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## ENSURING HEALTHY ENVIRONMENT: MECHANISMS OF CLUSTER STRUCTURES DEVELOPMENT IN THE FIELD OF WASTE MANAGEMENT

**Abstract.** *This paper formulates the basic provisions that determine the organizational and innovative basis for the formation of cluster structures in waste management to ensure a healthy environment and health disease prevention. The structural and functional scheme of creating and functioning the environmental and resource cluster of waste management has been substantiated. Features of the formation of the complex mechanism of cluster management have been outlined.*

*The main purpose of the research is to develop the conceptual principles and mechanisms of organizational and innovative development of clusters for ensuring environmentally healthy and safe, resource-oriented waste management at the regional level. From these perspectives, the relevance of the discussion of this scientific and practical issue is creating integrated business and entrepreneurial structures, appropriate organizational and economic mechanisms that would provide innovation, investment, financial and economic, socio-environmental framework to address the multidimensional problem of generation, disposal and use the secondary raw materials in the context of healthy and sustainable development.*

*Research on the principles, mechanisms of organizational and innovative development of cluster structures in the field of «healthy» waste management in the paper is carried out in the following logical sequence: justification for the application of the cluster approach to solving regional environmental and economic problems in the field of waste management for ensuring public health; the mechanism of integrated business structures creation in the field of waste management has been defined; formulation of the concept of environmental and resource cluster of waste management, its purpose, tasks and conceptual principles; the structural and functional scheme of the environmental and resource cluster has been proposed in this paper; creation of effective motivational mechanisms for involving enterprises in cluster interaction and specific motivational advantages of separate economic entities participation in the field of waste management have been substantiated; a comprehensive mechanism scheme for creating the environmental and resource cluster has been proposed; also the objective function and the main tasks of the complex mechanism of cluster formation have been considered.*

*The results of the research have proved the necessity and the relevance of defining conceptual principles and mechanisms for formation and effective development of environmental and resource clusters in the field of waste management in the context of healthy development. This research has identified the need to develop the effective interaction of cluster participants within the formation of a comprehensive mechanism for managing the integrated*

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*structure, which should include the internal mechanism of the cluster, as well as the external contour of regulatory mechanisms (motivational, organizational, economic, political and legal).*

**Keywords:** waste, healthy environment, waste management, public health, cluster, environmental and resource cluster, healthy and sustainable development, complex mechanism.

**Introduction.** Modern social and economic development of Ukraine is carried out mainly through the extensive use of natural and productive resources. According to the National Security Strategy of Ukraine (2020), the problems threatening national security and especially public health, include «... the generation of significant waste amounts of production and consumption, insufficiently effective level of their secondary use and recycling» (On the decision, 2020).

Insufficient use of environmentally friendly innovative technologies, as well as the introduction of closed production cycles and recycling cycles leads to the accumulation of significant waste amounts of production and consumption (Moustakas and Loizidou, 2019). So, the dynamics of waste generation indicators in Ukraine, according to the State Statistics Service, generally indicates a trend of increasing absolute volumes of both waste generation and accumulation. Ukraine has accumulated about 36 billion tons of waste, or more than 50 thousand tons per 1 km<sup>2</sup> of territory, of which only 30% of industrial waste and 4% of household waste are recycled. The volumes of waste generation, utilization, location and destruction are constantly changing taking into account the criteria of their belonging to the types and classes of danger (Order, 2020).

Hazardous waste is waste that has such physical, chemical, biological or other hazardous properties, poses a significant danger to the environment and human health and requires special methods and means of processing. The total amount of accumulated hazardous waste in the country is about 1.6 billion tons. For example, today, about 4.000 warehouses store chemical plant protection products in violation of the requirements for environmental and man-made safety. Specific waste generated during medical and veterinary practice, as well as related research, is also improperly stored. Such wastes after entering containers and landfills can lead to various infectious diseases (Order, 2020; State, 1999). And here it is necessary to note the relevance of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Law of Ukraine, 1999) as the most global agreement on the transport of hazardous wastes. In addition, this Convention regulates the transboundary movement of hazardous wastes. The parties to the Basel Convention have made a joint commitment to reduce hazardous wastes impact to a minimum and to implement them in such a way that they do not endanger human health or the environment.

Specific indicators of waste generation are approximately 220-250 kg / year per person, and in large cities – 330-380 kg / year. This, of course, leads to increased man-made resource load on the environment, as well as deterioration of the ecological quality of the environment and public health (Law, 2020).

