Environmental Planning and Economic Resources Optimization Modelling: An Empirical Approach Based on the Earth Ecological Economic Metaphor Principle

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Abstract. This paper is with an objective of exploring a top-level design system model for environmental planning and economic resource optimization. Based on the economic metaphor theory of the earth's ecological environment, of which “economic man” and “ecological man” are both involved, this study has self-built a WEMC corpus for empirical purpose. The study’s findings have revealed that, environmental planning and the optimization of economic resources reflect the relevant “eco-systemicity” from the perspective of economic metaphor, which is embodied in three major ecological categories (human, plant and animal) discovered in this empirical study; therefore, it is necessary and highly feasible to, based on the theory of systems engineering and ecological mechanics, explore and analyse the constituent factors, functions, stability, and evolution of the economic ecosystem from a new perspective and method. This paper has drawn a conclusion and proposed a top-level design system model for environmental planning and economic resource optimization based on the ecosystem integration.

1. Introduction
Nowadays, the capacity of the global climate has become a “scarcity”. Since the beginning of the Industrial Revolution, human social and economic activities are developing at an unprecedented speed. At the same time, excessive greenhouse gas GHG emissions are also produced in the atmosphere. Climate change issue is one of the most severe challenges facing human society in the 21st century, and therefore has become a hot issue of global concern. Global warming, climate change indirectly caused the rise of sea levels and other issues have had a negative impact on the earth. All these impacts directly lead to the scarcity of climate governance capabilities in various economies.

2. Literatures Review

2.1. Literatures
Environmental science scholars pointed out that human economic and trade exchanges, especially economic production activities, to a large extent, are very likely to cause the deterioration of the ecological and natural environment and at the same time lead to the depletion of the earth's natural resources. The net effect of human economic activities on the natural environment and the use of resources on the earth have a high degree of uncertainty and instability, and its own consumption paradigm and industrial structure are to a large extent significant with its international trade activities with the outside world[1-2]. In recent years, some scholars have also conducted research from the
perspective of technology and economy, and believed that international trade activities worldwide have also accelerated the spread of advanced production technology to a large extent, and this kind of advanced production technology is accompanied by the “spillover” of international trade. The proliferation also indirectly promotes environmental benefits [3-5]. In fact, the logic of this theory is based on a mechanism path, that is, under the conditions of an open foreign trade economy, the speed and efficiency of technological innovation are higher than those under a closed economic system. [5] [6] Under this mechanism of action, developing countries and underdeveloped regions can take advantage of the "spillover" brought about by trade to form their own "late-mover advantage", which can be achieved by using less natural resources and lower pollution costs for faster economic development. [7-8].

2.2. Review
To sum up, scholars have carried out a large number of studies on the relationship between human economic activity and the environment, especially carbon emissions, and have achieved certain results and conclusions. However, very few studies can be found to combine with ecological systematic research to specifically and empirically study the relationship between human economic activity and the environment; and it is also scarce to find researches applying the economic metaphor to further study. Therefore, this current study is conducive to the expansion of economics and global environmental science in the field of environmental planning and economic resources optimization from the perspectives of the earth’s ecological economic metaphor principle.

3. Methodology

3.1. Framework
The framework is with the concept of ecological biological metaphor system engineering, and its essence is to borrow the metaphors of natural ecological biological metaphor systems engineering or biosphere, and apply the "mapping principle" of economic metaphors (from SD-TD Schema) to scientifically manage the academic and business circles objectively and comprehending the surrounding natural world essentially provide a novel, innovative combination, very effective and efficient method or action guide—the dynamic development of evolutionary systems engineering and related evolutionary thoughts and thinking paradigms.

3.2. Corpus Method
The method is based on the economic metaphor theory referring to the leap from "economic man" to "ecological man". A corpus-based method is adopted so as to implement an empirical research to address the issue of exploring a top-level design system model for environmental planning and economic resource optimization. We have self-built a WEMC (WESTERN-ECONOMY-METAPHOR-CORPUS) corpus. This research has set and labelled the 4 most commonly used economic metaphors in discourse. According to the criteria for identifying metaphors in western economics, we finally identified 2158 metaphors. There are 2158 expressions in the WEMC corpus. All economic metaphor expressions come from the following source domains: upper/lower space, humans, machines, liquids, containers, buildings and competition. That is to say, we have 7 types of concepts economics metaphors and ECONOMY as The same target domain. These conceptual economic metaphors will be carefully analysed in this part in a top-down manner, that is, from the highest frequency to the lowest frequency of conceptual economic metaphors. In each of the conceptual Western economic metaphors, the screenshots retrieved from the WEMC corpus all show the expressions of economic metaphors in the discourse and their frequency figures. We sort these metaphorical expressions according to the numbers from largest to smallest. If they have the same number, we will arrange them in alphabetical order from A to Z.
4. Findings

