute to the overall improvement of the quality of life.

Business entities can choose different sustainable development strategies, such as introvert, extrovert and conservative. Choosing a strategy provides benefits in the form of reduced costs, improved market positions, increased brand reputation and increased competitiveness.

Sustainable business development involves the development of an effective management system based on principles such as goal setting, a systematic approach, adaptability and feedback. The principles of sustainable development include economic, social and environmental aspects, contributing to the harmonious development of the enterprise.

To achieve sustainable development, business entities should cooperate with local authorities, educational institutions and scientific institutions, as well as public organizations. Innovation, production modernization and effective resource management are key to successful sustainable development.

Today, Ukrainian enterprises must build a management system based on the principles of sustainable development. This approach to management contributes to strengthening financial stability, increasing competitiveness, effective functioning on the market, organization of production taking into account the reduction of harmful emissions, reduction of material costs, improvement of working conditions and

increase of the social level of the population. The effective mechanism of sustainable development allows enterprises not only to easily adapt to changes in the environment, but also to grow constantly.

The policy of sustainable development of enterprises is based on a complex of components focused on a balanced combination of economic, social and environmental aspects. The economic aspect of sustainable business development examines the available capital, its liquidity, financial stability, effective use to fulfill the mission and tasks in the conditions of changes in the external environment. The social component of the sustainable development of the enterprise involves the implementation of directions that will allow solving the task of social security of employees by improving working conditions, increasing wages and increasing the qualification level of personnel. In the environmental aspect of sustainable development, the enterprise uses modern technologies, automates work processes and uses environmentally safe materials in order to reduce environmental pollution, including the rejection of harmful substances and rational use of electricity.

To assess the sustainable development of business, the values of specific indicators are determined, which allow establishing the degree of sustainability in economic, social and environmental aspects at the internal level of the enterprise (Fig. 5.3).

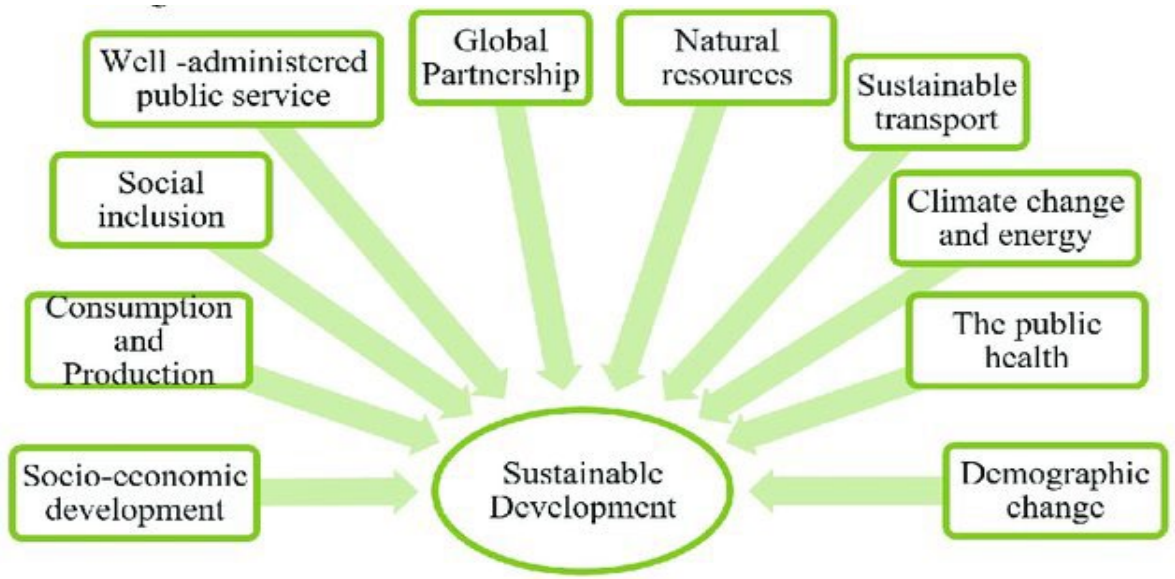


Figure 5.3 – Indicators of sustainable development

These indicators can reproduce the current situation at the enterprise and emphasize the areas where sustainable development lags behind in the enterprise's activities. Most enterprises pay more attention to economic indicators than to social and environmental ones. Such trends are due to the fact that the impact of environmental indicators is observed almost immediately and can be measured in monetary terms.

However, measures aimed at improving the social and environmental sphere also have a positive effect on the company's activities, although their results may not be immediately apparent. For example, measures to improve the qualifications of personnel may increase costs, but improving the knowledge and skills of employees allows them to propose ways to optimize work processes and implement them. The high level of wages in the industry, as well as the allocation of part of the profit to additional social programs for employees and the constant improvement of staff qualifications form the reputation of the enterprise as a reliable and caring employer. These activities also affect brand awareness, which can be a monetized quality.

To ensure sustainable development from economic, social and environmental components, it is necessary to form an appropriate balanced mechanism that would take into account all interrelationships and interdependencies in order to maintain business sustainability. From the words of L. G. Melnyk, any system, in order to ensure its long-term development, needs to fulfill such conditions as the organization of the spatio-temporal structure, ensuring the balance between the entire system and its individual components, the direction of development and the presence of driving forces.

According to these conditions, the concept of sustainable development should be based on the principles listed in Table 5.2 [11].

Таблиця 5.2 – Принципи концепції сталого розвитку

Principles of sustainable development	**Characteristics**
The principle of balance	Ensuring proportional development of the economic, social and environmental spheres
The principle of purposefulness	Providing the system with impulses for self-development due to the presence of developed scientific, technical and production potentials that ensure harmonization with the surrounding environment and assume an ecological orientation of socio-economic development
The principle of ensuring stability	The balance of the natural, industrial and socio-economic spheres
The principle of adaptability	The ability to adapt to changes that occur in the external environment and affect further development in the long term
The principle of dynamism	Changes in any activity parameter lead to changes in others, which is reflected in the indicator system and makes it possible to determine the state of the system at any time
The principle of integrity	Ensuring the proportionality and balance of the development of all spheres and elements, namely operational, financial, investment spheres
The principle of environmental motivation	Causes the adjustment of motivational tools to achieve the goals of greening the economy

The use of these principles contributes to the effective interaction of all aspects of sustainable development, ensures balance and harmony in their system to achieve the highest results. The combination of economic and social components contributes to the fair distribution of income and benefits among stakeholders. The economic subsystem accordingly affects the social and ecological components, contributing to their balanced development. The social subsystem indirectly affects the ecological subsystem by forming environmental awareness and stimulating the use of nature protection measures. The ecological subsystem directly affects the economic subsystem, since the introduction of resource-saving technologies leads to a decrease in costs, and the observance of environmental standards and the use of safe technologies increase the loyalty of all interested parties to this business entity.

As a result of the interaction of the components of the sustainable development system at all hierarchical levels, i.e. business entities, the sustainable development of higher-order systems is formed, which leads to the following:

The enterprise satisfies its needs through making a profit, improving its image

as a manufacturer of environmentally friendly products, optimizing energy consumption and reducing the amount of production waste, and the staff receives a fair reward for their competence and professionalism, which contributes to the formation of social responsibility and strategic advantages over competitors [12];

At the regional level, the problem of employment of the population is solved, the level of environmental pollution decreases due to the reduction of emissions;

At the national level, the level of environmental and technological safety is improving.

The main idea of sustainable development is to find an optimal balance between socio-economic growth and the use of resources, which ensures environmental safety and does not violate the opportunities of future generations, as well as ensures the necessary standard of living and well-being of the population. In this context, there is a need to develop and implement a sustainable development strategy aimed at achieving high economic and financial results, satisfying the interests of all stakeholders, ensuring decent living and working conditions for employees, as well as creating a brand for any business entity as an ecologically and socially responsible participant in business, which would also allow solving the issue of improving the quality of life, social security of the population, and minimizing the negative impact on the environment. This opens up opportunities for complex and systematic interaction between the internal environment of the enterprise and its external environment based on the principles of sustainable development. The issue of developing a management algorithm on the basis of sustainability and prioritization becomes relevant. To solve this issue, we can propose the following procedure for the formation of an enterprise management strategy on the basis of sustainability (Table 5.3).

Table 5.3 – Algorithm for the formation of a sustainable business management strategy

Name	Characteristics
Analysis of the factors of the internal environment and the external environment	At this stage, the company's ability to function in the context of sustainable development is assessed. To ensure sustainable development, it is necessary to constantly diagnose its activities to determine the level of sustainable development and develop an appropriate strategy. It is important to evaluate all aspects of the sustainable development of the enterprise, to identify existing problems. For this, a sustainable development assessment system is being developed, which should reflect the relationship between economic, social and environmental aspects. The assessment is carried out using a system of indicators and indicators that allow to assess the current state and development trends of each of the aspects of sustainable development, identify critical points for establishing the level of system sustainability, analyze dynamics over a long period of time to assess real sustainability. A number of authors suggest the use of both quantitative and qualitative indicators and indicators [23] to identify factors influencing the level of sustainable development of the enterprise. In order to obtain a comprehensive assessment and forecast the level of development of the enterprise, you can use a balanced system of indicators that will allow you to assess the ecological and economic efficiency of production and consumption, the quality of social development and the state of the environment.
Setting the goal and objectives of the strategy	The assessment of the components of the sustainable development of the enterprise and their identification make it possible to identify the problems that exist in it, establish the priority of their solution and formulate a system of relevant goals. The main goal is to introduce a socially responsible type of behavior in the external environment to ensure a continuous type of behavior in the external environment to ensure continuous development through a balanced interaction with the environment and maintaining internal balance. At the same time, the economic goals should be aimed at achieving the economic stability of the enterprise in terms of sustainable development; the social orientation of the goals involves ensuring the opportunities of the participants of socio-economic relations to adapt to changing conditions of a social nature and market instability; environmental goals provide for the effective interaction of the enterprise with the environment.
Formation of a strategy based on the principles of sustainable development of the enterprise, determination of ways of its implementation	At this stage, optimal options for achieving the final goal are considered. Recommendations for the implementation of the strategy were formulated, including: It is necessary to take into account the interests of all interested parties, in particular, the owners of enterprises; establishment of corporate standards and evaluation criteria for the concept of sustainable development; Determine the long-term needs of the enterprise to ensure its sustainable growth and balance of economic, social and environmental components; To take into account the needs of society in protecting the

Name	Characteristics
	environment and minimizing the negative impact on the environment; Invest funds in modernization of production, application of resource-saving technologies, innovative activities and conservation of resources; To create favorable conditions for work and development of employees.
Development and implementation of a system for monitoring and controlling indicators of the implementation of the sustainable development strategy	At this stage, the analysis of sustainability factors is carried out based on the system of indicators and indicators. This includes determining the class of sustainability to justify the goals and objectives of further development, as well as adjusting the functions, goals, principles and methods of strategic management taking into account the principles of sustainable development. The presence of such a system of permanent control allows the enterprise to function effectively and develop in the long term, as well as to respond in time to potential dangers.

In general, we can distinguish the following components of sustainable development strategies (Table 5.4):

Table 5.4 – Component strategies of sustainable business development

Name	Characteristics
Economic stability	Financial management – Effective management of the company's finances, including budget planning, working capital management, cost control and optimization of tax obligations
	Strategic planning – Development of long-term development strategies, definition of goals and strategies aimed at increasing the competitiveness and profitability of the enterprise
	Marketing and Sales – Development of effective marketing strategies, market research, competitor analysis and customer acquisition
	Investment in innovation – Development and implementation of new products, technologies and processes to increase the efficiency and competitiveness of the enterprise
Social responsibility	Human Resources Management – Ensuring fair and safe working conditions, developing a corporate social responsibility program, including supporting the work environment, work-life balance, and developing career opportunities
	Interaction with the public – Involvement of interaction with the local community, participation in charitable and social programs, promotion of development and support of social initiatives
	Consumers and customers – Ensuring high quality of products and services, collecting customer needs and feedback, maintaining an open and trusting relationship
Environmental sustainability	Waste Management – Use of technologies and processes that minimize waste and environmental pollution
	Energy efficiency – Reduction of energy consumption, transition

Name	Characteristics
	to renewable energy sources and development of energy efficient technologies
	Resource conservation strategies – Rational use of water, development of programs for secondary use and processing of raw materials and materials
Innovation and research	Research and Development – Investing in research into new products, technologies and processes
	Technological development – Implementation of the latest technologies to increase the efficiency and competitiveness of the enterprise
Strategic risk management	Risk analysis – Identification of potential threats to the enterprise and its activities
	Planning and risk management – Development of strategies and action plans to reduce the impact of risks on the enterprise
Transparency and reporting	Reporting to stakeholders – Presentation of clear and accurate information about the company's activities, its impact on the environment and social progress
	Adherence to standards – Compliance with international and national standards of sustainable development and reporting

The essence of sustainable development policy is that any business entity should work to achieve harmony between economic, social and environmental goals. This requires an enterprise to consider its activities in the context of a wide range of factors, including financial sustainability, social responsibility, environmental sustainability, innovation and research, strategic risk management and transparency.