Therefore, the relevance of the problem of creating integrated business and entrepreneurial structures, appropriate organizational and economic mechanisms that would provide innovation, investment, financial and economic, socio-environmental framework to address the multidimensional problem of generation, disposal and use the secondary raw materials to ensure healthy and sustainable development is obvious.

**Literature Review.** The study of the development of waste management and resource conservation has received considerable attention in domestic and foreign research works of such scientists as, Andreeva and Braun (2012), Mishchenko and Vyhovska (2009), N. V. Pavlika (2004), I. M. Sotnyk (2010), V. A. Studinsky (2006), Popkova et al. (2016), Massimo Battaglia, Tiberio Daddi, Francesco Testa (Battaglia et al., 2012), Moustakas and Loizidou (2019), Lesley (2003), Michael O. Harhay, Scott D. Halpern, Jason S. Harhay, Piero L. Olliaro (Michael et al., 2009), Ash Pachauri, Prerna Shah, Bethanie Almroth, Norma Sevilla and Manjulaa Narasimhan (Pachauri et al., 2019), Timothy Kurannen Baaki, Mohamad Rizal Baharum, Azlan Shah Ali (Baaki et al., 2018), Mala Trivedi, Manish Mathur, Parul Johri,

Aditi Singh, Rajesh K. Tiwari (Trivedi et al., 2020), Ata Rafiee, Kamyar Yaghmaeian, Mohammad Hoseini, Saeid Parmy, Amirhosein Mahvi, Masud Yunesian, Mehran Khaefi, Ramin Nabizadeh (Rafiee et al., 2016) and others. However, the processes of integrated cluster structure formation in the field of waste management are insufficiently studied.

**Methodology and research methods.** The theoretical and methodological basis of the study are the works of domestic and foreign scientists on the problems of creating integrated business structures and appropriate organizational and economic mechanisms for solving the problem of waste generation and disposal; their use as secondary raw material to ensure healthy and sustainable development, as well as the relevant legal documents that determine the need to address issues that threaten national security and healthy environment. To solve the problems of this study and following its purpose, such research methods as abstract and logical, system and structural and method of comparison have been used.

The purpose of the article is to improve the conceptual principles and mechanisms of organizational and innovative development of clusters to ensure environmentally safe and healthy, resource-oriented waste management in the region. This research hypothesizes the feasibility and necessity of applying the regional clusters theory to solve environmental and economic problems of waste management, which are generated in a certain area by enterprises of different economic sectors.

**Results.** The gradual achievement of sustainable environmentally balanced and healthy regional development requires the formation of strategic directions of cluster interactions of enterprises, organizations of various sectors of the national economy and government agencies. Thus, the effective functioning the water, forest and agro-industrial complexes to solve intersectoral socio-economic, environmental and economic problems (e.g. the need to improve the ecological quality of water resources, forest cover increase, integrated wood processing) is associated with the creation of cluster structures (Khvesyk et al., 2010). In general, it should be said that M. Porter emphasizes that in the context of globalization, the traditional division of the economy into sectors (industries) loses some relevance and clusters should be at the first place (Porter, 2001). The «Concept of creating clusters in Ukraine» also notes that the competitiveness growth of regions and the state should be carried out through the market mechanisms that compensate for various destructive natural processes based on flexible forms of cooperation, coordination and integration of joint actions of economic entities (The concept, 2020).

The use of a cluster approach to solving regional environmental and economic problems in the field of «healthy» waste management necessitates a certain emphasis on the «cluster» definition. Analysis of the substantive basis of the cluster formation concept (Battaglia, 2012; Popkova et al., 2016; Aragón et al., 2014; Mishenina, 2012; Laur, 2015) showed that such components in solving environmental and economic problems of waste management as production specialization, combination processes, concentration, as well as combining business potentials of enterprises (organizations) and government agencies, are important organizational economic conditions for the cluster approach implementation.

The mechanism of integrated business structures creation in the field of waste management on an intersectoral basis, in our opinion, is an interconnected and consistent set of measures and tasks of institutional, sectoral and business nature in the formation of an integrated business entity operating on the basis of appropriate organizational and production structure and system of internal economic and financial relations between its participants.

