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CONCEPTUAL LINK BETWEEN THE WASTE MANAGEMENT AND THE ECONOMIC CONTENT OF CATEGORY “RESPONSIBILITY”

Topicality. *In recent years the waste management as an object of nature using economy and transdisciplinary scientific direction has become increasingly evolved both in applied and in the conceptual (theoretical and political) values. The negative situation with domestic and industrial wastes in Ukraine reflects world trends, in particular, in the groups of countries with only a developing economy. Garbage on the streets of large cities, increasing the number of unauthorized landfills, loss of valuable materials due to inefficient waste sorting and indifferent attitude to the idea of recycling – this list, unfortunately, can be continued further. Not only restraining factor to the aggravation of the environmental situation in the country caused by the placement of waste into the environment, there is a decline in production and poverty of the population. In such circumstances, given the fact that in the short and medium term, financial incentives to improve the situation look rather ghastly, it is advisable to turn to the review of the theoretical basis of their solution to the problem of waste. Moreover, it is necessary to find solutions at the conceptual level, in particular, by adapting to the present ukrainian economy the popular concept of an extended producer responsibility in the western countries and aspects of waste management in the framework of corporate social responsibility, etc.*

Aim and tasks. *Purpose of the article is justification of a conceptual approach to improving the waste management situation in a country with an unstable economy. Such an approach should be grounded on the position of responsible waste management in its economic and environmental dimensions. To do this, it is necessary to analyze the relationship between the main subjects of the “economy of waste”, and to compare the innovative conceptual approaches in waste management, united by ties with the concept of responsibility.*

Research results. *During the research, we found that economic responsibility, in that number in waste management, is the responsibility of the entity to be responsible for the commitments he has taken; in particular the compensation for losses which can be caused by it may be it to the property of other entities or the environment. According to Max Weber, the problem of responsibility is inextricably linked to the notion of ethics: “ethics of persuasion” and “ethics of responsibility”; the ethics of persuasion is related with the direction to perfection, and therefore the responsibility for practical actions is very weak. At the national level, significant changes are needed in environmental policy in terms of increasing responsibility for waste management (in particular packaging waste); it is based on the following principles: priority of environmental protection and human health, prevention of the formation of packaging waste, promotion of the development of a competitive market environment, separation of packaging waste collection and arrangement of places for their authorized harvesting, maximum use of waste packaging as a secondary raw material, the formation of ecological consciousness of the population and individual social groups and citizens, innovation and science in relation to the technical and technological and ecological and economic aspects of packaging waste management, a combination of effective incentives and regulatory policy in the field of packaging waste management, etc.*

Conclusions. *In the article it is determined that the conceptual principles of the waste problem research cover the theoretical basis (the position of the economy of nature management, the economy of waste, the economy of secondary resources) and the political component (environmental, social, regulatory policy – in those aspects that intersect with the formation and waste management). As part of the analysis of the relationship between the waste problem and the concept of liability, attention is focused on such existing concepts: the concept of corporate social responsibility (in aspects of waste management), the concept of extended producer responsibility, the concept of integrated waste management. It is proposed to modify certain aspects of the concepts under study in order to form a new approach of “ecologically-expanded motivated producer responsibility”. This will allow for a comprehensive consideration of social and environmental factors in waste management in the medium-term perspective.*

Keywords: waste management, responsibility, environmental orientation, integration, resource-saving policy, conceptual approach.

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КОНЦЕПТУАЛЬНИЙ ЗВ'ЯЗОК МІЖ СФЕРОЮ ПОВОДЖЕННЯ З ВІДХОДАМИ ТА ЕКОНОМІЧНИМ ЗМІСТОМ КАТЕГОРІЇ «ВІДПОВІДАЛЬНІСТЬ»

Актуальність. Сфера поводження з відходами як об'єкт економіки природокористування, трансдисциплінарного наукового напрямку, протягом останніх років набуває все більшого розвитку як у прикладному, так і в концептуальному (теоретичному та політичному) значеннях. Негативна ситуація з відходами, як побутовими, так і промисловими в Україні відображає загальносвітові тенденції, зокрема, групи країн із економікою, що лише набуває розвитку. Сміття на вулицях великих міст, збільшення кількості несанкціонованих звалищ, втрата цінних матеріалів через неефективне сортування відходів і байдуже ставлення до ідеї рециклінгу, – цей перелік, на жаль, можна продовжувати далі. Чи не єдиними стримувальними чинниками до загострення екологічної ситуації в Україні, спричинене розміщенням відходів у навколишньому середовищі, є спад виробництва та бідність населення. В таких умовах, з огляду на те, що в коротко- та середньостроковій перспективі фінансове стимулювання покращення ситуації виглядає досить примарним, доцільно звернутися до перегляду теоретичних засад вирішення проблеми з відходами. Більше того, необхідним є пошук рішень на концептуальному рівні, зокрема, шляхом адаптації до сьогодення української економіки популярної в західних країнах концепції розширеної відповідальності виробника та аспектів поводження з відходами в рамках корпоративної соціальної відповідальності тощо.