A successful sustainable development policy involves the integration of these components into strategic planning and business operations. This includes developing specific strategies, programs and procedures aimed at balancing the needs of the business with the needs of employees, consumers and the environment. This approach helps businesses ensure their long-term success, while taking into account benefits for all stakeholders and contributing to the sustainable development of society as a whole.

Smart specialization, known as the S3 strategy, is a concept and policy that aims to promote the innovative development of regions and countries by focusing efforts and resources on a limited number of economic sectors in order to increase their competitiveness in international markets. To support this strategy and develop partnerships between various participants and countries, the European smart-specialization platform (S3 Platform) has been formed.

Information on methodological recommendations for the definition of smart specializations is available on the website of the Ministry of Community and Territorial Development of Ukraine and the Ukrainian Institute of International Policy. The algorithm for the development and implementation of smart-specialization in Ukraine, legislative and regulatory documents are available on the website of the project "Development of innovative infrastructure and improvement of innovative policy of the regions of Ukraine on the basis of "smart-specialization"".

The economic growth of the region, the growth of the competitiveness of the spheres of activity is ensured by the development of smart specialization strategies. For example, in the National Economic Strategy of Ukraine until 2030, the development of regions based on smart specialization is highlighted as a strategic task in the development of key industries.

The concept of smart specialization, which was developed by economists D. Forey, P. David and B. Hall [13] in 2008 and presented to the European Commission, became an important tool for the implementation of the "Europe 2020" strategy. This concept is the basis for defining national and regional guidelines and forming innovative strategies in order to ensure sustainable, smart and inclusive growth, especially in the context of globalization.

The European Commission has implemented a number of measures to support the implementation of smart specialization, such as the creation of the Smart Specialization Platform to facilitate the exchange of information between regions and policy subjects, the development of the RIS 3 Guide for the coordination of actions, as well as the introduction of the Regional Programs of Innovative Action, which determines the conditions of financial support of regional innovation programs from EU structural funds.

The current interest in the development and implementation of regional smart-specialization strategies in the EU is marked by the growth of their role in European regional policy. In fact, the presence of a smart-specialization strategy has become a mandatory prerequisite for receiving funding from the structural funds of countries or regions.

However, the need to substantiate the theory of smart specialization in the context of regional development policy remains relevant and requires further scientific research. There is a gap between practical policy and theory that requires attention to address this issue [13].

In his work on the theoretical foundations of smart-specialization, M. Fadeev emphasizes that this concept is based on classical economic theories of growth, such as the work of A. Smith, and on studies of economic development, such as the works of P. Krugman, A Marshall, M. Piora, M. Stopera, Sh. Saber She also points to the connection of this concept with modern scientific research [14].

The evolution of the concept of smart specialization is manifested in the fact that initially the main idea was to divide regions according to the level of innovative development, where leading innovative regions specialized in scientific research and technology development, and other regions contributed to the promotion of these technologies by local enterprises [15]. However, further studies have shown that smart specialization should not be limited to the simple specialization of the region in key strategic industries. It is more of a process that takes into account the impact of innovation on economic growth and the structure of the economy. Therefore, smart specialization involves the interaction of innovators and manufacturers [13].

As part of the analysis of the concept of smart specialization, it is worth noting the systematized approach of V. Geits, who considers smart-specialization as a conceptual model for the formation of innovation policy, which is aimed at stimulating inventive activity and activating long-term structural transformations in the economy [16].

A generalization of smart-specialization concepts and their key features are given in Table 5.5.

Table 5.5 – Scientific approaches to the definition of smart specialization

Author	Definition of the concept
EU regulation № 1303/2013	A smart specialization strategy means a national or regional innovation strategy that sets priorities for creating competitive advantages by developing and adapting own research and innovation capabilities to business needs in order to consistently respond to new opportunities and market changes, while avoiding duplication and fragmentation of efforts; the strategy of smart specialization may take the form of or be part of the national or regional research and innovation policy (clause 3, article 2). Smart specialization strategies should be developed by involving national or regional authorities and stakeholders, such as universities and other higher education institutions, representatives of industry and social partners, in the entrepreneurial search process (paragraph 4.3 paragraph 2 in Annex)
Ya. Bzhuska, Ya. Pyka	Smart specialization is identifying the unique functions and assets of each country and region, emphasizing the competitive advantages of each region and focusing the attention of regional partners on the vision of future achievements
The team of authors led by V. Geits	Smart specialization is a new concept of regional development that combines industrial and innovation policy and is designed to promote the effective and efficient use of state investments by focusing on the region's strengths, which constitute the region's specialization itself
O. Amosha, O. Lyakh, M. Soldak, D. Cherevatskyi	Smart specialization is a strategic approach to policy development to maximize the innovation potential of the region, regardless of whether the region is economically strong or weak and whether it is related to high-tech innovation
O. Yatsyuk	Smart Specialization is an innovative EU tool for building regional capacity through two key approaches, including local context and the knowledge economy. In practice, this approach involves identifying competitors' advantages and assets of the region, using its innovative and scientific potential
M. Fedyaeva	Smart specialization is an industrial and innovation system for regional economies, which aims to demonstrate how government policies, market conditions, as well as research, development and investment policies in innovation processes can influence the economic, scientific and technological specialization of a region, and therefore on its productivity, competitiveness and economic growth

The implementation of the smart specialization policy in the EU countries became a necessity due to the lack of scientific and technical development compared to the USA and Japan. This involved, first of all, overcoming the avoidance of duplication of development and conducting scientific research, which arose due to the independent formation of national innovation policy strategies and the development of the same technological industries. Despite the fact that the EU has always emphasized the development of its own potential in the field of innovation, previous regional innovation strategies had serious shortcomings, namely ineffective interaction between regional entities, inconsistency of strategies, programmatic and normative documents.

In the context of smart specialization, regional interests become the basis of national priorities, which is achieved through a vertically oriented approach to the selection of industries or spheres of state support. This approach provides for the formation of regional specialization due to the consolidation of efforts of all subjects of the region on specific business functions and processes, and also stimulates innovative and experimental activities.

Considering that specialization strategies within the concept of smart-specialization unite government bodies, local government structures, scientific institutions, enterprises, associations, public organizations, small and medium-sized enterprises at the regional level, approaches related to smart-specializations, open opportunities for developing the effectiveness of measures to solve social problems of the region. This serves as a prerequisite for economic growth and a source of creating new jobs.

The essence of smart-specialization is the analysis of the opportunities that the region has for the development of new types of activities, by determining priorities in local concentration and the most efficient use of available resources. At the same time, the concept is based on a system of principles and is based on such postulates.

The concept of smart specialization provides economic foundations focused on regions by identifying factors that can influence economic, scientific and technological specializations within regional policy or their impact on the mechanism of productivity, competitiveness and economic growth. The implementation of this concept is aimed at

achieving two main goals:

1. Creation of opportunities by researching new promising industries, sectors and spheres. Highly developed countries that have strong production, financial, and technological capabilities usually develop more specialized products that are often produced in a limited number of national economies and become the basis for long-term competitive advantage. The introduction of smart specializations opens up new horizons in the educational, industrial, and commercial spheres of Ukraine in cooperation with the EU.

2. Implementation of structural changes. Smart specialization is based on a multi-level management hierarchy, where the theoretical foundations of the policy and its implementation are carried out at different territorial levels. For example, the EU sets general rules and goals for funding, and the authorities at the national and regional levels implement policies taking into account specific tasks adapted to the socio-economic context of the regions. These characteristics make smart specialization a policy based on local principles and experiments [17].

The concept of smart specializations acts as a key strategy for an effective policy of sustainable development of enterprises. Its successful implementation requires an integrated approach, which includes the analysis of competitive advantages, creation of innovative ecosystems, financial support, development of educational programs and training of personnel, as well as systematic monitoring and evaluation of results.

Focusing efforts on the development of those areas where enterprises have competitive advantages and can bring maximum benefit to society and the environment contributes not only to economic growth, but also to sustainable development, reduction of emissions of harmful substances, optimization of resource use, and improvement of the quality of life of the population.

Thus, the introduction of the concept of smart specializations into the policy of sustainable development of enterprises is an important step on the way to creating an economy that promotes innovation, competitiveness and long-term well-being of society.

As a result of the analysis of the foundations of sustainable development policy,

taking into account the concept of smart specialization, the following conclusions can be drawn:

The concept of smart specializations is a key strategy for the effective policy of sustainable development of enterprises. It involves the analysis of competitive advantages, creation of innovative ecosystems, financial support, development of educational programs, training of personnel, systematic monitoring and evaluation of results. The implementation of this concept contributes not only to economic growth, but also to sustainable development, reducing emissions of harmful substances, optimizing the use of resources, and improving the quality of life of the population.

Successful implementation of smart specializations is based on local principles and experiments. This allows taking into account the specific conditions and needs of the region, which contributes to more effective development of enterprises and territories.

Focusing efforts on the development of areas where enterprises have competitive advantages can bring maximum benefit to society and the environment. An innovative approach to sustainable development policy contributes to the creation of an economy that supports innovation, competitiveness and the long-term well-being of society.

The policy of sustainable development, taking into account smart specializations, not only contributes to economic growth, but also ensures social stability and improvement of environmental conditions. This includes optimizing the use of resources, reducing emissions of harmful substances and improving the quality of life of the population.

Thus, the introduction of the concept of smart specialization into the policy of sustainable development of enterprises is an important step towards the creation of an innovative, competitive and sustainable economy that ensures the long-term well-being of society.

Tasks for independent work

Based on statistical information:

1. To analyze the trends of sustainable development of the Poltava region and

compare it with the level of development of the Kyiv, Sumy, and Kharkiv regions;

2. Assess the development potential of the Poltava region in the context of achieving the Sustainable Development Goals of Ukraine;

3. To determine the "points of growth" of the Poltava region and key structure-forming industries and budget-forming enterprises;

4. Analyze the current Development Strategy of the Poltava Region;

5. To assess the achievements and compliance of key indicators of the leading industries of the Poltava region with the Goals of sustainable development;

6. To develop a smart-oriented strategy for the sustainable development of the studied region.

Control questions

1. What are the key features of the concept of sustainable development?
2. What areas of sustainable development are implemented in Ukraine?
3. What are the structural components of sustainable development?
4. Are there any peculiarities in the application of methodical approaches to the development and implementation of smart specializations?

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TOPIC 6.
DEVELOPMENT OF THE CREATIVE ECONOMY: COOPERATION BETWEEN UKRAINE AND THE EU

Analysis of European trends in the development of the creative economy. Development of a mechanism for the promotion of European values in the development of the market of creative industries of Ukraine. Determination of the potential of transformation of creative industries into a highly efficient sector of the economy of Ukraine. Formation of strategies for strengthening the competitiveness of creative industries of Ukraine and development of its creative and innovative potential. Analysis of creative entrepreneurship in Ukraine and the EU. European approaches to the formation of civil society.

The post-industrial development of society requires new approaches to the economic growth of countries. Currently, this is expressed in the wide implementation of technologies and innovations, active digitalization, rapid development of creative industries, as well as increasing the role of creative and intellectual components in products and services. Investments in knowledge are superior to investments in material assets. Key factors of growth are knowledge, skills and innovative potential. At the same time, digitalization is changing business models, consumer structures, and content creation processes [1]. These transformations open opportunities for achieving the UN Sustainable Development Goals, particularly in the areas of quality education, decent work and economic progress, sustainable development of cities and communities, as well as responsible consumption and production. The growth of the creative economy will allow Ukraine to use the results of creative industries to strengthen its competitive advantages. Ukraine has many talented people who have gained global recognition for their out-of-the-box thinking in fields such as aircraft design, software development, performing arts and engineering. However, the development of creative industries in the country was chaotic and fragmented for a long time. Many initiatives, both from the side of business and from the side of the state, remain unfinished or do not receive a proper continuation due to the lack of a

clear strategic plan, defined goals and responsible participation of all stakeholders.