Thus, it should be noted that the main processes of creating integrated business structures in the field of waste management should include a system of organizational, economic, financial, social and environmental measures at different hierarchical levels of management: state, industry, regional (territorial), and at the level of business structures (enterprises). From these perspectives integrated business structures focused on cooperation in the field of waste management can, in our opinion, take the form of cluster associations. In this context, cluster policy in the field of waste management at the regional level should be considered as a system of organizational and economic relations between public

authorities and economic entities on environmentally safe neutralization of waste and their resource use as secondary raw materials, increasing the enterprises competitiveness and the clusters development.

In general, a cluster is a group of geographically interconnected and interacting economic entities in the field of waste management, which are characterized by common activities and complement each other. The cluster formation theory allows determining the fundamental differences of the cluster in the field of waste management as a business structure from other territorial and industrial associations as follows:

1. The cluster is a geographically concentrated combination of enterprises in the field of waste management, including related industries (e.g. housing, agriculture and water). At the same time, the production foundation of the cluster is simultaneously formed by large competitive enterprises of waste-intensive production.

2. The regional environmental and resource cluster has a broader and specific composition, which is formed not only by production (economic) entities that are part of the organizational and technological chain of generation, disposal and use of waste (waste flows), but also the necessary service organizations, research centers, specialized banks, educational institutions, government agencies, small businesses, private entrepreneurs and non-profit organizations.

3. The presence of the cluster provides a more favorable innovative business climate in the regional management of waste flows in accordance with the principles of sustainable development.

Based on the theoretical analysis of the conceptual organizational and economic foundations of cluster associations (Carneiro et al., 2015; Gallié et al., 2013; Laur, 2015) as well as the study of the differences between these entities from other integrated structures (including territorial production complexes), the concept of environmental and resource cluster of waste management has been formulated. Environmental and resource cluster of waste management is a geographical polycentric agglomeration of interdependent and determining principles of rational regulation and use of waste flows of business entities of different ownership forms, organizational and legal forms of management: business structures, research and educational institutions, government agencies, non-profit organizations and other organizations that complement each other (in particular through cooperation) in the direction of solving socio-environmental and economic problems in a particular area of waste disposal and use as secondary raw materials and strengthen the competitive advantages of individual entities and the cluster as a whole.

The purpose of forming an environmental and resource cluster of waste management is to implement a comprehensive approach to solving the waste problem at the regional level by combining efforts of enterprises in different industries, municipal authorities and government to regulate waste flows on an innovative basis to ensure sustainable health development of the region through cluster interaction of stakeholders.

In accordance with the purpose, the main tasks for the formation, operation and development of such a cluster can be represented as follows:

1. Reducing the volume of rational generation, effective disposal of waste and their use as secondary raw materials.

2. Identification of stakeholders' interests in the system of waste management for regional needs.

3. Separation of organizations (enterprises) as structural and providing economic entities of cluster formation.

4. Introduction of innovative technologies for waste use, as well as the organization of integrated management in solving environmental and resource problems.

5. Continuous provision and assessment of production and economic, organizational, environmental and social effects of waste management, taking into account the synergy of their manifestation.

6. Development of the action of organizational and institutional, financial and economic, ecological and economic levers that influence management decisions on the efficient use of waste in the process of cluster interactions.

7. Increasing the efficiency of interaction between the organizations participating in the cluster, other regional economic entities and the population, taking into account changes in environmental conditions.

8. Continuous improvement of the monitoring system of the interaction effectiveness of cluster participants.

9. Development of interaction between local authorities, local governments, organizations participating in the cluster, non-profit organizations, local communities (population) in the field of waste management.

Regardless of the chosen business strategy by each participant of the cluster formation on environmentally safe waste management, the design of their interaction is determined by the content of the principles that must be followed by each participant.

The most defining principles of functioning environmental and resource cluster of waste management can be as follows:

1. System integration, cooperation and competition of cluster formation participants. Comprehensive and systematic cooperation of enterprises ensures the coordination of their resource-production, financial and economic, environmental and economic interests, as well as causes them to obtain a synergistic effect and, thus, helps to increase competitiveness.

2. System interdependence and self-organization. The principle provides for stable relationships (organizational and technological, economic, financial, etc.) between the participants of the regional environmental and resource cluster and contains elements of systemic self-organization and self-development of business structures as a condition for innovative development.

3. Innovativeness. The principle is focused on the development of implementation and dissemination of innovations (technological, organizational and managerial, market) related to the use of waste on an ecological and economic basis.