Мета та завдання. Метою статті є обґрунтування концептуального підходу щодо покращення ситуації в сфері поводження з відходами в країні з нестабільною економікою. Такий підхід має бути обґрунтованим із позиції відповідального поводження з відходами в його економічному та екологічному значеннях. Для цього необхідно провести аналіз взаємозв'язків між основними суб'єктами «економіки відходів», а також провести порівняння інноваційних концептуальних підходів у сфері поводження з відходами, об'єднаних зв'язками з поняттям відповідальності.

Результати. В ході проведеного дослідження ми з'ясували, що економічна відповідальність, у тому числі в сфері поводження з відходами, є обов'язком суб'єкта господарювання відповідати за зобов'язаннями, які він прийняв, зокрема, щодо компенсації збитків, які можуть бути ним заподіяні власності інших суб'єктів чи довкіллю. За Максом Вебером, проблема відповідальності знаходиться в нерозривному зв'язку з поняттям етики: “етика переконання” та “етика відповідальності”; етика переконання пов'язана зі спрямуванням до досконалості, а отже відповідальність за практичні дії є дуже слабкою. На загальнодержавному рівні необхідні суттєві зміни в екологічній політиці в аспектах підвищення відповідальності за поводження з відходами (зокрема, відходами упаковки); на основі таких принципів: пріоритетності охорони довкілля та людського здоров'я, запобігання утворенню відходів упаковки, сприяння розвитку конкурентного ринкового середовища, роздільності збирання відходів упаковки та облаштованість місць для їх санкціонованого збирання, максимальності використання відходів упаковки як вторинної сировини, формування екологічної свідомості населення та окремих соціальних груп і громадян, інноваційності та науковості по відношенню до техніко-технологічних і еколого-економічних аспектів управління відходами упаковки, поєднання дієвих стимулів і регуляторної політики в сфері поводження з відходами упаковки тощо.

Висновки. В статті визначено, що концептуальні засади дослідження проблеми відходів охоплюють теоретичний базис (положення економіки природокористування, економіки відходів, економіки вторинних ресурсів) і політичну складову (екологічну, соціальну, регуляторну політику – в тих їх аспектах, що перетинаються з утворенням і управлінням відходами). В рамках аналізу площини взаємозв'язку проблеми відходів із поняттям відповідальності, увагу акцентовано на таких існуючих на сьогоднішній день концепціях: концепція корпоративної соціальної відповідальності (в аспектах поводження з відходами), концепція розширеної відповідальності виробника, концепція інтегрованого управління відходами. Запропоновано

модифікувати окремі аспекти досліджуваних концепцій із тим, щоб сформувати новий підхід «екологічно-розширеної мотивованої відповідальності виробника». Це дозволить у середньостроковій перспективі комплексно врахувати соціальні та екологічні чинники в сфері поводження з відходами.

Ключові слова: поводження з відходами, відповідальність, екологічна орієнтованість, інтегрованість, ресурсозберігаюча політика, концептуальний підхід.

Problem statement and its connection with important scientific and practical tasks. In recent years the waste management has become as object on which scientists and practices are focusing increasingly in the area of nature management economic and related scientific and applied sciences. The negative situation with domestic and industrial wastes in Ukraine reflects world trends, in particular, in the groups of countries with only a developing economy. Garbage on the streets of large cities, increasing the number of unauthorized landfills, loss of valuable materials due to inefficient waste sorting and indifferent attitude to the idea of recycling – this list, unfortunately, can be continued further. Not only restraining factor to the aggravation of the environmental situation in the country caused by the placement of waste into the environment, there is a decline in production and poverty of the population. In such circumstances, given the fact that in the short and medium term, financial incentives to improve the situation look rather ghastly, it is advisable to turn to the review of the theoretical basis of their solution to the problem of waste. Moreover, it is necessary to find solutions at the conceptual level, in particular, by adapting to the present ukrainian economy the popular concept of an extended producer responsibility in the western countries and aspects of waste management in the framework of corporate social responsibility, etc.

