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Efficiency of carbon landfill for reducing environmental pollution and global climate instability

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Abstract. The evaluation of the impact of highly concentrated innovative carbon landfills reconstruction for the global climate balance improvement and environmental management on the organization of projects to reduce emissions of pollutants was carried out. The article elaborates conceptual tools for reducing environmental pollution to overcome the shortcomings of standard gas emission systems at landfills, improve global anthropogenic conditions and increase the global climate stability using integrated balanced scorecard cluster technology. Using the indicative mechanisms of SR-technology of environmental cleaning projects, the criteria for evaluating the efficiency of carbon landfills were corrected and quantitative deviations of the risk level of increasing the concentration of pollutants depending on climatic seasons were revealed. Using the author's simulation method of criteria-based analysis, cross-cutting directions for improving the environmental conditions were proposed, reflecting optimal conditions for the polystructurality of carbon innovations elements and promising modified wind gusts reflecting the specifics of climatic conditions. As a result of the research, the methodology for a comprehensive evaluation of the feasibility and efficiency of stimulating carbon landfill models were proposed through the balanced scorecard focused on overcoming the resulting difference in pollutant emissions.

Keywords: environmental pollution, global climate, carbon landfill, efficiency.

1. Introduction

In the conditions of herbage during the disposal of landfill gas, the use of reconstructed carbon landfills, equipped with energy-sensitive accumulators for reducing pollutant emissions, involves the development and implementation of innovative environmentally friendly stimulators to use distribution indicative mechanisms of SR-technology for reflecting the modification process of climatic wind gusts (greenhouse gases), improving the global climate balance and providing comprehensive environmental purification within a green ecosystem. At the same time, the impossibility of changing the composition of carbon dioxide emissions into the environment determines the existing unevenness of the innovative carbon transformation in the air and downtime in the operation of carbon landfills (the spread of polycyclic aromatic hydrocarbons (8.8%), the occurrence of polychlorinated dibenzodioxins (5.4%), the spread of concentrates of non-methane volatile compounds (7.3%)), which leads to a decrease in the positive impact of the functional accessibility of innovative landfill mechanisms on the climatic balance of the ecological purification process (at the level of 8.05 points) and the structure of pollutants (at the level of 8.1 points), which form the basis of the potential for biological environmental intensification [1]. The uneven innovative activity of thermal carbon power plants not only aggravates the problem of the lack of a multi-level air purification system based on concentrated components of carbon compounds, but also determines the insufficient level of polystructurality (intersection) of wind stimulators and modified wind gusts using integrated balanced scorecard cluster technology, aimed at improving the ecological environment when assessing the impact of the reconstruction of carbon wind accumulators on the efficiency of changing air masses [2]. In this situation, a multilateral environmental purification mechanism based on the modification of the landfill operation process should be aimed at the achievement of safe climatic conditions by suspended cleaning substances. When eliminating climatic fluctuations, the use of the landfill function to accumulate and synthesize oxygen in combination with the concentrated cleaning SR-technology mechanisms and modeling the potential for reducing the “dome” of polluted air makes it possible to form additional strategic prospects for the efficiency of innovative carbon landfills within the balanced scorecard [3]. In this regard, the key leading indicators forming complex strategic projections of the environmental purification process under the influence of positive and negative factors will allow to assess the impact of the polystructurality of carbon innovation elements within the balanced scorecard concept on the productivity of oxygen distribution and identify advantages of adaptability to technologically modified carbon compounds.

The problem of the research is to determine the degree of influence of highly concentrated innovative mechanisms of carbon landfills in order to use them in improving the global climate and environmental purification within the framework of organizing a mass procedure for reducing the harmful substances concentration in the atmosphere and organizing environmental and energy-intensive

initiatives through the balanced scorecard concept. In each strategic projection of the integrated balanced scorecard, various modifications of the distribution mechanisms of environmental cleaning prevent the occurrence of polluting trace elements resistant to the positive influence of carbon power plants and provide a high level of climate adaptation.

