СЕКЦІЯ 1
РОЗВИТОК СОЦІАЛЬНО-ЕКОНОМІЧНИХ СИСТЕМ МІКРО-, МЕЗО- і МАКРОРІВНЯ: КОНФЛІКТ ТРАДИЦІЙНИХ МОДЕЛЕЙ ТА ЕКОНОМІЧНИХ РЕАЛІЙ XXI СТОЛІТТЯ

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CONTROL AND MANAGEMENT OF GREENHOUSE GAS EMISSIONS AT MICRO-, MESO- AND MACRO-LEVELS OF AN INDUSTRIAL ENTERPRISE

Greenhouse gases have been the scourge of mankind for centuries and the prospects are not rosy. The main greenhouse gases of the Earth are known to be water vapor, carbon dioxide, methane, ozone and nitrogen oxide (in the order of their estimated impact on the heat balance). Potentially, anthropogenic halogenated hydrocarbons and nitrogen oxides can also contribute to the greenhouse effect, but due to low concentrations in the atmosphere, estimation of their contribution is problematic. All greenhouse gases form two groups: long- and short-lived.

Long-lived greenhouse gases such as carbon dioxide, methane and nitrous oxide are chemically stable and persist in the atmosphere from ten years to several centuries or longer, so their atmospheric emissions have a long-term impact on climate. Because these gases are long-lived, they mix well throughout the atmosphere much faster than they are removed, and their global concentrations can be accurately estimated from data from several locations. Carbon dioxide is not known to have a specific lifetime, as it continuously cycles between the atmosphere, oceans and terrestrial biosphere, and requires a number of processes with different time scales to remove it completely from the atmosphere.

Short-lived gases (e.g. sulphur dioxide and carbon monoxide) are chemically active substances that are removed, usually by natural oxidation processes in the atmosphere, by removal at the surface or by precipitation; their concentrations are therefore highly variable. Ozone is an important greenhouse gas that is formed and destroyed by chemical reactions involving other constituents of the atmosphere. Confrontation of greenhouse gases is carried out by mankind in all directions, one of which is minimization of emissions into the atmosphere through continuous control and management of these processes.

Control and management of greenhouse gas emissions at an enterprise can be presented as a complex multilevel system, all components of which are interconnected and interdependent. In most cases, these are nano, micro, meso, macro and mega levels. In the presented research the system of control and management of greenhouse gas emissions at an industrial enterprise (hereinafter referred to as the system) is considered the composition, structure, and functioning of the system at three levels: control and management of greenhouse gas emissions at the enterprise as a whole - the highest macro level; functioning of individual units (generating greenhouse gases) including employees - micro level; integration of units into separate areas, laboratories, workshops, departments - meso level. The mesolevel occupies an intermediate position between micro- and macrolevels of the system. Sometimes (in case of deep research and expediency) there is a division of some levels into several components: for example, the meso level includes meso I and meso II; there may be other variants. Here the role and importance of nano- and mega levels are by no means diminished; however, in this case these directions are beyond the purpose of the work and are neither the object nor the subject of the presented research.

It is known that the distinction between micro- and macro in economic theory is not absolute and is flexible. Thus, when considering organizations as macrosystems, microsystems are groups (mesosystems) to solve certain tasks within the framework of effective achievement of macro objectives; in the framework of this study, it is the minimization of greenhouse gas emissions into the atmosphere. When studying the global system, its mesosystems are national corporations and their associations. When considering the system within a country as a macrosystem, its microsystems are economic entities (enterprises, organizations, etc.), and mesosystems are sectoral and/or territorial structures. Thus, the mesosystem level is defined as a set of ways to achieve the ultimate goal of macrosystem functioning at the scale under study. In our case (the object of study - the system of control and management of greenhouse gas emissions within the enterprise is considered as a macrosystem) the achievement of the ultimate goal at the production and auxiliary divisions of the enterprise.