4. Dynamics and balance of cluster formation functioning and development. It is also necessary to adapt to changing environmental conditions. This principle also covers the structural and functional transformations of cluster members in terms of organizational and technological, environmental and economic, and institutional parameters.

5. Economic and legal, social and environmental responsibility at different hierarchical levels of management. It means compliance with contractual obligations, agreements within the integrated business processes of waste management, as well as environmentally responsible behavior.

6. Unity of complex information support of participants of cluster formation on the basis of monitoring system of the organizations (enterprises) interactions on logistic bases.

The proposed structural and functional scheme of the environmental and resource cluster of waste management is presented in Figure 1. Let's outline certain structural and functional features of the formation and functioning such a cluster.

First of all, it should be noted that the creation of an environmental and resource cluster of waste management is an innovative initiative in implementing a comprehensive and systematic approach to solving environmental and resource problems, which requires a combination of organizational, economic and financial efforts of enterprises, industries and local authorities of the region. Regional, local and state regulatory authorities on industrial, social and environmental issues must provide some organizational, managerial and financial support for the clusters creation, as well as the necessary organizational and institutional conditions.

The main functions of local and regional, state regulatory authorities (concerning natural resources, energy, social and environmental problems) on the formation and development of the regional environmental and resource cluster are as follows:

- institutional and regional support for strategic directions of cluster structures formation of ecological and economic orientation in order to ensure sustainable health development;
- support for the infrastructure development (business, innovation and investment, personnel, etc.);

- development of effective organizational and economic relations between the cluster participants, as well as with representatives of small business;
- tax incentives for business entities of various ownership forms and management within cluster interactions.

Thus, the process of formation and development of environmental and resource cluster of waste management should provide close cooperation of enterprises with local and public administration authorities on socio-economic development of the region on an innovative basis.

To achieve the competitive advantages of the enterprises participation in the cluster of environmentally safe and healthy use of waste, it is important to identify the features and possible forms of public-private partnership in the regional waste management system. For example, it is necessary to involve the institutional and organizational alliance between the state, local authorities and private business in the process of improving and further innovative development of regional waste management.

Effective implementation of the mechanism of cluster interactions of authorities, government agencies, enterprises and organizations to address regional socio-environmental and economic problems of waste management requires the creation of a Cluster Coordination Center.

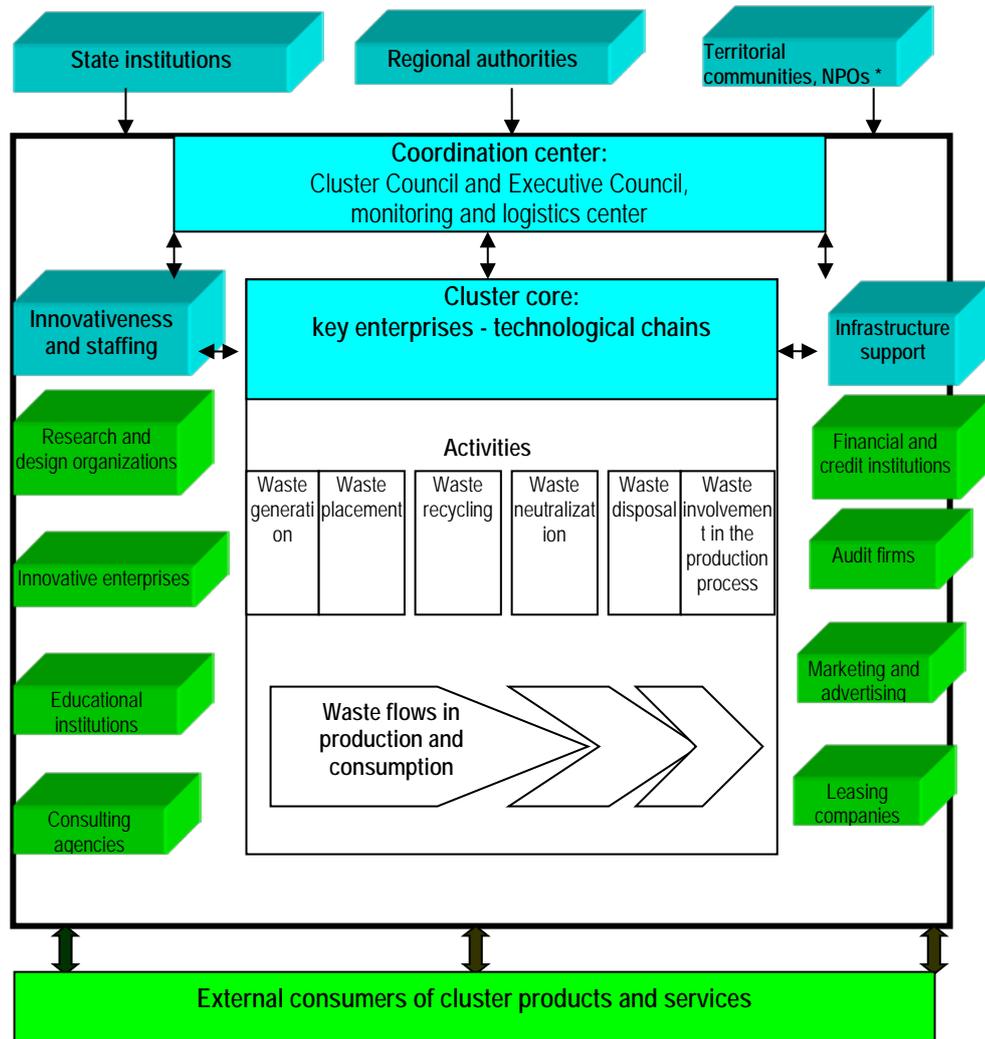
Given the existing proposals on the principles of formation of the cluster (coordination) center, and the composition of its structural units we have considered the following main components, taking into account the specifics of solving the environmental resource problem associated with waste management:

1. The Coordination Center consists of the Cluster Board and the Executive Directorate. The cluster council is known to be the highest governing body. Operational management of the Coordination Center for the performance of regulatory and management functions is carried out by the Executive Directorate headed by the Director in accordance with the regulations approved by the Cluster Board.

2. The Council of Environmental and Resource Cluster is formed of representatives of structural enterprises and organizations of the cluster core (waste-intensive enterprises of various industries, housing and communal services, specialized transport enterprises, recycling enterprises, landfills, etc.), as well as business, innovation, consulting and staffing (for example, financial institutions, leasing and insurance companies, research and design organizations, educational institutions, consulting firms).

3. The Cluster Council should include representatives of local councils (local governments, state regulators of socio-economic and environmental regional development, as well as the deputies of the regional and district level. These institutions, of course, should coordinate the activities of structural enterprises at all stages of a cluster creation, functioning and development of environmentally safe use of waste.

4. For information and analytical support of the Coordination Center, integrated assessment of the cluster formation effectiveness at different hierarchical levels of management, it is advisable to offer, in our opinion, a system for monitoring cluster interactions on a logistical basis (Monitoring and Logistics Center). The main tasks of the Monitoring and Logistics Center should include: formation of a comprehensive monitoring system of organizational and technological, financial and economic, environmental and economic and socio-ecological indicators of cluster development; formation of integrated logistics systems of material, financial and information flows; assessment of socio-ecological and economic efficiency of cluster formation and structure-forming enterprises; development of communication policy with a wide range of stakeholders on the problem of waste management of production and consumption within the existing logistics flows. But there is a problem of difficulty in attracting direct investment in waste management, which is associated with the threat of low economic efficiency of borrowed funds, especially at the initial stage of creating a cluster. This requires effective motivational mechanisms for involving enterprises in cluster interaction.



NPOs\* – non-profit organizations

Figure 1. Structural and functional scheme of environmental and resource cluster of waste management

Sources: developed by the authors based on (Mishenina, 2012).

Specific motivational advantages for participation of separate economic entities of environmental and resource use of should be defined as follows:

1. Motivational advantages for structuring enterprises:
  - Systematic improvement of indicators of financial and economic, production and economic activity (financial assets liquidity, production profitability, return on assets, labor productivity, etc.).
  - Reduction of production and logistics costs (in particular, material, transport, transaction, etc.).

- Implementation of the strategy of constant growth of enterprises competitiveness.
- The possibility of cost-effective transfer of innovative technologies.
- Expansion of innovation, investment and business infrastructure
- Increasing human, intellectual and social capital.
- 2. Motivational guidelines for public administration authorities:
  - Increase in budget revenues due to growth of tax revenues.
  - Increasing the investment attractiveness of the region, as well as improving the innovation climate.
- Increasing the region competitiveness.
- Reduction of social unemployment benefits.
- Increasing the level of employment in the region.
- 3. Motivational advantages for financial and credit organizations:
  - Opportunity to participate in innovation and investment projects.
  - Obtaining additional income from the financial activities intensification.
- 4. Educational institutions - motivational guidelines:
  - Opportunity to participate in environmental and economic, innovation and investment projects.
  - Financial receipts for development of project documentation of innovative technologies of waste management.
- Increasing scientific, technical and innovative potential.