The purpose of the research is to elaborate conceptual tools for reducing environmental pollution through the balanced scorecard cluster resource-saving technology to overcome the shortcomings of standard gas emission systems at landfills, improve global anthropogenic conditions and increase global climate stability with further correction of cross-cutting criteria for evaluating the efficiency of carbon landfills.

2. Materials and methods

Evaluation of the properties of carbon dioxide uptake by the terrestrial ecosystem based on the indicative mechanisms of SR-technology for organizing environmental clean-up projects makes it possible to determine quantitative deviations of the risk level of increasing the concentration of pollutants depending on climatic seasons. At the same time, the principles of using carbon landfills in the process of ecological modification of air, proposed by the authors of various methods for assessing the climate change balance in the global environment [4], cannot be fully used to build conceptual tools for reducing environmental pollution through the balanced scorecard. In conditions of complex interrelations between variants of modification of systematic procedures and various parameters of ecological indicative mechanisms for improving air masses and competitive advantages of territorial environmental systems (various diatom soil platforms), the evaluation of the polystructurality of the balanced scorecard concept and environmental innovations forms two additional strategic projections (“The emergence of the concentrated environmental stimulator infrastructure” and “Cyclicity of renewal of purification components”) [5]. The main and additional projections of the balanced scorecard resource-saving model, reflected through predictive simulation, ensure the targeted development of modified climatic gusts using partial chemical treatment, assuming the achievement of a high concentration of plant biomass for the synthesis of moisture from an oxygen-carbon medium. Ultimately, these cause-and-effect relationships form conceptual tools for reducing the spread of pollutants in the atmosphere, which form the basis of the author’s method of criteria-based analysis of

the influence of the distribution of carbon innovations within the balanced scorecard on the level of the resulting difference in emissions of harmful airborne trace elements (figure 1).