It is advisable to start control over the state of greenhouse gas emissions at an industrial enterprise from the micro level: it provides minimum costs for the implementation of these procedures, the speed of the results obtained, and thus the decisions taken, and thus the efficiency of management. Control is carried out mainly on the basis of theoretical calculations; the basis for calculation - technical characteristics of units generating greenhouse gases and calculated theoretical dependencies according to methodological recommendations. For example, annual greenhouse

gas emissions from the energy activity of the enterprise (fuel combustion) include fuel demand, net calorific value, carbon oxidation and emission factors and carbon to carbon dioxide conversion.

Mesosystems are open systems, which means that they are open to self-organization (formation of new structures, new ways of evolution, bifurcations). The processes of information (resources) exchange with the environment external to the mesosystem pass both through the boundary of the mesosystem and through each point of this system. The effect of structure formation in a mesosystem is linked to the effect of localization due to the existence of non-equilibrium, openness and flows through it (among them nonlinear ones that form non-stationary evolutionary structures). Nonlinearity of mesosystems (nonlinearity of mesosystem reaction to external influence, impact) and their environment leads to increased fluctuations, change of the system's sensitivity threshold, discreteness of its evolution paths. Mesosystems, as it is known, have significant characteristics: multidimensionality; variety of system structure; multi-connectedness of system elements (vertical and horizontal links of subsystems; diversity of the nature of structural elements; multifariousness of changes in the composition of the system and its states; multi-criteriality of the system (differences of local criteria for subsystems and global criteria for the system as a whole, their inconsistency, such as transboundary mesosystems); multidimensionality in the scientific aspect. As can be seen from the presented list of characteristics, the meso-level of the control and management system at an industrial enterprise occupies a key position in achieving the set goal - minimization of greenhouse gas emissions into the atmosphere by a particular industrial enterprise. Transition to the meso-level provides for automation of the control and management process.

Hierarchically, the system automation system usually consists of two levels. The value of the measured parameter from process sensors, secondary converters in the form of analog or digital signals goes to the lower level - the controller. The controller performs the following main functions: collection and processing of analog measurements; collection and processing of digital signals of alarms, warning alarms and states of process equipment; control of units and other actuators; automatic regulation of system parameters; detection and registration of the root cause of emergency situations; information exchange with the second level of control.

The upper control level is realized on the basis of a personal computer, which is located in the operator's room and performs the following functions: provides round-the-clock exchange of information with controllers; performs processing of the received information, formation of databases of measurements, as well as the history of current events; displays the received information in the form of tables and on mnemonic diagrams with the ability to show both the full list of parameters and parameters for a particular technological subsystem; plotting of trends in the development of technological processes Communication between the lower and upper levels is realized via serial interface.

In fact, the proposed automated system of control and management of greenhouse gas emissions at an industrial enterprise (meso-level) is based on a programmable logic controller. The meso-level is the core in the control and management of greenhouse gas emissions at an industrial enterprise; it is the connecting component in the transition to the macro-level within the enterprise and the construction of the entire control and management hierarchy in improving environmental safety.

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ВПЛИВ ПОВЕДІНКОВИХ ФАКТОРІВ НА УПРАВЛІННЯ ОСОБИСТИМИ ФІНАНСАМИ В УМОВАХ ЕКОНОМІЧНОЇ НЕСТАБІЛЬНОСТІ: АНАЛІЗ ТЕНДЕНЦІЙ ТА ОСОБЛИВОСТЕЙ

THE IMPACT OF BEHAVIORAL FACTORS ON PERSONAL FINANCE MANAGEMENT IN CONDITIONS OF ECONOMIC INSTABILITY: ANALYSIS OF TRENDS AND FEATURES

Фінансова система будь-якої країни значною мірою залежить не лише від макроекономічних чинників, але й від поведінки окремих домогосподарств та індивідуальних учасників ринку. Поведінкові фактори, що включають емоції, звички, переконання та вплив соціального середовища, суттєво впливають на управління особистими фінансами, що, у свою чергу, формує певні тенденції в економіці. Ці фактори можуть як посилювати фінансову стабільність, так і створювати ризики для економічної системи, особливо в умовах нестабільності.

Емоції, такі як страх перед невизначеністю чи оптимізм у періоди зростання, можуть визначати, як люди розподіляють свої доходи, ухвалюють інвестиційні рішення чи управляють заощадженнями. Наприклад,