The process of formation and development of environmental and resource cluster of waste management requires the creation of a comprehensive mechanism for managing the integrated structure. The formation of motivational, organizational and economic mechanisms of environmentally oriented management of waste flows is focused on overcoming environmental and economic contradictions that arise in the processes of generation, disposal of waste and their use as secondary raw materials.

The complex mechanism of environmentally oriented management of waste flows on a cluster basis is an integral system of organizational and economic relations which are realized on the basis of application of various management methods, tools, levers which provide effective regulation of waste management processes on a cross-sectoral basis.

The objective function of the complex economic mechanism of integrated waste management is to coordinate organizational and technological, financial and economic, environmental and economic, socio-ecological interests of all participants in the cluster formation (enterprises, government agencies, non-profit organizations, etc.), as well as address emerging contradictions in the regional socio-ecological-economic system aimed at environmentally safe use of waste, taking into account the quality of the environment. The tasks for the functioning this mechanism are definitely related to the tasks outlined by us for the creation of an environmental and resource cluster.

The main tasks of the complex mechanism of a cluster formation management are as follows:

1. Formation of motivational mechanisms for rationalization, greening regional waste flows.
2. Ensuring the necessary efficiency at all stages of the organizational and technological chain of waste management (generation, accumulation, disposal, energy use, recycling).
3. Stimulation of entrepreneurial and innovative initiatives in the field of waste management.
4. Ensuring the functioning an effective system of economic, legal and social and environmental responsibility in the field of energy conservation.

The main principles of functioning the organizational and economic mechanism of waste management are: system approach; principles of institutional and legal regulation of environmental and economic management; principles of strategicity; the principle of functional integration, specialization, universalization and centralization of management on the basis of effective application of ecological and economic tools, etc. (Mishenin, 2012).

Construction of the structural and functional scheme of the mechanism of organizational and economic support of ecologically safe use of waste should be formed with an emphasis on specificity of the investigated problem of waste management from the point of view of branch, directions of their utilization, etc.

The peculiarity of the author's approach to the formation of the functional scheme and general structure of the complex mechanism of environmental and resource cluster management is that the internal mechanism of enterprises interaction of organizational and technological chain of waste flows is distinguished, as well as the external contour of cluster formation mechanisms (Fig. 2).

The structure of the internal mechanism of cluster interactions of enterprises involved directly in the waste technological chain includes the following components: the mechanism of use and involvement in the turnover of resources of cluster participants; planning on a logistical basis; control and evaluation of activity; establishment of material responsibility; internal motivational mechanism; eco-management system and «green» logistics.