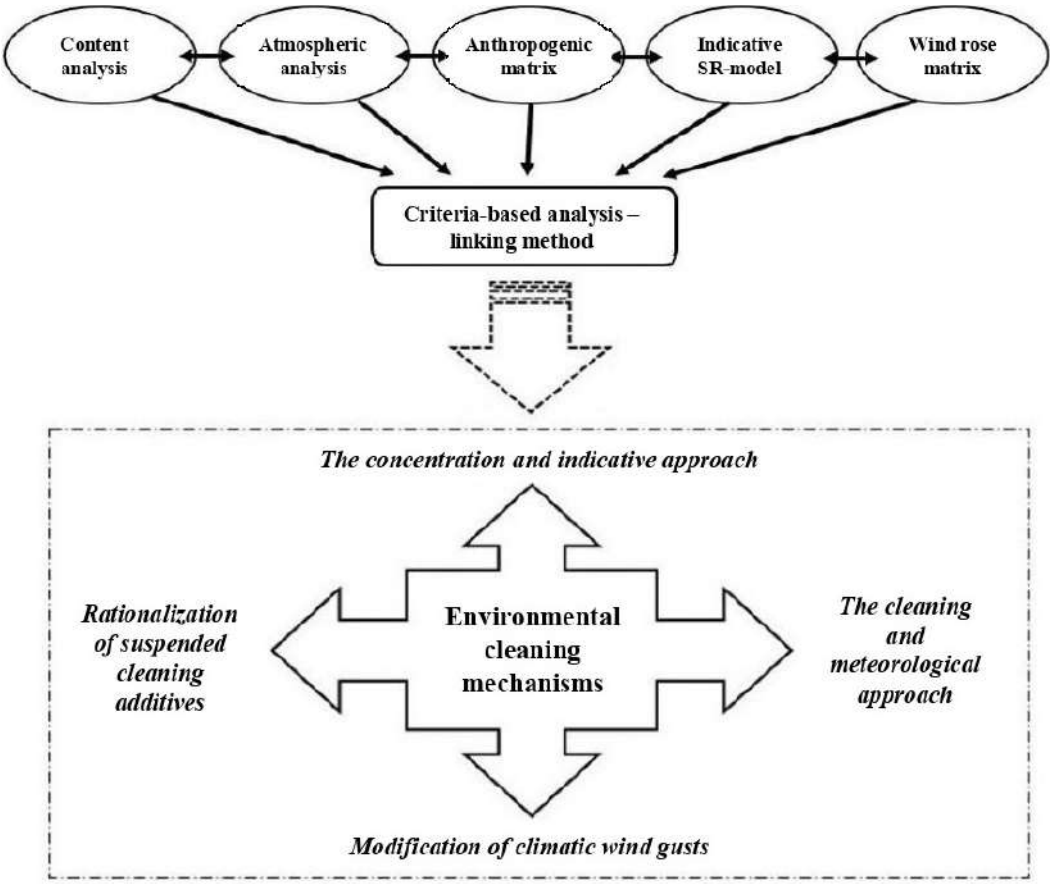

Figure 1. Conceptual tools for reducing environmental pollution to overcome the shortcomings of standard gas emission systems at landfills in the process of global climate stabilization using integrated balanced scorecard cluster technology.

3. Results and discussion

As the main result of the research, the cluster-logical model of the balanced scorecard is proposed, including corrected criteria for evaluating the efficiency of carbon landfills and quantitative deviations of the risk level of increasing the concentration of pollutants in the process of managing the positive effect of environmental purification, and cross-cutting directions for improving the environment are presented, reflecting optimal conditions for the polystructurality of carbon innovations and promising modified wind gusts reflecting the specifics of climatic conditions (table 1).

In the strategic projections “Energy stability of carbon compounds (the emergence of the concentrated environmental stimulator infrastructure, cyclicity of renewal of purification components)”, “Balance of internal processes (cyclicity of renewal of purification components)” and “Innovative

content of the ecological value of the climate" key qualitative indicators (the level of concentration of energy-intensive nutrients, the level of concentration of ecological mechanisms and the level of innovative readiness of distributive carbon stimulators) form trends and prospects for increasing the usefulness of environmental purification while improving carbon compounds due to carbon innovations by about 75%. The most complete positive effect is achieved at all seasons of the year (winter, spring, summer, autumn) due to minimal deviations in the risk level of increasing the concentration of the pollutant (R_{poll} + 0.75%, R_{poll} + 0.5%, R_{poll} + 1.5%, R_{poll} + 1.25%) due to a partial reduction in the impact of harmful trace elements on the chemical composition of air masses and normalization of biologically pure atmosphere.

Table 1. Technology for improving the environmental conditions and managing the global climate sustainability through modification of air mass gusts depending on climatic seasons and the risk level of increasing the concentration of pollutants (R_{poll}) using the integrated balanced scorecard.

Cross-cutting directions of increasing the efficiency of carbon landfills through modification of air mass gusts	Key leading indicators of strategic projections of the balanced scorecard Energy stability of carbon compounds (the emergence of the concentrated environmental stimulator infrastructure, cyclicity of renewal of purification components)	Balance of internal processes (cyclicity of renewal of purification components)	Modernization of components in the structure of carbon compounds	Innovative content of the ecological value of the climate
1. Promotion of domestic innovative and technological carbon stimulators for the growth of the air stabilizer provision for treatment complexes	The level of concentration of energy-intensive nutrients, the level of concentration of ecological mechanisms (generation – 75%, control indicator of experimental air mass: 44.9 ± 2.25) *Correction of quantitative deviations of the risk level*: winter: R_{poll} + 0.75% spring: R_{poll} + 0.50% summer: R_{poll} + 1.50% autumn: R_{poll} + 1.25%	The level of innovative readiness of distributive carbon stimulators (generation – 75%, control indicator of experimental air mass: 54.7 ± 4.17) *Correction of quantitative deviations of the risk level*: winter: R_{poll} + 0.75% spring: R_{poll} + 0.50% summer: R_{poll} + 1.50% autumn: R_{poll} + 1.25%	X	X
2. Organization of a multi-level digital environmental monitoring system for the implementation of interstate standards for the leveling of pollutants		X	The level of coordination of consumers of environmentally friendly stimulants (generation – 25%, control indicator of experimental air mass: 60.7 ± 5.23) *Correction of quantitative deviations of the risk level*:	X

	winter: R_{poll} + 3.50% spring: R_{poll} + 4.75% summer: R_{poll} + 3.85% autumn: R_{poll} + 5.55%