Creative industries are a relatively "new" issue on the international agenda. However, the understanding that creative industries can directly or indirectly influence the economy by creating jobs, stimulating innovation, and promoting social and sustainable development is gradually taking root.

For the first time, the concept of "creative industries" was used by the Australian government in the report "Creative Nation" (1994). And the first definition was proposed by the UK Department of Culture, Media and Sport (1998), according to which creative industries are sectors of the economy that are based on individual creativity, skill and talent, have the potential to create added value and new jobs by generating, production and operation of intellectual property products.

Since the 11th UNCTAD Ministerial Conference in 2004, this issue has increasingly attracted the attention of international, regional and national institutions. At the same time, national governments are developing policies and programs aimed at turning the creative industries into engines of economic growth.

Creative industries are at the heart of the creative economy, which is formed at the intersection of art, business and technology.

The most common definition of the term "creative industries" today is that used by UNCTAD (United Nations Conference on Trade and Development). This definition is based on the following foundation:

Creative industries are related to the creation and production of goods and services that use mainly intellectual capital, that is, they are characterized by a high share of creativity and intellectual resources.

According to the UNCTAD classification, creative goods are conventionally divided into 7 main categories, which include 25 subcategories, and services are classified into 8 groups (Table 6.1).



Figure 6.1 – Classification of creative goods and services according to the UNCTAD methodology

On April 24, 2019, the Cabinet of Ministers of Ukraine approved Order No. 265-r "On Approval of Types of Economic Activities Related to Creative Industries." This document lists activities that have a significant impact on the scope of the sector and cover various creative industries, including:

Visual arts: painting, graphics, sculpture, photography, etc.;

Performing arts: music, theater, dance, opera;

Literature, publishing and print media;

Audio arts;

Audiovisual arts: cinema, television, video, animation, animation;

Design, fashion;

New media and information and communication technologies: software development, video games, digital art technologies (3D printing, virtual and augmented reality);

Architecture and urbanism;

Advertising, marketing, public relations and other creative services;

Libraries, archives and museums [2].

The socio-economic impact of creative industries in Ukraine corresponds to the world average.

Creative industries in Ukraine form about 3.5% of GDP and provide employment for 2% of the population. Although this indicator is significantly lower compared to the European level of employment (6.5%) [3], it indicates the presence of potential for further development of the industry. The contribution of this sector to the economy of Ukraine corresponds to the world average (3% of global GDP), but it is significantly lower than the average in the EU (6.8%) or in countries such as the USA (11.2%), Australia (10, 3%) and the Netherlands (6%) [4].

Design is a key subsector in the export structure of creative goods of Ukraine. Ukraine is a net importer of creative goods, but at the same time a net exporter of creative services. During the period from 2005 to 2014, the export of creative goods tripled - from 238 million to 768 million US dollars.

In the global market of creative goods, 70% of exports fall on the design subsector (Fig. 6.2). In recent years, the Ukrainian fashion industry has gradually strengthened its position, although previously it was mainly focused on the domestic market and had a limited presence on the international scene. As in many other developing countries, folk arts and publishing are second only to design in terms of exports of creative goods, although their share is much smaller. Other subsectors currently have a limited influence on the export of creative products of Ukraine [5].

The world market of creative goods and services is constantly growing in the long term and opens new opportunities for developing countries to integrate into the global economy and obtain all the accompanying benefits.

International trade in creative goods showed steady growth between 2002 and 2015, with global exports of creative goods more than doubling from $208 billion. USA up to 500 billion dollars. USA. And even in the conditions of the global economic crisis of 2008-2009, creative industries showed the ability to adequately respond to the turbulence of the external environment and produce new creative products. Despite the volume of international trade in 2015 (down 13% compared to 2014), the demand for creative products remains high thanks to the high adaptability of the sector to consumer needs.

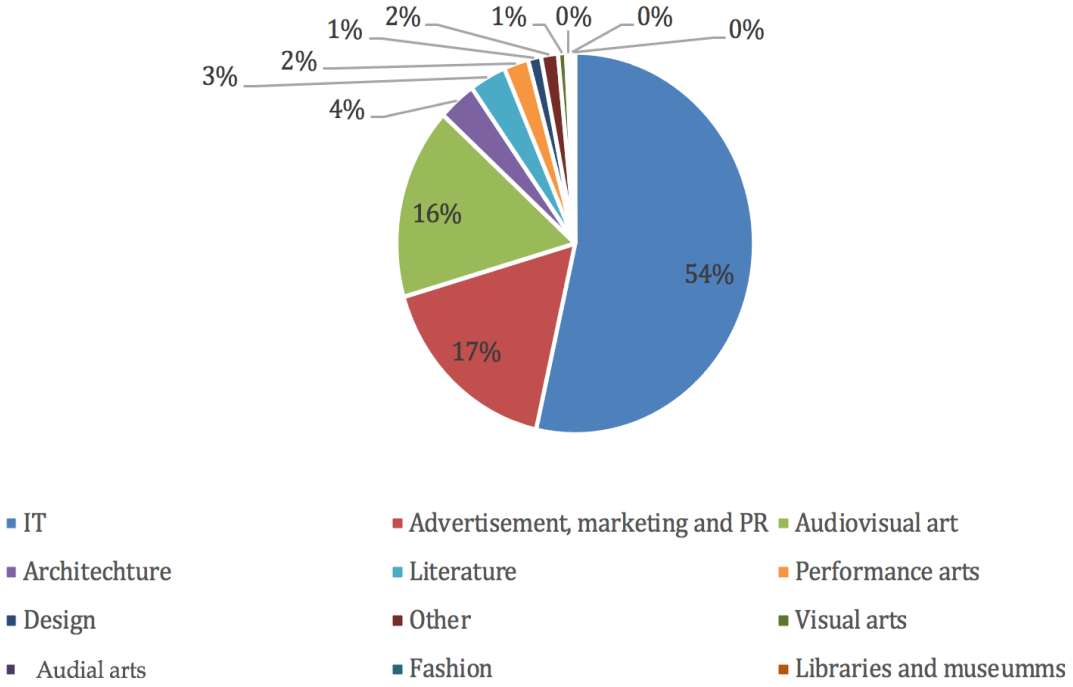


Figure 6.2 – Structure of the Gross Added Value of Creative Industries in Ukraine, 2019, UAH billion [6]

In 2013, cultural and creative industries (CCI) reached 3% of global GDP ($2.25 trillion) and provided about 30 million jobs worldwide. For comparison, in the EU in 2014, the creative sector accounted for 6.8% of GDP (about 860 billion euros) and 6.5% of employment (about 14 million people). Creative industries in Ukraine provide 4% of Ukraine's GDP.

Culture and artistic activity have always been an important component of the life of Ukrainian society. In recent years, there has been a significant revival in the cultural sphere, which is due to the opposition to russian aggression and the propaganda information war.

It is worth noting that cooperation with the European Union in the cultural sphere was an integral element of the European integration progress of our state. An example of Ukraine's cooperation with the EU are the launched programs:

"Culture and creativity" (2015-2018);

"Creative Europe" (2014).

In 2016, the Ukrainian Institute of Books was founded to present Ukrainian

culture in the world and create a positive image of Ukraine.

An effective creative industries export strategy should consider overcoming obstacles in three key aspects of their competitiveness. The integrated approach is based on the competitiveness matrix for micro, small and medium-sized enterprises (SMEs).

The Competitiveness Matrix (Competition – Connectivity – Change) highlights the most pressing issues affecting the growth and development of creative industries.

The identified limitations have a significant impact on the studied sector. Their elimination will help complete the process of formation of the industry, create favorable conditions for further development and promote its internationalization.

At the same time, these measures should be accompanied by internal changes in the sector, in particular, an increase in the level of entrepreneurial activity, orientation to market needs, as well as the development of new and improvement of existing products.

To achieve economic growth in the field of creative industries, the following strategic goals are defined: organization, consolidation and unification of the sector of creative industries, adaptation and modernization of creative goods and services in priority sectors, promotion of export-oriented internationalization with the aim of expanding market opportunities for sustainable growth of the sector.

The identified goals are the first attempt at the state level aimed at transforming creative industries into the driving force of Ukraine's economic growth. The success of such a transformation will depend on the activity of interested parties, the availability of resources and opportunities to implement the measures provided for in the Strategy. To create the structure necessary for the development of the sector, it is necessary to determine the priority of the following steps:

Determine the structure of creative industries through the adoption of relevant legal acts, development of policies and establishment of types of economic activity;

Establish the Cross-Sector Council for Creative Industries (CRCI) as a formal platform for dialogue between the public and the private sector, which will ensure continuous policy updates, awareness raising and market development.

Ukraine's creative industry suffered significant blows not only because of the full-scale war, but also because of previous restrictions that lasted for three years after the start of the quarantine.

According to the developed plan for the recovery of Ukraine, additional problems caused by the war - 37% of workers lost their jobs, 39% of creative businesses note a decrease in income, 20% of representatives of creative industries left abroad.

Accordingly, to overcome these problems, the main directions of the development of the creative industries sector for the short- and medium-term perspective were developed, which include:

1) Restoration and increase of financing of the Ukrainian Cultural Fund, as well as the promotion of Ukrainian culture abroad until the end of 2025.

2) Training representatives of creative industries in international market skills, including sales through international online platforms, use of payment systems, cross-border logistics and copyright protection.

3) Promotion of the "Spend with Ukraine" initiative, which encourages foreigners to buy Ukrainian goods and services; attracting Ukrainian brands to register on this platform.

4) Grants for the creation of music videos.

5) Support of creative industries workers who have returned to Ukraine or are resuming their activities after the war (it is planned to support 20,000 workers with a payment of UAH 10,000 per month for 6 months in 2023-2025).

6) Grant program for strengthening the production and export potential of creative industries (support for the purchase of raw materials, equipment, logistics, relocation, marketing, digitalization and IT support in 2023-2025).

7) Launch of the National Office for the Development of Creative Industries, which will provide state support for the innovative development of creative business in 2023-2025.

8) Support of creative hubs.

9) Stimulating the opening of offices of international companies such as Apple,

Spotify, YouTube in Ukraine to promote Ukrainian content on global platforms. The project will be implemented through political mediation.

The following measures are planned for the long-term perspective of the development of creative industries (2026-2032):

Implementation of the "Creative backpack" program, which will give schoolchildren the opportunity to travel across Ukraine and get acquainted with modern creative professions and practices. This initiative provides state funding for the organization of trips to Ukrainian cities, where students will have the opportunity to participate in various creative activities, such as excursions, workshops, trainings using VR/AR technologies, 3D printing, film schools, clothing modeling, etc.

Improvement of educational programs in the field of creative industries, namely the provision of practical training services covering sales on international platforms, protection of intellectual property and other important aspects; development of new partnerships and exchange programs with foreign universities in the field of creative industries; implementation of a grant program to support the creation of educational products in the field of creative industries, as well as the development of projects aimed at improving professional and educational standards, in particular in the field of non-formal education.

As a result, strategic goals for the development of the creative industries sector were formed.

Strategic goal 1: Organization and consolidation of the creative industries sector.

Operational tasks: 1.1. Promote the integration of the sector through the implementation of a clear institutional and policy framework.

Measures: analysis of the structure of the sector; strengthening of institutional capacity.

1.2. Creation of an active information network to improve communication between business participants.

Activities: Creating links between stakeholders in the sector.

Strategic goal 2: Modernization of Ukrainian goods and services in creative industries with an emphasis on key subsectors.

Operational tasks:

2.1. Strengthening links between enterprises and educational institutions to ensure compliance with market requirements.

Measures: Improvement of technical and professional skills; Improvement of business competencies.

2.2. Development of human capital through practical experience and international expertise.

Activities: Initiation of academic mobility programs of students and teachers.

2.3. Creation of conditions for increasing technological complexity and product diversification.

Activities: Development of a support program to increase the level of innovation.

Strategic goal 3: Support internationalization and exports to expand market opportunities and ensure sustainable growth of the sector.

Operational tasks:

3.1. Making legislative changes in accordance with the best international standards.

Measures: Strengthening the intellectual property protection system; Support for the development of foreign economic activity.

3.2. Increasing international recognition of Ukrainian creative industries through targeted promotion.

Activities: Expanding the international influence and popularity of the sector.

3.3. Creation of a single brand to promote Ukrainian creative products abroad.

Activities: Positioning of Ukrainian creative products under the "Uniquely Ukrainian" brand.

So, the key theses of this study are the following:

Creative industries of Ukraine have recently begun to be recognized at the level of state policy for their economic potential.