Analysis of recent publications on the problem. Subject of waste is widely studied in the works of scholars such as Baitsar R. I. and Depko Kh. I. [1], Bodog M. [2], Vyhovska H. P. [3], Gorlitskiy B. A. [4], Keller R. [5], Krykavskiy Ye. V., Kostyuk O. S. and Shandrivska O. Ye. [6], Nöthe M. [7], Rylieiev S. V. [8], Romanchuk K. V. and Shymanska K. V. [9], Savytska K. V. [10] and others like that. So, Khomenko I. A., Babachenko L. V. and Padii Ya. V. in [11] are analyzing problems, landfills and areas of solid waste processing in Ukraine. In works Romanchuk K. V. and Shymanska K. V. [9] and Ryleev S. V. [8] classification is disclosed respectively waste facility as accounting and controls and services for solid waste management. The work [6] deserves special attention within the limits of this research, because it proves the expediency of responsible waste management "... through the prism of ecological consciousness, ecological position and ecological behavior".

The questions of responsibility in their general theoretical context and, in particular, the actions related to the actual or potential negative impact on the natural environment and people, are covered in the works by Bayertz K. and Beck B. [12], Cetindamar D. and Husoy K. [13], Gupt Y. and Sahay S. [14], Zheng X., Xu F. and Feng L. [15], Rayzberg B. A., Lozovskiy L. Sh. and Starodubtseva E. B. [16], Seidel W. [17], Khumarova N. I. and Martienko A. I. [18], Yoder T. S. [19], and others. Thus, in [14] conducted a comparative analysis of the cases of the role of stakeholders at various stages of implementing the concept of extended producer responsibility. The paper [15] concluded that laws and regulations related to the notion of responsibility, the minds of managers and corporate image are the three most important drivers of implementing the concept of extended producer responsibility.

Allocation of previously unsolved parts of the general problem. At the same time, the issues of responsibility in waste management from the standpoint of all stakeholders remain insufficiently researched. It is also useful, in our opinion, to find such solution to the problems associated with the formation and using of waste, in which the motivational component is dominated, focused on obtaining high environmental performance indicators. Also we need additional analysis to questions of social responsibility in the economic and environmental aspects of waste management.

Formulation of research objectives (problem statement). In view of the above, the purpose of the research is to substantiate the conceptual approach for improving the situation in waste management at the country with unstable economy. This approach should be justified from a position of responsible waste management in its economical and environmental values. In particular, it is necessary to conduct a comparative analysis of existing conceptual approaches to waste management based on the principles of environmental and social responsibility, and the relationships between the main actors of "waste economy".

Outline of the main results and their justification. The situation in the world related to the creation, collection, processing and other processes of waste management in general is negative, both in the current and in the long-term vision, regardless of the level of economic development (table 1). Since research is conducted mainly on the example of waste management in Ukraine, the emphasis in table 1 is on "Lower

middle income” data. The predicted values of the indicator “Urban waste generation per capita, kg/capita/day” – 1.3 in 2025 compared with 0.78 in 2010 – suggests that the problem is no longer in demographic or economic factors, but in the environmental consciousness and “style” of life in lower middle income countries and opportunities of their people, for example, to buy products with unnecessarily large volumes of packaging or to litter the streets with impunity, etc. At the same time, the demographic crisis also threatens.

Table 1

Waste generation, collection, composition, and disposal in economies by income *, 2010 and forecast 2025**