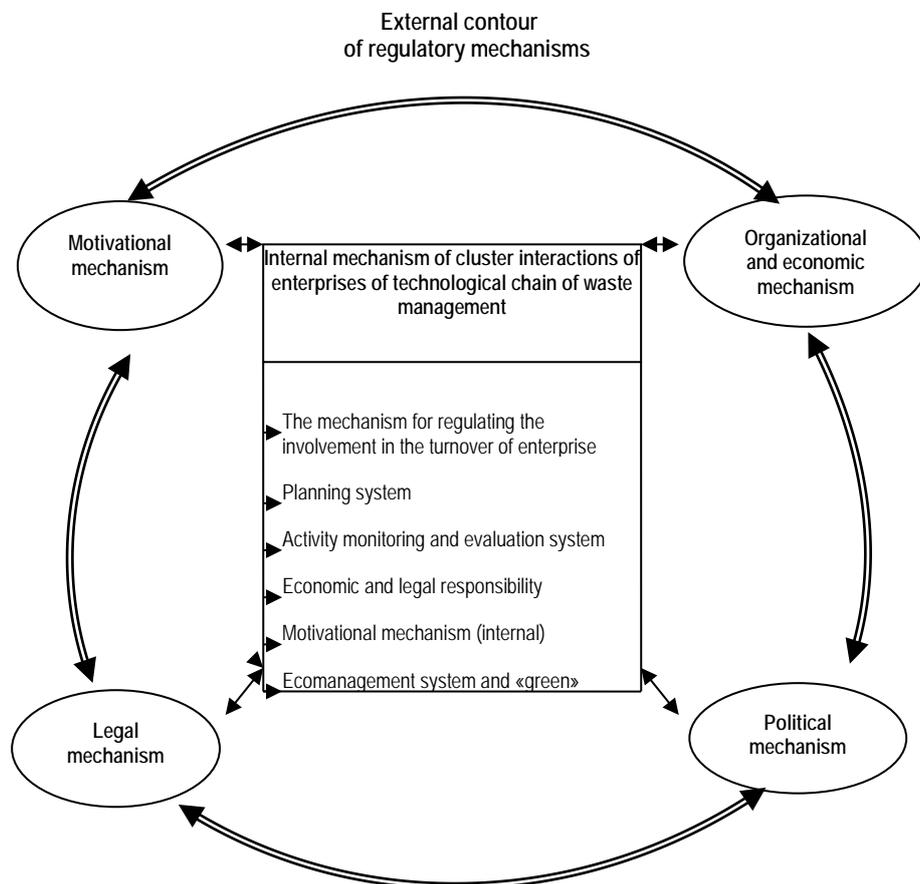


Figure 2. A comprehensive mechanism for managing the environmental and resource cluster of waste management

Sources: developed by the authors based on (Mishenin, 2012).

Thus, it is especially important to focus on the need within the internal mechanism of cluster interactions of enterprises to form an environmental logistics system for the waste flows management. For example, the application of a logistical approach to solving the regional environmental and economic problem associated with the use of solid waste in heat. This is an organic relationship of integration of management processes of formation, transportation, storage, sorting and use of solid fuel waste as energy raw materials from in order to achieve the maximum result in the field of conservation of natural energy resources, which should be aimed at minimizing not only the cost of time, resources, but also the economic damage from environmental pollution.

Planning on the logistical basis of enterprises is carried out by establishing the main environmental and economic indicators of production and environmental activities of enterprises within the allocated material waste streams and is based on the application of progressive norms and standards of resource provision, production and economic activities of enterprises. The existing theoretical and methodological bases concerning the definition of the essential and substantive basis of environmentally oriented («green») logistics (Mishenin et al., 2013) allows to define environmentally oriented logistic of the waste management. It can be considered as an organizational and managerial mechanism aimed at a more complex and systematic taking into account environmental and economic, financial and economic and socio-environmental parameters of waste management in the regional dimension and at the level of individual entities at all stages of organization, planning, control and regulation of material, information, financial flows in space and time within organizational and technological processes of waste generation, disposal and use.

The external motivational mechanism is created in accordance with the structure of enterprises that form the core of the environmental resource cluster of waste management and may include three subsystems of motives: motivational mechanism of high quality productive work, mechanism of scientific, technical and innovative development and motivational mechanism of entrepreneurial initiatives.

The organizational and economic mechanism of the external contour of regulatory mechanisms includes the following sub-mechanisms: structuring and planning the environmental and resource cluster development; management organization; financial mechanisms; state support and regulatory mechanisms; innovation and investment processes regulation; mechanisms of competition and market formation; information mechanisms.

The defining moment in the functioning the organizational and economic mechanism for ensuring environmentally friendly and healthy waste management is the identification of promising financial sources (both internal and external). The analysis of the existing experience in financing the development of cluster formations gives grounds to outline the main sources in the financial support of the development of the cluster structure of environmental and economic direction:

1. Use of own funds of participants of cluster formation: profit reinvestment; capital accumulation and investment through the issue of shares, the secondary stock market.
2. The system of venture financing and the use of budgets of administrative-territorial entities of different hierarchical levels.
3. Use of the loan mechanism: investment loans, financial leasing, «green» bonds of cluster formation.
4. Use of extra-budgetary environmental fund, various investment and innovation funds.
5. The preferential taxation system, including environmental.
6. Use of funds of non-profit organizations (NPOs) based on the dissemination of fundraising techniques.