In turn, the key qualitative indicator of the strategic projection "Modernization of components in the structure of carbon compounds" (the level of coordination of consumers of environmentally friendly stimulants) generates an increase in the usefulness of environmental purification while improving carbon compounds due to carbon innovations by only 25% and does not significantly affect the strategic prospects of overcoming problems. Significant quantitative deviations of the risk level of increasing the concentration of the pollutant (R_{poll} + 3.5%, R_{poll} + 4.75%, R_{poll} + 3.85%, R_{poll} + 5.55%), presented within this projection, at all seasons (winter, spring, summer, autumn) indicate a complete absence of the positive effect and do not allow to cover the main positions of environmental normalization due to an increase in the proportion of harmful trace elements. In conditions of aggravation of problems arising under the influence of negative distributional factors, the polystructurality of carbon innovations based on modified wind gusts can be comprehensively assessed using the author's method of criteria-based analysis as insufficiently high (the potential of normalized interaction of air mass purification mechanisms and global climate stabilization within the framework of strategic projections "The emergence of the concentrated environmental stimulator infrastructure" and "Cyclicity of renewal of purification components" when using ecological ecosystem stabilizers does not correspond to the level of highly efficient and resource-intensive operation of carbon batteries).

The factors should be constantly taken into account within the framework of the balanced scorecard projections to reflect the cyclical development of the process of environmental renewal in the conditions of global climate stabilization [6]. In this regard, the balanced scorecard is the most acceptable cluster model that evaluates the feasibility and efficiency of carbon landfills and provides an improvement in the flow of oxygen-carbon processes of the atmosphere with subsequent stabilization of climate changes. The model should be focused on overcoming the resulting difference in pollutant emissions and forecasting further trends in the development of the environmental purification process using key direct and indirect indicators [7]. Positive and negative factors included in strategic projections combine "growth points", opportunities, threats and problems of biological modernization of carbon landfills [8-10]. The internal balance between the expediency of using modified air masses and the energy-intensive stability of carbon innovations became the basis for the development of the author's methodology for a comprehensive evaluation of the feasibility and efficiency of stimulating carbon landfill models within the balanced scorecard projections and convergence of climate stabilization components based on innovative modification of air stimulators.

4. Conclusion

The main conclusions of the research are presented as follows:

- The improved environmental cleaning tools for evaluating the efficiency of carbon landfills using the author's method of criteria-based analysis within the framework of the integrated balanced scorecard allowed us to elaborate a system of mechanisms for modifying air masses through concentrated elements of carbon innovations;
- The usefulness of the proposed integrated model is determined by considering the efficiency of carbon landfill batteries as a structure-forming component, the level of environmental value of which depends on the polystructurality of wind gusts reflecting the specifics of climatic conditions;
- The use of a comprehensive author's methodology is possible in the formation of a multi-level system of SR-technology cleaning mechanisms with the introduction of uniform standards for the treatment of polluted air flows;
- The optimal combinations of distribution purification mechanisms in the formation of strategic projections will lead to an improvement in the polluted air of the atmosphere, which is an integral part of the climate restructuring process during the transition from uncontrolled fluctuations to stability depending on climatic seasons;
- The experience of cyclical renewal of cleaning components and the study of the process of purposeful wind gusts stabilization allowed us to identify cross-cutting directions for improving the environmental conditions and calculate quantitative deviations of the risk level of increasing the concentration of pollutants;
- The practical significance of the balanced scorecard cluster technology consists in the convergence of the components of the process of ensuring the continuity of carbon landfills before and after reducing harmful emissions within the framework of innovative wind gusts modification and stabilization of climatic conditions, "growth points" and cleaning procedures.

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