Indicators	Economies				Total
	Lower Income	Lower Middle Income	Upper Middle Income	High Income	
Waste Generation, %	6	29	19	46	100
Waste Generation Per Capita, kg/capita/day					
Lower Boundary	0.09	0.16	0.11	0.70	–
Upper Boundary	4.3	5.3	5.5	14	–
Average	0.60	0.79	1.2	2.1	–
Total Urban Population, millions	343	1,293	572	774	2,982
	676**	2.080	619	912	4,287
Urban Waste Generation Per Capita, kg/capita/day	0.60	0.78	1.16	2.13	1.19
	0.86	1.3	1.6	2.1	1.4
Total, tons/day	204,802	1,012,321	665,586	1,649,547	3,532,256
	584,272	2,618,804	987,039	1,879,590	6,069,705
Waste Collection, %	42	68	85	97	–
Waste Composition, %					
Organic	64 (62)	59 (55)	54 (50)	28 (28)	–
Paper	5 (6)	9 (10)	14 (15)	31 (30)	–
Plastic	8 (9)	12 (13)	11 (12)	11 (11)	–
Glass	3 (3)	3 (4)	5 (4)	7 (7)	–
Metal	3 (3)	2 (3)	3 (4)	6 (6)	–
Other	17 (17)	15 (15)	13 (15)	17 (18)	–
Waste Disposal, million tons					
Dumps	0.47	27	44	0.05	71.52
Landfills	2.2	6.1	80	250	338.3
Compost	0.05	1.2	1.3	66	68.55
Recycled	0.02	2.9	1.9	129	133.82
Incineration	0.05	0.12	0.18	122	122.35
Other	0.97	18	8.4	21	48.37

*World Bank Open Data [20]

The current state of dealing with solid household waste is characterized by the following [21, pp. 21-30] increasing volumes of solid waste (the population is rapidly decreasing in the country); the low level of processes of sorting, recycling, reuse and disposal of solid waste (while there is increasing urbanization and hence opportunities for civilized waste management); lack of economic incentives for waste management; no practical solution to the problem regarding the collection of solid waste in rural areas; growth in export of solid waste in open landfills and illegal dumps and others. At the same time, the domestic waste management market does not receive the necessary development due to the following obstacles: economic (insufficient financing of the sector as a guarantee of return of investments, lack of regulation of tariffs related to waste, etc.); administrative (lack of transparency of the waste management, lack of clear division of responsibility, imperfect mechanism of public-private partnership, outdated technology and nesyystematychnist

implementation of environmental monitoring); cultural-informational (low level of ecological consciousness, unregulated measures for environmental education of the population, etc.).

Before we consider the general conceptual views on this matter, which then determine the choice of methodological approaches to study the problem of waste, pay attention to the theoretical basis, namely the provisions referred to in Figure 1: waste is formed at each stage of the process of satisfying the needs of consumers (from the taking of resources in nature – to use the value of goods purchased on the market). Secondary resources may also be formed. The state thus plays the role of protector and observer. That is, a rather specific “waste economy” that can function according to the laws of the market, but at the same time, it pays special attention to the side of the state and the active part of the population, in particular, representatives of public organizations on environmental protection and public health, etc.

The mutual transformation of theoretical opinions and political vectors is the basis for the formation of conceptual approaches, in our research – in relation to the waste management.

There is no unambiguous view on the term “waste”, as mentioned, for example, in research of [1]. In particular, the authors compare the treatment of waste in accordance with the domestic [22] and European [23; 24] legislation. [10] proposed to recognize the waste “... a negative factor that has a significant impact on the natural environment, health and life of people”.

Economic responsibility is treated as an obligation of the entity to be responsible for the obligations that it took, to comply with agreements, obey the laws, pay taxes, and compensate for the losses that may be incurred by him to other business property or environment [16].

Responsibility is considered in the context of the relation of a person’s dependence on something that is perceived by her as a determining principle for decision-making and activities directly or indirectly aimed at preserving or promoting this principle. At the same time, other people, including future generations, community, environment, material and spiritual values, could be the object of responsibility. From the historical and philosophical point of view, the development of the idea of responsibility relates to issues of freedom of choice, freedom of decision, freedom of action, and guilt [25].