**Conclusions.** Thus, the main causes of the problem in the waste management to ensure healthy and sustainable development are as follows: imperfect mechanism of collection, transportation, recycling, storage, processing and disposal of wastes, as a consequence of increasing their accumulation; lack of

environmentally friendly methods and means of waste management – it leads to increased man-made, environmental and public health risks; slow introduction of low – waste technologies and low rates of infrastructure in the field of waste management, in particular imperfect legislation and state regulation system in the field of waste management. It is the «healthy» policy of waste management that should be aimed at creating conditions to prevent occurrence and reduce the level of hazardous waste impact. This is achieved through the use of environmentally safe technologies, saving natural resources, development of appropriate technologies for the final disposal of hazardous substances that contain waste intended for secondary use. From these perspectives the regional clusters theory allowed to substantiate and form conceptual principles and mechanisms for formation and development of environmental and resource cluster in the field of «healthy» waste management. The results of the research have proved the necessity and the relevance of defining conceptual principles and mechanisms for formation and effective development of environmental and resource cluster in the field of waste management in the context of healthy and sustainable development. This research has identified the need to develop the further interaction of cluster participants within the formation of a comprehensive mechanism for managing the integrated structure, which should include the internal mechanism of the cluster, as well as the external contour of regulatory mechanisms (motivational, organizational, economic, political and legal).

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**Забезпечення здоров'я довкілля: механізми розвитку кластерних структур у сфері поводження з відходами**

У статті сформульовано принципові положення, які визначають організаційно-інноваційну основу формування кластерних структур у сфері поводження з відходами для попередження захворювань у регіоні. Обґрунтовано структурно-функціональну схему створення та функціонування еколого-ресурсного кластеру поводження з відходами. Окреслено особливості формування комплексного механізму управління кластером.

Метою статті є удосконалення концептуальних принципів та механізмів організаційно-інноваційного розвитку кластерів для забезпечення у регіоні екологічно безпечного, здорового та ресурсорієнтованого поводження з відходами. Авторами висунута гіпотеза про доцільність та необхідність застосування теорії регіональних кластерів для вирішення еколого-економічних проблем поводження з відходами, які генеруються на певній території підприємствами різних галузей економіки.

Систематизація літературних джерел та підходів до вирішення питання поступового досягнення сталого екологічно збалансованого регіонального розвитку засвідчила, що виникає необхідність формування стратегічних напрямів кластерних взаємодій підприємств, організацій різних галузей національного господарства та державних управлінських структур. Саме тому актуалізується проблема створення інтегрованих бізнес-підприємницьких структур та відповідних організаційно-економічних механізмів, які б забезпечували інноваційно-інвестиційні, фінансово-економічні, соціально-екологічні основи для вирішення багатоаспектної проблеми утворення, знешкодження відходів та їх використання як вторинної сировини з метою забезпечення «здорового» сталого розвитку.

Дослідження питання щодо створення інтегрованих підприємницьких структур у сфері поводження з відходами в статті здійснено в такій послідовності: обґрунтовано необхідність використання кластерного підходу до вирішення регіональних еколого-економічних проблем у сфері поводження з відходами (зокрема, визначено механізм створення

інтегрованих підприємницьких структур); теорія формування кластерних утворень дозволила визначити принципові відмінності кластера у сфері поводження з відходами як підприємницької структури від інших територіально-промислових об'єднань; на основі проведеного теоретичного аналізу концептуальних організаційно-економічних основ формування кластерних об'єднань сформульовано поняття еколого-ресурсного кластеру поводження з відходами, визначено його мету, завдання та принципи формування та функціонування. Розроблено структурно-функціональну схему еколого-ресурсного кластера поводження з відходами у системі здорового регіонального розвитку. У дослідженні встановлено, що ефективна реалізація механізму кластерних взаємодій органів влади, державних структур, підприємств та організацій щодо вирішення регіональних соціально-еколого-економічних проблем поводження з відходами, потребує створення Координаційного кластерного центру. З огляду на існуючі пропозиції щодо принципів формування кластерного (координаційного) центру та складу його структурних утворень, окреслено основні його складові з урахуванням специфіки вирішення еколого-ресурсної проблеми, пов'язаної з екологічно безпечним для здоров'я людини поводженням з відходами. Сформовані специфічні мотиваційні переваги участі окремих господарських суб'єктів в оздоровленні регіону через еколого-ресурсне використання відходів.

У дослідженні запропонований комплексний механізм управління еколого-ресурсним кластером поводження з відходами, який повинен включати внутрішній механізм кластера, а також зовнішній контур регулюючих механізмів (мотиваційний, організаційно-економічний, політичний та правовий механізми).

Ключові слова: відходи, поводження з відходами, здорове довкілля, охорона здоров'я, кластер, еколого-ресурсний кластер, «здоровий» сталий розвиток, комплексний механізм.

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