The contribution of creative industries to Ukraine's GDP can be compared with

the world average, but it still remains lower than in EU countries.

The most developed export subsector is design, although computer services also have a strong position.

The export of creative goods of Ukraine is mainly focused on European markets.

The audiovisual subsector has the potential to support the development of other subsectors.

To achieve a greater economic effect, it is important not only to increase government spending on creative industries and the consumption of their products, but also to pay attention to the development of the production capabilities of these sectors.

Tasks for independent work

1. Provide a comparative analysis of the creative industries sector of Ukraine and the EU.
2. To analyze Ukraine's potential for the development of the creative industry.
3. To carry out a SWOT analysis of the sector of creative industries.

Control questions

1. Formulate the main advantages of Ukraine's cooperation with the EU in the field of creative industries.

2. What is the essence of the existing potential of Ukraine in the direction of the sphere of creative industries.

3. What reforms of the creative industries sector have been carried out in Ukraine?

4. Name the possible main directions of the strategy for the development of the creative industries sector in Ukraine.

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TOPIC 7.
DEVELOPMENT OF THE FINANCIAL SPHERE OF UKRAINE IN THE CONDITIONS OF EUROPEAN INTEGRATION

Financial education in Ukraine and the EU. European experience in the availability and level of use of financial services. European standards for the protection of the rights of consumers of financial services. Increasing the level of financial inclusion of the population of Ukraine on the basis of European experience.

Today, the process of integrating individuals into the economic system in the context of developing market relations is extremely important both for individuals and for society as a whole. The development of civil society, which is closely tied to economic education and the formation of financial literacy, has become essential due to the rapid changes in social processes. These changes require new forms of economic behavior from individuals. The economic education of young people takes place under conditions of uncertainty and social variability, making it necessary to adapt to diverse activities, social roles, and norms. There is an urgent need to cultivate active, economically literate citizens with high personal tolerance, capable of quickly responding to unpredictable situations in Ukraine's market economy. This is particularly relevant for young people. It is also important to consider that in times of instability and crisis, the social development of the younger generation often outpaces their physiological development, which further emphasizes the significance of economic education and the development of financial literacy in today's market conditions [1].

That is why we can assert that all citizens of Ukraine should have at least a basic level of financial education. This is a requirement of the times and the present day.

Financial education is important not only for self-employed individuals, entrepreneurs, and professionals but also for families. Skills in financial management, saving, and investing are key to many important life decisions, such as buying or renting a home, investing in a business, creating an emergency fund, or planning

vacations. The quality of decisions made significantly improves when a person possesses deep knowledge of financial literacy.

Financial education has clear benefits. It fosters a conscious approach to risks, as every financial decision has its consequences. This can be observed in simple examples, such as overspending during the holidays, which increases financial strain at the start of the following year and hampers savings efforts. Financial literacy helps align current decisions with the real goals a person aims to achieve in the short, medium, or long term. These goals set the direction in everyday life, allowing individuals to coordinate their financial actions with future expectations.

The uncertainty of the future, which is particularly relevant today, significantly impacts the economic sphere. This uncertainty encourages the desire to save, even though it can be a considerable challenge. To achieve the desired level of savings, careful budget planning and optimal management are essential [2].

Every individual faces both fixed and variable expenses each month, which can be categorized into essential and less important ones. Increasing savings is possible by focusing on effectively managing these expenses.

Financial freedom, a dream for many, represents a state where a person is not constrained by financial concerns. Financial literacy is a crucial tool for achieving this state.

At the end of the year or when transitioning to a new life stage, various aspects of life, including financial management, are often reviewed. Financial education helps assess successes, identify mistakes, and recognize strengths and weaknesses, providing essential tools for further financial growth.

But there are differences between «financial education» and «financial literacy».

It is relatively easy to grasp the theoretical foundations of financial literacy; however, applying this knowledge in practice can be a significantly more challenging task. Financial literacy reflects a certain level of acquired knowledge, whereas financial education is a continuous process of learning and improvement.

Thus, knowledge of the fundamentals of budgeting, saving, and interest calculation indicates a certain level of financial literacy, but the actual application of

these skills in everyday life is the result of quality financial education.

The level of financial literacy in society is measured by a specific index, which directly impacts the economic well-being of the country. To determine this index, a methodology developed by the Organisation for Economic Co-operation and Development (OECD) is used. The study on the level of financial literacy in Ukraine involved the organization USAID, an agency of the U.S. government that provides humanitarian assistance to other countries.

One of USAID's key projects is "Financial Sector Transformation," aimed at increasing the level of financial literacy among Ukrainians. It was within the framework of this project that a study on the financial literacy index was conducted [3].

The OECD methodology involves assessment based on three criteria:

- financial knowledge;
- attitude towards finances;
- financial behavior.

The survey consists of several questions in each category, and the interview lasts about 40 minutes. The maximum score for the index is 21 points.

According to the OECD methodology, the overall financial literacy index in Ukraine in 2021 was 12.3 points, which corresponds to 58% of its maximum level (21 points) (see fig. 7.1). The financial literacy indicator in Ukraine shows positive dynamics, having increased by 6.0% in points in less than three years. In comparison, the growth of the financial literacy index in other countries included in the OECD reports in 2016 and 2020 (Georgia, Estonia, Poland, Russia, Hungary, Croatia, Czech Republic) was only 2.4%. Ukraine has also nearly reached the level of these countries in terms of percentage value from the maximum (60%).

In the context of martial law in Ukraine and the significant number of affected citizens, it is particularly important to raise the level of financial literacy among inclusive groups of the population. The connection between financial literacy and inclusion is key to ensuring equal opportunities for various social groups, especially vulnerable categories such as low-income individuals, women, youth, people with

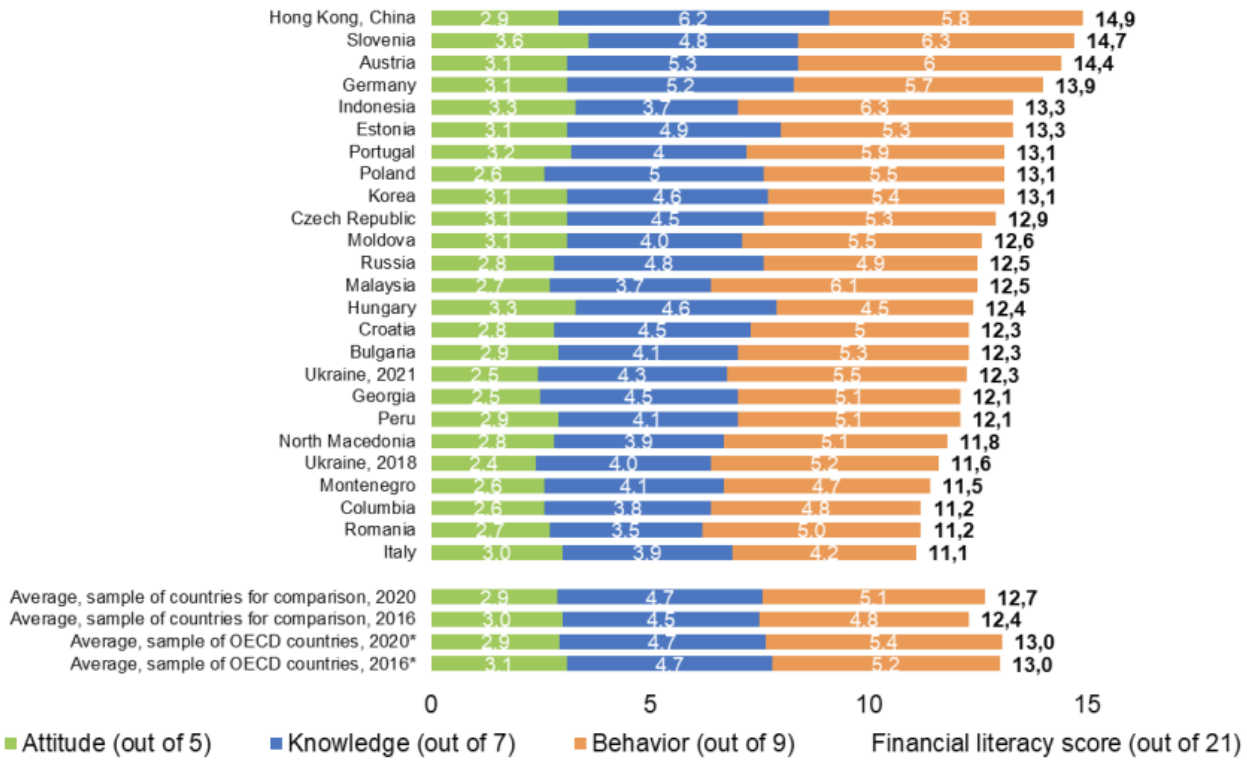


Figure 7.1 – OECD financial literacy index as of 2021

disabilities, those affected by military actions, and internally displaced persons. Financial literacy serves as an essential tool for promoting financial inclusion, as it helps individuals better navigate financial products, make informed decisions, and effectively manage their own resources [4].

To enhance the development of Ukraine's financial system, it is also crucial to focus on increasing financial inclusion among the population. Ukraine began its journey in this direction back in 2014 under the UNEP (United Nations Environment Programme), which initiated the international research initiative "UNEP Inquiry into a Design of a Sustainable Financial System." The primary outcome of this program was the report titled "The Financial System We Need." In response to these initiatives, the National Bank of Ukraine (NBU) approved the decision of the Board No. 1010-rsh on December 26, 2019, which established the "Strategy for the Development of the Financial Sector until 2025," identifying financial inclusion as one of the strategic priorities for the development of Ukraine's financial sector.

Ensuring the financial inclusion of the country, particularly through the

accessibility of financial services for the population via the spread of information technologies, opens new opportunities for both the economy and the state as a whole. This stimulates economic growth by expanding the possibilities for attracting citizens' savings and investing these funds in the development of the economy. At the same time, the level of population well-being increases through the development of entrepreneurial skills and the ability to plan personal financial decisions rationally, such as budgeting, managing financial accounts, savings, loans, and more.

Financial inclusion serves as an important driver of economic growth and a factor for social equality in the modern world. The spread of electronic financial services based on digitalization offers numerous advantages. The strategy for promoting financial inclusion in Ukraine should be based on two key approaches: improving the quality of financial services for those who already have access, and expanding access to basic financial services for those who are still unable to utilize them, primarily through digital solutions. Innovative technologies play a crucial role in enhancing the level of financial inclusion.