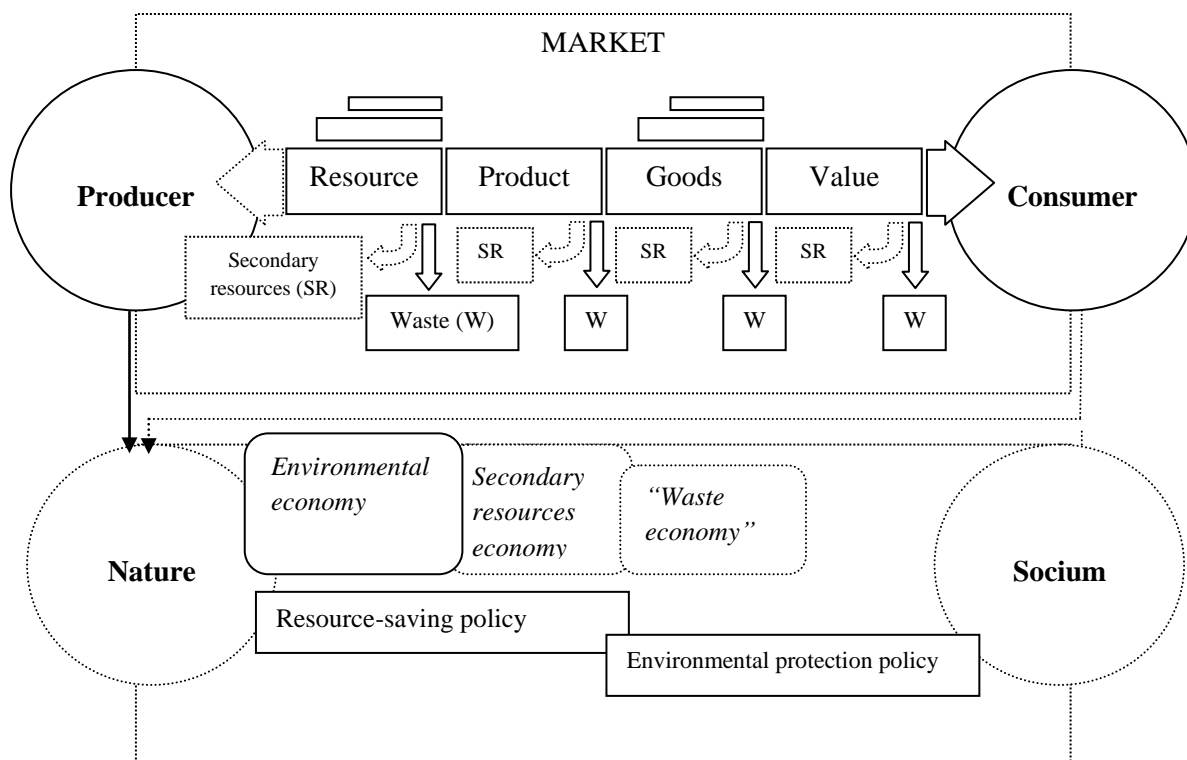


Fig. 1 Conceptual scheme of interconnections between the main subjects of the “waste economy”

Max Weber [26] had been investigated the problem of responsibility in close connection with the concept of ethics. At the same time, he outlined the “ethics of conviction” and “ethics of responsibility”,

which allowed the scientist to distinguish between two relevant types of behavioral orientation, which are both fundamentally different and supplement each other. The ethics of conviction is connected with the direction to perfection, and therefore the responsibility for practical actions is very weak. When we talk about the ethics of responsibility, on the contrary, the material world is studied as it is. The goals of action with such ethics are quite real, and responsibility is strong.

In today's economic conditions, this approach has developed in the concept of corporate social responsibility: responsibility belongs not to individuals, but to members of organizations.

According to Gorlitskiy B. A. [4], thorough approach to investigate the waste management needs to return and spreading modern interpretation of the concept of "industrial metabolism", which was developed in the 1980s. This concept covers the lifecycle of the substances involved in the sector technogenesis: the stage of "extracting raw materials – production – consumption products". At each stage, the material balance of the substance is formed in such a way that the final product of the decomposition of the waste of production and consumption "... has reached a physical-chemical equilibrium with the environment, becoming an equilibrium part of the lithosphere, the hydrosphere and the atmosphere". In order to obtain high performance in such equilibrium states, the scientist drew attention to the need for quantitative and qualitative analysis of waste streams, taking into account the specificity of transformation of the initial forms of matter, fixation of the composition of the stable compounds to prevent the accumulation of concentrations of environmentally hazardous substances in the waste. However, such analysis is appropriate within specific industries, sectors, territories, clusters and so on. The main thing is to study in detail and optimize the interconnections of material flows from various natural and anthropogenic sources, as well as in the chain of "primary natural raw materials – commodity production – the sphere of consumption and services".

In the research of Vyhovska H. P. [3] an integrated approach is considered in methodological aspect of resource management and waste management. It is noted that "the integrated management methodology should proceed from the consideration of the system of alternative solutions .., each of which is evaluated according to the criteria of environmental friendliness, technical feasibility and economic feasibility". The essence of the approach is that the substances of nature are considered in the context of the concept of the life cycle of products and materials. That is, the study must be transformed and spatial displacement of substances from nature, from their development and extraction, and ending with use and returning to nature in their altered form. As a target it is used the function of waste management, minimization of their formation for the entire life cycle of the product. At the same time, the stages of the life cycle are : production exists as a plan; scientific research and work; design stage; production; packaging, transportation, storage and sale of products; use of products by the consumer; disposal of products after the expiration of service life. The main principle here is the principle of non-waste of technology.