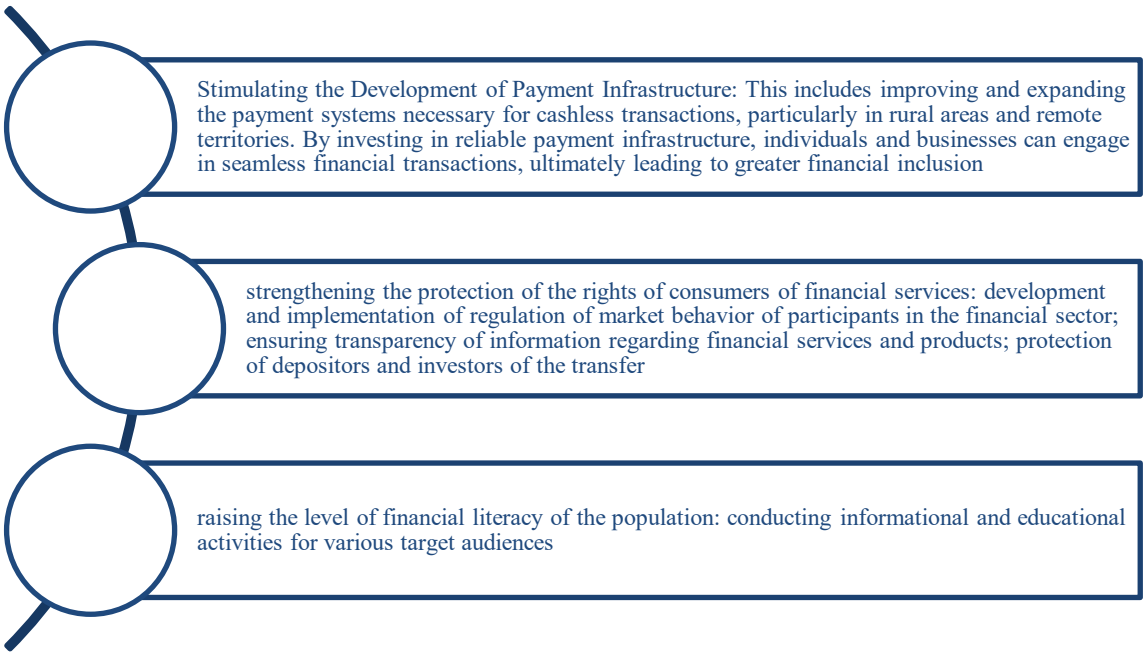


Figure 7.2 – The essence of financial inclusion

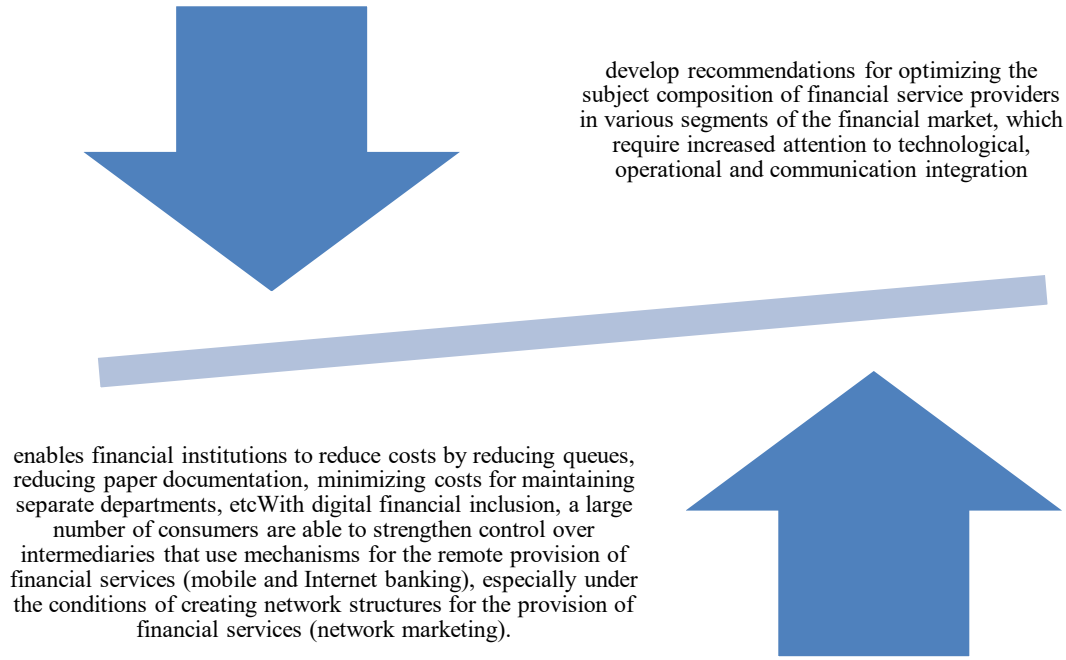


Figure 7.3 – Benefits of financial inclusion

The globalization of the economy, particularly financial globalization, has brought the issue of financial inclusion to the forefront, which is being studied at both local and global levels. One of the key indicators of financial inclusion is the presence of a bank account among the adult population. According to the World Bank, some countries, such as Denmark, Sweden, Norway, the Netherlands, and Australia, have already achieved a 100% level of financial inclusion. In Ukraine, this indicator was 84% in 2021, which is 11 percentage points lower than the target level of 95% set by the World Bank.

Research also indicates a clear distribution of financial literacy levels across age groups. The lowest levels of financial literacy are observed among young people aged 18-19 (10,1 points on the OECD index) and individuals over 60 years old (11,6 points).

In fact, these statistical data have a completely logical foundation. Older adults often belong to socially and economically vulnerable groups, and their integration into society is weak, which is a common issue in many post-Soviet countries. Additionally, these factors are exacerbated by specific mentalities and difficulties in adapting to market conditions.

As for young people aged 18-19, their position in this ranking may seem unexpected. However, the reason for such results is quite evident. It's not just about the lifestyle of this age group. The main issue is the lack of mandatory financial education and the absence of open discussions about financial matters within families or with friends. Therefore, when young individuals enter independent life and face their own financial challenges, they find themselves insufficiently prepared to manage their funds. At this age, impulsive spending often dominates, and there is a lack of concern for their financial future [5].

However, it should be noted that most young people aged 18-19 are still reliant on their parents' financial support, which limits their ability to establish a stable personal budget. At this age, the understanding of financial management is just beginning to develop, and in the most optimistic scenario, it will only become conscious after reaching the age of 20. These parameters certainly reflect general trends but do not represent individual characteristics.

At the same time, research conducted by the National Bank of Ukraine shows that the highest level of financial literacy is observed among individuals aged 25 to 34 years (12,7 points). Similar results are also seen in the group aged 30 to 59 years (12,6 points). These figures are not surprising for individuals who have a psychologically established and successful career.

Although the trend of devaluation of higher education continues, particularly due to perceptions of its «unnecessariness», the results of the NBU research underscore its significance.

The average financial literacy score among university students is higher than that of technical schools and colleges (13,3 compared to 11,9 points). This can be attributed to the closer connections that university students have with social and professional environments. However, it cannot be unequivocally stated that higher education is the only factor influencing financial literacy. There are various extracurricular programs, such as «Crypto Teenagers» and the NBU initiative «Harazd», which contribute to the development of financial literacy among youth. It is encouraging to note that the level of financial literacy among men and women is virtually equal, which breaks down

stereotypes.

Although the overall level of financial literacy in Ukraine is increasing, we observe a significant gap between urban and rural populations. In 2018, this indicator was approximately the same, but now urban residents demonstrate a higher level of financial awareness (12,6 points) compared to rural residents (11,8 points). This indicates the underdevelopment of financial infrastructure in rural areas and confirms the global trend toward urbanization [6].

Despite the low starting level, the financial literacy of Ukrainians shows a positive trend of growth. In recent years, both theoretical knowledge and practical skills in the financial sphere have significantly improved. However, there is still considerable potential for further development, especially when compared to the recommended level of 14 points.

Modern technologies play a significant role in enhancing the financial literacy of Ukrainians. People who actively use digital tools demonstrate a level of financial awareness that is 2,5 points higher. This indicates that access to information and online services contributes to a better understanding of financial issues.

Despite the fact that most Ukrainians prefer short-term spending, they understand the importance of teaching children financial literacy from an early age. 79% of respondents believe that schools should incorporate financial education into the curriculum.

Despite the gradual recovery of banks following the destruction caused by the war, access to financial services remains limited for many Ukrainians. There is a particularly acute shortage of bank branches and ATMs in remote regions. The establishment of a Financial Inclusion Bank will help address this issue by providing Ukrainians with access to essential services such as cash withdrawals, currency exchange, and loans.

To provide the necessary legal framework for the emergence of Financial Inclusion Banks in the Ukrainian financial services market, a draft law amending certain laws of Ukraine regarding the development of financial inclusion in Ukraine № 12044 has been developed and submitted to the Verkhovna Rada.

The draft law has been developed in accordance with paragraph 62 of the Memorandum with the International Monetary Fund, which stipulates that the National Bank must prepare a comprehensive legislative proposal aimed at quickly addressing the growing challenges of financial inclusion using the existing infrastructure.

The draft law introduces the necessary amendments to the laws of Ukraine «On Banks and Banking Activities», «On the National Bank of Ukraine», and other regulatory legal acts. The draft law was registered on September 19, 2024.

The state and financial institutions must work together to protect consumer rights. This involves both strengthening oversight of banking activities and enhancing the financial awareness of the population. Additionally, there is a need to establish an effective system for extrajudicial dispute resolution.

The EU's approach to an effective consumer protection regime in financial services is based on three main principles. Consumers should have access to (fig. 7.4):

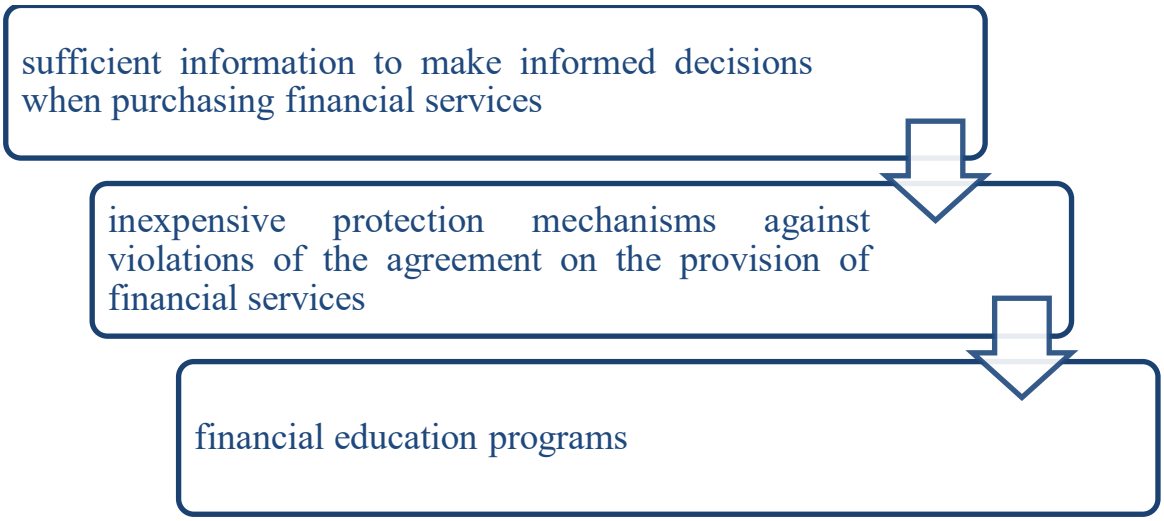


Figure 7.4 – EC principles regarding effective protection of the rights of consumers of financial services

Effective consumer protection is impossible without improving the financial literacy of the population. When consumers are aware of their rights and obligations, they become more confident in their decisions regarding the selection of financial products and services. This enables them to avoid fraudulent schemes and manipulations by financial institutions, as well-informed consumers are capable of asking questions and demanding explanations about contract terms and fees.

A high level of financial literacy promotes competition in the financial market. When consumers are aware that they can choose from multiple options, they encourage financial institutions to improve their offerings, lower prices, and enhance service quality. Competition, in turn, leads to the creation of more favorable conditions for customers and fosters innovation in financial products.

Moreover, increasing financial literacy fosters a responsible approach to managing personal finances. Individuals who understand how various financial instruments work can effectively plan their expenses, savings, and investments, ultimately enhancing their financial stability [7].

Overall, financial literacy is a crucial aspect that not only protects consumers' rights but also promotes the healthy development of the financial system. It equips consumers with the knowledge and skills necessary to make informed decisions, which, in turn, contributes to the creation of a fair, transparent, and efficient financial environment.

An important feature of the development of the legal framework in the EU is the consideration of the experiences of financial services users.

In accordance with the principles of better regulation, the European Commission places great importance on ensuring proportional representation of users at all stages of developing its policy on financial services. To this end, the Commission engages the expertise of professionals:

–in 2004, the Commission established the Financial Services User Forum (FIN-USE) to gather expert contributions from the perspective of users in the process of shaping the European Commission's policy on financial services;

–in 2006, the Commission established the Financial Services Consumer Group (FSCG) as a subgroup of the existing European Consumer Consultative Group (ECCG) to bring together representatives of consumer organizations from each member state. This group was created to discuss policies and proposals concerning financial services that are particularly relevant to consumers.

The management system (governance) of activities in the EU financial markets is considered to involve the execution of three interconnected functions:

–regulation through the assessment of the state, establishment, and improvement of standards and rules for the provision of financial services;

–supervision and control over compliance with established standards and rules;

–taking enforcement actions against violators of established standards and rules.

Regulators and supervisory bodies are responsible for maintaining order in the financial market. Regulators analyze market conditions and develop standards and rules that financial institutions must adhere to. Supervisory authorities ensure that these rules are followed and take action if violations are discovered.

In European countries, there are several models for organizing state regulation and supervision of financial institutions' activities:

–sectoral model, which involves the existence of specific authorities in countries that supervise the activities of individual sectors: banking, insurance, securities market, etc. (Greece, Spain, Italy, Luxembourg, Cyprus, Lithuania, Portugal, Slovenia, France);

–concentration model, where all supervisory functions are concentrated within a single supervisory authority (Germany, Finland, Sweden, Switzerland, Poland, Estonia, Belgium, Romania, Bulgaria, Austria, etc.);

–twin Peaks model, which involves a distribution of powers concerning market supervision and prudential supervision, or a functionally oriented model (Netherlands).

The deep integration of the economies of EU countries requires coordinated policies, especially in the financial sector. The expansion of financial institutions' activities across Europe and the interdependence of different market segments have made this need even more urgent. The financial crisis of 2007-2008 was a clear confirmation that without the coordination of efforts among member countries, it is impossible to effectively address issues in the financial sector.

The goal of the reform of the financial regulation system in the EU was to create mechanisms that allow for the early identification of potential threats to financial stability, even before they escalate into large-scale crises [8].

The reform has led to the adoption of the following documents:

1. Regulation (EU) No 1092/2010 of the European Parliament and of the Council

of November 24, 2010, on the macroprudential oversight of the EU financial system and establishing the European Systemic Risk Board.

2. Regulation (EU) No 1093/2010 of the European Parliament and of the Council of November 24, 2010, establishing the European Supervisory Authority (European Banking Authority), amending Decision No 716/2009/EU, and repealing Commission Decision 2009/78/EC.

3. Regulation (EU) No 1094/2010 of the European Parliament and of the Council of November 24, 2010, establishing the European Supervisory Authority (European Insurance and Occupational Pensions Authority), amending Decision No 716/2009/EU, and repealing Commission Decision 2009/79/EC.

4. Regulation (EU) No 1095/2010 of the European Parliament and of the Council of November 24, 2010, establishing the European Supervisory Authority (European Securities and Markets Authority), amending Decision No 716/2009/EU, and repealing Commission Decision 2009/77/EC.

The new European System of Financial Supervision (ESFS) consists of the following bodies:

The European Systemic Risk Board (ESRB) was established at the proposal of the European Commission at the end of 2010, along with three sectoral bodies:

1. European Securities and Markets Authority (ESMA);

2. European Banking Authority (EBA);

3. European Insurance and Occupational Pensions Authority (EIOPA):

–Joint Committee of the European Supervisory Authorities (ESA) (the Joint Committee of the European Supervisory Authorities)

–National supervisory authorities of EU member states (the national supervisory authorities of EU member states).

The main goal of establishing the European System of Financial Supervisors (ESFS) is to ensure financial stability in the European Union by proactively identifying and mitigating systemic risk.

The European System of Financial Supervision (ESFS) includes both macroprudential and microprudential supervision, thereby:

– the EU aims to establish a truly pan-European level of supervision in the medium term;

– aims to ensure dialogue among all institutions, including central banks and supervisory authorities in EU member states.

The establishment of the EBA, ESMA, and EIOPA, along with the updating of the microprudential supervision system, is an important step toward the centralization of financial supervision in the EU.

Although the primary responsibility for supervising individual financial institutions lies with national regulators, European supervisory authorities can participate in the oversight of systemically important financial institutions or in cases where the national regulator cannot effectively fulfil its functions. Such participation is carried out in close cooperation with national regulators:

–conducting investigations by European supervisory authorities – at the request of the European Commission, the European Parliament, the European Council, a national supervisory authority, a banking group, or on their own initiative – of cases where EU legislation has been violated by national authorities;

–taking binding measures in the event of a prolonged disagreement between national authorities if mutual agreement cannot be reached;

–making decisions in emergency situations that require specific actions from national authorities, or if the latter fail to take such actions, making decisions regarding individual financial institutions.

As one of the main institutions of the European Union, the European Central Bank not only formulates and implements a single monetary policy but also participates in regulating the financial sector, thereby ensuring the stability of the EU's financial system.

The activities of the European Central Bank aimed at ensuring price stability in the Eurozone and conducting a unified monetary policy have a clear legal foundation defined in the Treaty on the Functioning of the European Union and the Statute of the European System of Central Banks and the European Central Bank.

The European System of Central Banks, which includes the European Central

Bank and the national central banks of Eurozone countries, was established to ensure price stability. The primary task of the ESCB is to protect the euro from inflation and maintain its purchasing power.

The European Central Bank, as a central element of the Single Supervisory Mechanism, is responsible for assessing risks and ensuring that banks comply with regulatory requirements. This enhances the safety and soundness of the banking system in the Eurozone and contributes to the stability of the financial system throughout the European Union.

Regulation No. 1024/2013 established new rules for the EU banking sector by creating the Single Supervisory Mechanism. This mechanism involves the collaboration of the European Central Bank and national banking regulators to enhance the resilience and safety of the banking system in Europe.

The regulation applies to EU member states regardless of whether they are part of the eurozone.

The SSM (Single Supervisory Mechanism) concept stipulates that the European Central Bank (ECB) assumes direct oversight responsibility for the largest and most significant banks in the eurozone. At the same time, other banks are subject to joint supervision by the ECB and national regulators, ensuring a unified approach to banking supervision in the eurozone.

The European Directive 2013/36/EU, which defines the conditions for access to banking activities and the rules for banking supervision, is based on the international standards set by the Basel Committee on Banking Supervision (Basel II and Basel III). This directive promotes the resilience and security of the EU banking system by implementing uniform rules for all banks.

The European Central Bank, guided by European Union legislation and the national laws of member states, establishes the fundamental principles for the operation of banks. Additionally, the ECB has the exclusive right to decide on the granting and withdrawal of licenses for conducting banking activities, as stipulated by the Regulation № 1024/2013.

The ECB is empowered to oversee credit institutions that wish to open branches

or provide cross-border services in EU member states that are not part of the Banking Union (point (b) of Article 4(1)).

The European Central Bank supervises compliance with requirements regarding own funds, securitization, limits on large exposures, liquidity, leverage, as well as public disclosure of information related to these matters (point (d) of Article 4(1)).

The European Central Bank conducts consolidated prudential supervision of credit institutions, which involves assessing the adequacy of their risk management systems, internal controls, and capital sufficiency, as well as collaborating with national competent authorities.

The European Banking Authority is a network of institutions at the EU level and individual countries that collaborates to ensure the stability of the financial system, market transparency, and the protection of depositors' and investors' rights.

According to Article 1(2) of the Regulation establishing the EBA with amendments, the EBA will operate within the powers granted by the Regulation and in accordance with the following legislative texts:

- Regulation on Capital Requirements (CRR)
- Directive on Capital Requirements (CRD)
- Directive on the Recovery and Resolution of Banks (BRRD)
- Directive on Deposit Guarantee Schemes (DGSD)
- Directive on Payment Services (PSD)
- Directive on Electronic Money (EMD)
- Directive on Financial Conglomerates (FICOD)
- Directive on Distance Marketing (DMD)
- Regulation on Information Accompanying Money Transfers (WTR)
- Regulation (EU) No 1024/2013 on the Single Supervisory Mechanism (SSM).

The European Banking Authority (EBA) has the authority to take on the functions of a national regulator if that regulator fails to ensure proper supervision of banks within its jurisdiction, and this poses a threat to the stability of the EU financial system or the unified approach to banking regulation.

The main task of the European Banking Authority (EBA) is to develop unified

rules for banking activities in the EU that ensure a level playing field, a high level of protection for depositors, investors, and consumers of financial services, as well as contribute to the stability of the financial system in Europe.

The European Banking Authority (EBA) promotes the harmonization of supervisory practices in the EU banking sector by developing unified rules and standards. Additionally, the EBA regularly assesses the risks faced by the banking system, conducts stress tests, and develops recommendations to enhance the resilience of banks.

Other tasks of the EBA, as defined by European legislation, include:

- investigating the incorrect or insufficient application of EU legislation by national authorities;
- making decisions directed at specific competent authorities or financial institutions in emergencies;
- mediating to resolve disagreements between competent authorities in cross-border situations;
- acts as an independent advisory body to the European Parliament, Council, or Commission;
- takes a leading role in promoting transparency, simplicity, and fairness in the market for consumer financial products or services within the internal market.

To carry out its tasks, the European Banking Authority (EBA) has the right to issue various regulatory and non-regulatory documents, such as technical standards, guidelines, recommendations, and reports. These documents serve as an important tool for ensuring a uniform approach to bank supervision within the EU and contribute to the establishment of a safe and stable financial system.

Binding Technical Standards (BTS) are legal documents developed by the European Banking Authority to complement European banking laws. BTS provide detailed rules and guidance necessary for the consistent application of these laws across all EU countries. Once a draft BTS is developed, it is approved by the European Commission and becomes mandatory for all banks in Europe to comply with.

Unlike guidelines and recommendations, Binding Technical Standards (BTS)

have legal force and are mandatory for compliance by all banks in all EU member states. This means that banks are required to adhere to the requirements set forth in the BTS, and failure to comply with these requirements can have legal consequences. BTS ensure a unified approach to banking regulation in the EU and contribute to creating a level playing field for competition.

The European Insurance and Occupational Pensions Authority (EIOPA) was established to promote the development of a single insurance and pensions market within the European Union. EIOPA focuses on harmonizing regulatory requirements, enhancing the resilience of the financial system, and protecting consumer rights, particularly by:

- ensuring proper and effective regulation and supervision;
- ensuring stable, transparent, effective, and proper functioning of financial markets;
- strengthening international coordination in the supervision of insurers and pension funds;
- preventing regulatory arbitrage and leveling the competitive conditions across different jurisdictions;
- ensuring proper regulation and oversight of risks in the fields of insurance, reinsurance, and private pension provision;
- protecting the rights of consumers of financial services in this area.

EIOPA is an independent EU body that serves as an analytical center and advisor on insurance and pensions, providing expert assessments for the development of European policy in this field.

EIOPA actively collaborates with other European institutions, such as the European Central Bank, to ensure the stability of the financial system. By establishing a robust regulatory framework and conducting effective oversight, EIOPA helps protect the rights of policyholders and pensioners, enhancing public trust in the insurance and pension sectors. This, in turn, contributes to the overall stability of the EU financial market.

The objectives of EIOPA's activities are:

- improving consumer protection and restoring trust in the financial system;

- ensuring clear, effective, and consistent regulation and supervision that considers the interests of all member states and the diverse nature of financial institutions;

- implementing a more harmonized and consistent application of rules for financial institutions and markets in the EU;

- strengthening oversight of cross-border groups;

- promoting coordinated supervisory actions in the financial sector in the EU.

ESMA – this is an independent institution of the European Union responsible for ensuring the stability and efficiency of financial markets. The activities of ESMA are aimed at protecting investors' rights, enhancing market transparency, and creating a level playing field for all participants.

ESMA provides analytical information and conducts special tests (stress tests) for the European Systemic Risk Board, contributing to the assessment of the overall resilience of the financial system. At the same time, ESMA actively works on developing unified rules for securities markets across Europe, which promotes their stable functioning, in particular:

- ensuring an adequate level of investor protection through effective regulation and supervision;

- creating a level playing field for financial service providers, as well as ensuring effective and efficient supervision.

National securities market regulators play a key role in ensuring the stability and efficiency of national financial markets by supervising their activities and developing relevant regulatory requirements.

Regulators work on issues such as:

- stability of price formation;

- accuracy of information about financial products traded on stock exchanges;

- prevention of manipulative behavior;

- implementation of appropriate legislation to protect consumer rights in the securities market.

ESMA achieves its goals by:

- assessing risks for investors, markets, and financial stability;
- implementing uniform rules for the EU financial markets;
- promoting convergence in supervision and direct oversight of credit rating agencies, trade repositories, and securitization repositories.

ESRB – this is an organization responsible for the overall safety of the EU financial system. Their task is to identify and prevent significant financial problems that may arise due to various factors, such as economic crises or issues within individual banks. The ESRB aims to ensure the stability of the financial system in the long term.

Macroprudential policy aims to ensure the stability of the financial system so that it can support economic growth. This is achieved by strengthening the resilience of financial institutions and reducing risks that could lead to financial crises [9].

The tasks of the ESRB are:

- defining and/or collecting and analyzing all relevant and necessary information to achieve the objectives of its activities ESRB;
- identification and prioritization of systemic risks;
- preventing situations where systemic risks reach significant levels and, where appropriate, publicly disseminating such warnings;
- providing recommendations for corrective actions in response to identified risks and, where appropriate, publicly disseminating such recommendations;
- issuing warnings to the European Council about threatening situations and assessing such situations to enable the Council to approve decisions necessary to address the problematic situation;
- monitoring the implementation of the provided warnings and recommendations;
- coordinating actions with international financial institutions, especially the IMF and FSF, as well as relevant authorities of third countries on matters related to macroprudential oversight.

The high degree of interconnection among the economies of EU countries,

achieved through integration, underscores the necessity of coordinating national policies, particularly in the financial sector. This will help avoid negative consequences for the entire European economy.