Significant changes are needed in the state environmental policy in terms of increasing responsibility for waste management. An example of this is the Draft [27], in accordance with Article 4, the main principles of the policy of packaging and waste management are as follows:

- priority of environmental protection and human health;
- prevention of the formation of packaging waste, hierarchically carrying out the following processes (from the most to the least acceptable): prevention of waste generation – reuse – recycling of waste – recovery – waste disposal;
- promoting the development of a competitive market environment;
- the separation of the waste packaging collection and the arrangement of places for their authorized harvesting;
- the maximum use of waste packaging as a secondary raw material;
- formation of ecological consciousness of the population and some social groups and citizens;
- the principle of innovation and science in relation to both the technical-technological and environmental-economic aspects of packaging waste management;
- a combination of effective incentives and regulatory policy of waste packaging management, etc.

The article about responsible waste management [6], scientists are considering the model of the "life cycle of waste". The following phases are envisaged: identification of potential waste; dematerialization of waste in the process of production and consumption of products; realization of consumer behavior; restore the value of the resource contained in the waste. On this basis, "the concept of a civilized policy of SWM" was suggested. Elements of policy are divided into soft (ecological consciousness, ecological behavior, etc.) and rigid (normative acts, social responsibility of business, influence of civil society, etc.). This indicates that

the state policy of solid waste management should be systematic and based on a balance of control and provide discretion: depending on the specific situation, particularly in terms of threats to national security and so on.

Therefore, based on a comparative analysis of the main conceptual approaches to waste management in which we can see the aspects of responsibility, we propose an “ecologically-expanded motivated producer liability” approach (table 2).

Table 2

Comparison innovative conceptual approaches in waste management, united by communications with the concept of responsibility

Conceptual approach	Criteria for comparison			
	Integration into the management system of the entity	The directness of communication with the waste management	Focusing on the interests of third parties	Ecological orientation
Corporate social responsibility	Average level	Low level	High level	Average level
Extended producer responsibility	Average level	High level	Average level	Average level
Integrated waste management	High level	Average level	Average level	Average level
“Ecologically-expanded motivated producer responsibility”	Average level	High level	Average level	High level

In terms of economic instability necessary to develop waste management strategy based on the concept of extended producer responsibility, but combined with the social aspects of the concept of CSR and environmental orientation. It is clear that integration of comprehensive mechanism in waste management is only possible in the long term. The disadvantage of the integrated approach, in our opinion, is the unclear targeting of liability (usually refers to municipal initiatives within the IWM), and partial violation of the principle of “the polluter pays”. In Ukraine, where “collective responsibility” has been established for decades, we need more drastic changes.

The “motivation” in the proposed approach lies in the fact that a producer who adheres to the rules of responsible waste management, has the opportunity to receive additional incentives for business development and motivation of their employees. Sources of such stimulation may be both state subsidies and funds accumulated as a result of fines for violation of environmental legislation (in terms of waste management) by other producers or consumers, etc.

Conclusions and perspectives of further research. As a result of the analysis of the conceptual relationships between the field of waste management and the economic, as well as related social, environmental and ethical content of the category “responsibility”, we arrived at the following conclusions. The conceptual framework for researching the waste problem involves, firstly, the theoretical basis (the situation of the nature management economy, the waste economy, the secondary resources economy) and, secondly, the political component (environmental, social, regulatory policy – in those aspects that intersect with the formation and waste management). Narrowing the object of research to the plane of its relationship with the notion of responsibility, attention is focused on such existing concepts : the concept of corporate social responsibility (in aspects of waste management), the concept of extended producer responsibility, the concept of integrated waste management. It is also proposed to modify certain aspects of the concepts under research in order to form a new approach to “ecologically-expanded motivated producer responsibility”. This will in the medium term to take into account the complex of social and environmental factors in the area of waste management. And at the same time, we take advantage of the process approach, as it was done in implementing of extended producer responsibility concept.

The complexity and dynamism of waste issues, as well as the plurality of views on the concept and content of waste, their classification, etc., determine the application of such methodological approaches to their substantiation and analysis as system and process approaches. On this basis, and taking into account the criteria of responsibility and information and situational factors that affect the scope of waste in the future we will form a strategic system of environmentally oriented waste management.

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