Previously, oversight of financial markets in the EU was conducted separately for different sectors. The establishment of the ESRB has created a unified body responsible for the overall stability of the financial system, thus filling the existing gap in the oversight framework.

The new structure has been developed with consideration of the characteristics of the modern financial system, which is marked by a high level of interdependence among its various sectors. This allows for a more effective assessment of risks and the maintenance of overall financial system stability.

It is the macroprudential supervision that aims to ensure the stability of the EU's financial system as a whole. To achieve this, it focuses on the timely identification and mitigation of systemic risks that could lead to financial crises.

The powers of the ESRB extend to various financial institutions, such as banks, insurance companies, asset management firms, and financial market infrastructure. This enables the ESRB to conduct comprehensive oversight of the entire financial system [10].

The European Systemic Risk Board (ESRB) plays a crucial role in ensuring the stability of the European Union's financial system. It conducts continuous monitoring of the financial system, carefully analyzing its current state and examining both existing and potential risks that may threaten its functioning.

The monitoring process involves collecting and analyzing data on financial markets, banks, insurance companies, and other financial institutions, as well as assessing the impact of economic, political, and social factors on the stability of the financial system. Based on this analysis, the ESRB identifies risks that could lead to systemic issues or financial crises.

When the ESRB identifies threats to the stability of the financial system, it not only informs about them but also issues warnings and recommendations aimed at preventing or minimizing potential negative consequences. These recommendations

may relate to various aspects, including regulatory changes, increasing capital requirements for banks, adjustments in risk management practices, and improving transparency in financial reporting.

Additionally, the ESRB actively engages with other regulators and financial institutions to ensure the effective implementation of its recommendations. The organization also works to raise awareness of risks in the financial sector and develops strategies that help strengthen financial resilience not only at the level of individual institutions but also across the entire EU financial system [11].

Through this activity, the ESRB plays a vital role in ensuring trust in financial institutions and markets, which is critical for stable economic development within the European Union. Ultimately, continuous monitoring and timely responses to risks allow the ESRB to contribute to the establishment of a resilient and stable financial system, which is key to the well-being of all EU member states.

Tasks for independent work

1. Analyze the experience of Central and Eastern European countries in the process of Eurointegration and its impact on the development of their financial systems.

2. Assess the role of international financial organizations (IMF, World Bank) in supporting reforms in Ukraine's financial sector.

3. Analyze the impact of global financial crises on Ukraine's financial system and the measures taken to stabilize it.

Control questions

1. Define the concepts of «financial system,» «eurointegration», and «macroprudential supervision».

2. Describe the main components of Ukraine's financial system.

3. Analyze the legislative framework governing the activities of the financial sector in Ukraine.

4. Investigate the fundamental principles of the functioning of the EU financial system.

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TOPIC 8.
DIGITAL INTEGRATION OF UKRAINE'S FINANCIAL INDUSTRY INTO THE EU

Integration of the financial market of Ukraine in the European financial space. Driving forces of digitalization. Driving force of digitalization. Ensuring the development of SupTech & RegTech. Development of the digital economy in Ukraine and the EU.

Digitalization is a global process of societal transformation that involves the implementation of digital technologies in all areas of life, from the economy to culture. It leads to the emergence of new forms of interaction between people, changes production and consumption methods, and creates new challenges and opportunities for societal development.

The modern digital landscape is characterized by a wide range of technologies, including artificial intelligence, robotics, the Internet of Things, big data, cloud computing, and blockchain. These technologies not only transform production and consumption methods but also impact social interactions, creating new opportunities and challenges for society.

It is worth noting that today, all individuals are consumers of digital technologies (fig. 8.1). [1].

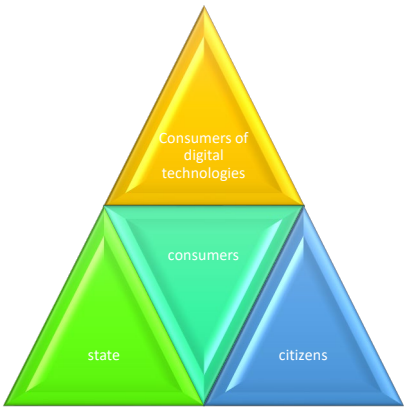


Figure 8.1 – Consumers of digital services

Digital technologies are a powerful catalyst for economic growth, driving

increased productivity, reducing costs, and creating new markets. Their impact extends beyond business, transforming consumer behavior, social interactions, and creating new opportunities for societal development.

Digital transformation is a strategic priority for Ukraine, as it paves the way for economic growth, improving citizens' quality of life, and strengthening the country's position on the global stage. Through digitalization, Ukraine can achieve its ambitious goal of increasing GDP eightfold and reaching a standard of living comparable to that of European Union countries.

According to forecasts, the digital economy will become the driving force behind global economic growth in the coming years. Ukraine has set an ambitious goal–to increase the share of its digital economy to 65% of GDP by 2030, surpassing global averages. Achieving this scenario will require significant investments, the development of innovative infrastructure, and the training of highly skilled professionals. However, the success of these efforts will open new opportunities for Ukraine's economic growth and improve the well-being of its citizens [2].

The digital economy is considered a new paradigm in which digital data serves as a strategic resource. Through the analysis and use of big data, companies can create innovative products and services, enhance production efficiency, and personalize customer interactions. This, in turn, fosters the development of new business models, increases productivity, and contributes to the creation of a more intelligent and convenient society.

However, beyond the economy, society itself must also become digital. A digital society is one where digital technologies are a powerful tool for personal development, professional fulfillment, and solving societal challenges. It opens new opportunities for education, communication, creativity, and collaboration. However, for digital technologies to benefit society, it is essential to ensure equal access to them, promote digital literacy, and create a safe digital environment.

It is worth noting that the digital economy:

–it encompasses businesses in all sectors of economic activity, not only in the information and telecommunications sector but also in the core industries, agriculture,

construction, and so on;

–it permeates all sectors across all categories: public and private; real, non-manufacturing, and financial; extraction, manufacturing, and the service sector.

The fulfillment of international obligations in the field of sustainable development requires Ukraine to undertake a radical transformation of its financial system. This involves mobilizing significant amounts of public and private investments, developing the green finance market, and creating a favorable investment climate. Only under these conditions will Ukraine be able to ensure sustainable economic development and improve the quality of life for its citizens.

The financial system in the context of sustainable development must evolve not only to provide funding for the real sector of the economy but also to promote the development of innovations, social projects, and environmentally friendly technologies. This means that financial services should become more accessible, and the financial system as a whole should be more effective and resilient. Therefore, it implies [3]:

– the transition to sustainable development requires a radical transformation of the financial system. The financial system must become a driving force for change, directing investments towards projects that promote environmental conservation, social development, and economic growth. This involves the development of new financial instruments, a shift in risk assessment approaches, and strengthening international cooperation;

– through its political decisions and regulatory mechanisms, the financial system plays a key role in shaping the environmental and social consequences of economic activity. It determines which projects will receive funding, which technologies will be developed, and how resources will be distributed within society. Therefore, to achieve sustainable development, it is essential to reform the financial system in such a way that it stimulates investments in environmentally friendly and social projects.

The transition to sustainable financing is a complex and gradual process that involves not only the development of new financial instruments and the establishment

of specialized institutions but also a change in the financial culture of all market participants. To achieve this goal, active cooperation between the government, the private sector, and international organizations is necessary. Only through joint efforts can a financial system be built that supports the achievement of the Sustainable Development Goals.

The transition to sustainable financing requires systemic changes in the financial system, which include the development and implementation of a new regulatory framework, stimulating investments in sustainable projects, developing the green finance market, and enhancing the financial literacy of the population. This process requires active participation from the government, business, and international organizations. Only through joint efforts can we build a financial system that supports the achievement of the Sustainable Development Goals.

The development of sustainable financing in Ukraine requires a systematic approach that includes harmonizing national legislation with international standards, active participation from the government, business, and civil society, as well as consideration of regional specificities. Only under these conditions can effective resource mobilization be ensured to achieve the Sustainable Development Goals.

For the successful development of sustainable financing in Ukraine, it is essential to create a detailed national roadmap that outlines priorities, tools, and mechanisms for attracting sustainable investments. This roadmap should consider both international experience and national specificities, as well as ensure coordination of actions among the government, business, and civil society. Only under these conditions can effective resource mobilization be ensured to achieve the Sustainable Development Goals. Such a roadmap should include: (1) the main goals and priorities for Ukraine in attracting sustainable investments; (2) potential obstacles to sustainable investing; (3) tools and mechanisms to stimulate sustainable investment; (4) step-by-step instructions for attracting sustainable investments; (5) directions for government policy aimed at preventing or minimizing the potential outflow of sustainable investments due to adverse market and political environment factors [4].

The National Bank conducted a thorough analysis of the current state of the

financial sector as part of its development strategy for 2025. This analysis allowed for the identification of the main challenges and opportunities for the industry's growth:

1. The full-scale war of Russia against Ukraine has dealt devastating blows to the Ukrainian economy, leading to a deep recession and a significant contraction in GDP. However, thanks to the joint efforts of the government, the National Bank, and international partners, as well as the heroic resistance of the Armed Forces of Ukraine, the economy is gradually recovering. Nonetheless, significant investments and reforms are needed for complete recovery and to achieve sustainable growth.

2. Despite the significant challenges posed by the full-scale war, the National Bank of Ukraine (NBU) has demonstrated a high level of adaptability and effectiveness in conducting monetary policy. In extremely difficult conditions, the NBU has managed to prevent the destabilization of the financial market and avoid hyperinflationary processes that often occur during military conflicts. The determination and swift decision-making played a crucial role in this effort.

One of the key achievements of the NBU is that, even in the context of military aggression, it has managed to keep inflation at an acceptable level, avoiding rapid increases. This has been made possible through coordinated monetary policy measures, which included raising the key interest rate to high levels, controlling the liquidity of the banking system, and enhancing oversight of financial institutions.

The National Bank also took measures to support the stability of the foreign exchange market, including the introduction of currency restrictions to curb capital outflows and ensure stable currency exchange. These restrictions were necessary to maintain the exchange rate stability of the hryvnia amid external pressures on the country's economy [5].

However, the gradual easing of currency restrictions that the NBU initiated after stabilizing the situation indicates the institution's readiness to return to an inflation targeting regime. This reflects a commitment to ensure a more flexible and predictable monetary policy following the acute phase of the crisis. The return to inflation targeting signifies that the NBU prioritizes long-term price stability, which is a key condition for sustainable economic development.

3. To overcome the financial difficulties caused by the war, Ukraine is actively attracting international financial assistance. At the same time, to reduce dependence on external funding sources and avoid the negative consequences of budget monetization, the government and the National Bank have taken measures to stimulate the domestic borrowing market. This has helped alleviate pressure on the national currency and provide more stable financing for government expenditures.

4. Despite the unprecedented challenges posed by the full-scale war, the Ukrainian banking system has demonstrated significant resilience. This has been made possible by a combination of factors: a substantial capital buffer accumulated by banks in previous years, the prompt and effective response of the National Bank of Ukraine, which implemented a range of unconventional measures to support the liquidity of the banking system, and the results of long-term reforms in the financial sector that have enhanced the banks' resilience to external shocks. Thanks to these efforts, the banking system continues to function and support the economy of the country in extremely challenging conditions.

5. The war in Ukraine has significantly weakened credit demand among both individuals and businesses. Decreased incomes and uncertainty about the future have limited the need for credit resources. This, in turn, has negatively impacted the profitability of banks and the financial sector as a whole. In 2022, the «Affordable Loans 5-7-9%» program became the main source of financing for Ukrainian businesses, accounting for over a quarter of corporate lending. However, for a full recovery of lending, stable economic growth and increased confidence among businesses and the population in the future are necessary.

6. The laws «On Financial Services and Financial Companies» and «On Insurance», adopted in 2021, represent a significant step in reforming Ukraine's non-banking financial sector. These laws provide for a substantial update of the regulatory framework, aligning Ukrainian legislation with international standards. It is expected that the new rules will promote increased competition, improve consumer rights protection, and attract additional investments to the Ukrainian economy. However, to fully realize the potential of these laws, it is essential to ensure their effective

implementation and create favorable conditions for the development of the financial sector.

7. Despite the significant challenges posed by the full-scale war, the Ukrainian payment system has demonstrated a high level of resilience. Thanks to the prompt actions of the National Bank and the banking sector, payments were processed seamlessly, which helped avoid a cash crisis and maintain bank liquidity. The adoption of the new Law of Ukraine «On Payment Services» and the launch of a new generation of the NBU's Electronic Payment System were important steps in modernizing the payment market and creating favorable conditions for the development of innovative financial services. This comprehensive set of measures ensured the continuity of economic processes and laid a strong foundation for the further development of Ukraine's payment infrastructure.

8. The full-scale invasion by Russia has significantly limited activity in the Ukrainian stock market. To stabilize the financial system and prevent capital flight, a number of restrictions on securities transactions were introduced. Although most of these restrictions have already been lifted, the market continues to operate under martial law, which affects investor confidence. Currently, the vast majority of trading is concentrated on government securities, while the volume of trading in corporate securities remains minimal. The gradual lifting of restrictions creates conditions for market recovery; however, stable economic growth and increased investor confidence in the future are necessary for a full restoratio [6].

Reforms in the financial sector are strategically important for Ukraine's future. They aim to create a reliable and stable financial system capable of ensuring economic growth, supporting the country's defense capabilities, and improving the lives of citizens. The integration of the Ukrainian financial market into the European space will open up new opportunities for businesses and investors, as well as facilitate the attraction of additional resources for the country's reconstruction after the war. The implementation of these reforms is a complex process that requires the collective efforts of the government, regulators, and international partners. The strategy for the development of the financial sector involves a balanced approach that combines

ensuring financial stability with stimulating growth. After overcoming the acute phase of the crisis, a gradual easing of the temporary restrictions imposed on the financial sector is planned. At the same time, regulation and oversight will be strengthened to prevent new crises. Special plans will be developed to respond to potential shocks. This approach will ensure the continuous functioning of the financial system and create favorable conditions for economic growth. The implementation of the Strategy will create a modern, stable, and European-integrated financial system in Ukraine. As a result, trust in the national currency will increase, foreign investments will be attracted, and access to financial services for the population will improve. Consequently, Ukraine will be able to ensure sustainable economic growth, enhance the welfare of its citizens, and successfully integrate into the European economy.

We envision Ukraine's financial sector as a dynamic, innovative, and resilient system integrated into the global financial market. This sector should ensure accessibility to financial services for all segments of the population, foster economic growth, and enhance citizens' welfare, while also being capable of effectively countering any challenges [7].

The mission of the financial sector regulator is to ensure the stable functioning of the financial system, protect the rights of consumers of financial services, stimulate the development of financial innovations, and promote economic growth in Ukraine. The regulator facilitates the effective allocation of financial resources, enhances financial inclusion, and contributes to the recovery of the country's economy.

The implementation of the 2025 Strategy will transform the Ukrainian financial sector into a modern, innovative, and resilient system capable of competing in the global market, ensuring stable economic development in Ukraine, and enhancing the well-being of the population:

– satisfaction of consumer needs for quality and accessible financial services;

– reduction of the cost and extension of the maturity of financial resources for the state and enterprises;

– increasing the competitiveness of the Ukrainian economy as a whole.

The 2025 Strategy is structured around five key areas: ensuring financial

stability, stimulating macroeconomic growth, expanding financial accessibility, developing financial markets, and implementing innovations. Each of these areas has specific objectives and performance indicators.

Creating a reliable and transparent financial environment capable of withstanding various challenges through the enhancement of the regulatory system, improving the quality of corporate governance, and ensuring effective supervision of financial institutions.

Ensuring macroeconomic stability by balancing public finances, stimulating lending to the real sector of the economy, strengthening the protection of creditors' and investors' rights, and creating conditions for attracting long-term investments necessary for the sustainable development of the country [8].

Creating conditions for every citizen to access financial services, understand their terms, and be protected from abuses. This involves simplifying access to financial services, increasing the financial literacy of the population, enhancing consumer rights protection, and expanding the range of available financial products.

The development of deep and liquid financial markets that ensure effective redistribution of financial resources, promote economic growth, and facilitate Ukraine's integration into the global economy. This includes the development of the non-bank sector, improvement of capital market infrastructure, creation of effective risk management mechanisms, and integration of the Ukrainian financial market into global financial flows.

Creating a favorable environment for the development of financial technologies, which involves establishing an open architecture for the financial market, supporting fintech companies, implementing modern technologies in regulatory activities, and advancing the digital economy as a whole. This will enhance the efficiency of the financial sector, expand access to financial services, and strengthen Ukraine's position in the global financial market.

The successful implementation of the 2025 Strategy will not only enhance the competitiveness of the Ukrainian financial market on the global stage but will also ensure its compliance with the highest international standards, thereby contributing to

the achievement of the desired vision for its development.

Characteristics of the Future Financial Sector.

Thanks to the close cooperation between the regulator and the Deposit Guarantee Fund (FGVFO), as well as the implementation of unified approaches to supervision and regulation, the financial sector of Ukraine is becoming more resilient, transparent, and competitive, aligning with the best global practices. A comprehensive reform of the financial sector regulation system has been carried out, which included the redistribution of functions among regulators, optimization of their organizational structures, and improvement of internal processes. These measures are aimed at enhancing the effectiveness of regulation, eliminating conflicts of interest, and ensuring the transparency of the financial market's operations. To ensure financial stability and enhance the resilience of the financial sector to external shocks, modern supervisory and regulatory tools that meet European standards are being implemented. This includes the introduction of effective early warning systems, strengthening capital requirements for banks, improving procedures for the liquidation of insolvent banks, expanding the powers of regulators, and enhancing their coordination. Regulation in the area of combating money laundering and terrorist financing is conducted in accordance with international standards set by FATF, IMF, and MONEYVAL, ensuring a balance between the need to combat financial crimes and creating favorable conditions for the development of free enterprise. This allows for effective counteraction against money laundering, terrorist financing, and other financial crimes while simultaneously promoting the development of the national economy. Joining the IOSCO Memorandum has enhanced investor protection by reducing the risks of fraud and manipulation in the capital market, as well as ensuring more effective cooperation with foreign regulators in investigating cross-border crimes. At the end of 2019, Ukraine joined the global fight against tax evasion by ratifying the FATCA agreemen. At the same time, a system to combat fraud in financial markets was implemented in accordance with the European MAR and MAD standards, which allowed for effective action against Ponzi schemes, insider trading, and market manipulation. These measures contributed to increased trust in the Ukrainian financial market and its

integration into the global financial system. The reform of corporate governance, particularly the simplification of merger and acquisition procedures and the alignment of corporate governance of state enterprises with international standards, has made Ukrainian companies more attractive to investors. Active investment attraction through IPOs and the overall improvement of the investment climate indicate the success of these reforms. The launch of the second level of the pension system was an important step in reforming Ukraine's pension system, ensuring its financial stability and enhancing social guarantees for citizens. At the same time, it stimulated the development of the stock market by attracting significant volumes of long-term investments and strengthening investor confidence in domestic financial instruments. The elimination of shortcomings in the functioning of the government bonds market became an additional factor contributing to the growing demand for Ukrainian financial assets. By introducing clear rules for the derivatives market and implementing full-fledged hedging mechanisms, Ukrainian companies gained a reliable tool for risk management. Concurrently, there was an active growth in the securities market, indicating increased investor trust in the Ukrainian economy. The number of companies attracting capital through public offerings of shares has increased, as well as the volume of trading on organized markets [9].

Thanks to comprehensive reforms carried out across all segments of the financial sector, significant improvements have been achieved. Ukraine's financial sector has become transparent, competitive, stable, and high-tech. The solvency of market participants has increased, customer trust has been restored, and the stable functioning of the entire financial system has been ensured. Ukraine's financial sector has successfully undergone the process of harmonization with European legislation, providing a high level of consumer protection and the resilience of the financial system. Special attention has been paid to the development of the insurance market, particularly the introduction of government support programs for agricultural insurance. This contributes to increasing the competitiveness of the Ukrainian economy and its integration into the European space. The reform of the financial sector has led to the creation of a transparent and stable market for peer-to-peer lending, as well as the

implementation of European standards in the areas of securities trading, depository activities, and clearing. This has fostered the development of financial infrastructure and enhanced the competitiveness of the Ukrainian economy. In order to protect investor rights and minimize risks in the financial market, Ukraine has regulated the activities of rating agencies and benchmark administrators in accordance with European standards. Concurrently, hryvnia financial instruments have been integrated into global financial markets. This enhances trust in the Ukrainian financial system and attracts foreign investments.

The tax reform has been implemented, including the introduction of voluntary declaration and the implementation of international BEPS standards, aimed at reducing the shadow economy, increasing tax revenues to the budget, and enhancing business transparency [10].

Thanks to the effective functioning of the financial sector and favorable macroeconomic conditions characterized by low inflation, stable economic growth, and increasing income levels, Ukraine has achieved significant success in economic development. The expansion of lending, the increase in bank capitalization, and the development of the non-bank sector indicate the health of the financial system and its ability to support economic growth. The reform of the financial sector, particularly the development of the secondary credit market, the implementation of asset securitization mechanisms, and the reduction of credit costs for small and medium-sized businesses, has created favorable conditions for investment, increased the liquidity of the financial market, and contributed to stable economic growth.

The establishment of a trading repository and data warehouse, along with the development of modern exchange, settlement, and clearing infrastructure, has ensured a high level of transparency and liquidity in Ukraine's financial markets. This enables the effective servicing of both traditional financial instruments and a wide range of commodity assets, creating favorable conditions for investment and economic development. The implementation of European standards in the field of collective investments and the expansion of the range of investment products, including UCITS, money market funds, venture funds, and hedge funds, contribute to the development of

the Ukrainian capital market, attracting long-term investments, and enhancing the country's financial stability.

The combination of rapid technological development, such as e-commerce and mobile payments, with the improvement of the regulatory environment in accordance with European standards, has led to a revolution in Ukraine's financial sector. Cashless payments have become more accessible and cheaper, while the emergence of financial technology companies has stimulated innovation and increased competition in the market. The creation of a sandbox for fintech companies, regulation of new financial instruments, and active support for digital payments have transformed the Ukrainian financial market into a dynamic and innovative ecosystem. This has contributed to increased competition, expanded access to financial services, and improved customer service quality. The intensification of digitalization in the financial sector creates new opportunities for the development of a digital society, but at the same time increases the risks of cyberattacks. Therefore, one of the priorities for regulators is to ensure the cybersecurity of critical elements of the financial infrastructure, such as payment systems, depositories, and exchanges.

Restored public trust in the financial sector, increased financial literacy, and the active use of digital technologies have led to a significant rise in the number of bank accounts. By 2025, 80% of the adult population in the country actively uses banking services [4].

The introduction of regulatory norms for new financial technologies, such as InsurTech, WealthTech, and crowdfunding, has created favorable conditions for utilizing modern technologies like machine learning and artificial intelligence in the financial sector. This allows Ukrainian financial companies to compete with international leaders and offer clients innovative products and services. The implementation of European payment standards, such as PSD2 and ISO20022, as well as the development of a digital hryvnia, contribute to enhancing the competitiveness of the Ukrainian financial market, expanding the range of financial services, and integrating Ukraine into the European financial space. This lays the foundation for further development of the digital economy in the country.

Thanks to the implementation of SupTech and RegTech technologies, the process of complying with regulatory requirements has become more efficient and transparent. Regulators have gained access to innovative tools for collecting, processing, and visualizing data, enabling them to conduct more accurate market monitoring and promptly identify risks. Financial market participants, in turn, can adapt more quickly to the changing regulatory environment and reduce their operational costs.

Open consolidated registries have been created, integrating information from various sources. By utilizing open APIs and the developed strategy, financial market participants can effectively use this data for client identification, automation of business processes, and enhancing overall market efficiency. Ukraine has established a legislative framework for the development of large technology companies (BigTech), ensuring a balance between fostering innovation and protecting consumer rights. The activities of such companies are subject to clear regulation, guaranteeing the security of users' personal data and a high level of cybersecurity.

Tasks for independent work

1. Develop a concept for the national strategy for the development of digital financial services in Ukraine. Identify priority areas and actions.

2. Identify the main risks and opportunities associated with the digital transformation of Ukraine's financial sector.

3. Analyze the impact of digital technologies on financial stability and cybersecurity.

Control questions

1. Analyze the legislative framework of Ukraine and the EU regulating the digitization of financial services. Identify the main differences and similarities.

2. Evaluate the degree of compliance of Ukrainian legislation with European directives (PSD2, GDPR, etc.).

3. Compare the level of digital transformation in Ukraine's financial sector with

that of leading EU countries. Identify the main differences and reasons.

4. Analyze the experience of other EU countries in implementing central bank digital currencies (CBDC).

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SCIENTIFIC EDITION

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