As shown in Figure 1, we have discovered a large number of metaphors related to human ecological economics. The mapping mechanism and schema is that human body experience plays a very important role in human perception and understanding of the economic world. Human economic metaphors here are mainly related to human life characteristics, such as birth, health, feelings, etc. The birth/death expression of human economic metaphors can be used to describe economic companies, economic markets, economic products, economic sales, and so on. Marketing and sales activities in the economy serve as growth agencies.

![Figure 1. Screenshot of Economic Metaphors for Corpus Retrieval of Human](image)

From these examples, we can see that almost all economic activities related to the metaphorical expression of Western economics are closely related to similar functions of human body parts. Health is the foundation of mankind, because health and life are closely related to expectations and quality of life. Good health can help us improve the quality of life. Diseases may affect our long-term development. So we can get two mappings: problems related to healthy human beings and good economic recovery and development.

We continued to search the corpus for plant biology terms such as plant, and found that plant biology economic metaphors are very common as shown by Figure 2.
Figure 2. Screenshot of Economic Metaphors for Corpus Retrieval of Plant

We continued to search the corpus for animal and biological vocabulary, and found that animal biological economic metaphors are very common as shown by Figure 3.

Figure 3. Screenshot of Economic Metaphors for Corpus Retrieval of Animal

5. Conclusion and Implication

5.1. Conclusion

Based on the above analysis, we can draw a conclusion that the issue of global climate change is not only a global challenge, but also that for different national economies, the impact of global climate change varies greatly, and has a large "heterogeneity", with a very obvious imbalance. Due to the different "heterogeneity" of greenhouse gas emissions, economies have different "heterogeneity"
responsibilities in reducing greenhouse gas carbon GHG emissions due to their different levels of development. If the global greenhouse gas emissions, especially the greenhouse gas carbon GHG emissions, cannot be well controlled, then global climate degradation will be inevitable, and these will inevitably have more serious and profound impacts on all economies, especially for the impact of developing economies. To address this issue, various economies need to take and implement joint actions to jointly formulate countermeasures to provide effective institutional arrangements for carbon emissions reduction and green economic development at the international community level.

From the perspective of the metaphor of "Economic ecology", global public issues are a systematic ecological project involving the common interests of all mankind. Therefore, in the entire "global village", all national economies and regional economies (or pan-economic organizations), instead of relying on one or two single economies. Therefore, in this interdependent world, solving global public problems requires the cooperation of more economies and factors. Similarly, solutions to global public climate governance issues are beyond the capabilities of an economy and must be highly dependent on the advantages of all economies to deal with it. Therefore, international economic cooperation in reducing greenhouse gas carbon GHG emissions has become a “must”.

5.2. Implication
Based on the consideration of the empirical findings based on corpus and the above conclusion drawn, the establishment of an integrated system to protect the earth's environment is a key means in the management system of a country's or local regional ecological and environmental protection, and it serves as an important top-level design in the construction of sustainable and healthy development of the Earth's environment. Both of the integration of environmental protection responsibilities and the establishment of an integrated system are aimed to protect the global environment. This reform trend has greatly improved the voice and law enforcement power of environmental protection departments, and the environmental supervision capabilities have been continuously enhanced, which contributes to the sustainable and healthy development of the global environment of a country or local area.

Construction provides a strong institutional guarantee. From global experience, most environmental supervision implements a large-scale environment ministry model covering pollution prevention, resource protection and ecological conservation. Such a top-level design system is more conducive to the formation of an integrated top-level design management of all environmental elements from the mountain top to the ocean, from the sky to the underground. Based on the economic metaphor theory of the global environment, various elements in the natural environment, such as mountains, water, forests, fields and lakes, are a life community in the earth ecosystem; and the various elements in these natural environments are protected and integrated top-level design. Management and unified restoration are very necessary and have far-reaching effects. The various elements of the global environmental economic system are interdependent, restrictive and indivisible. To realize the unified management of the ecological environment, it is necessary to scientifically integrate the management functions dispersed in different departments and truly realize the integrated top-level design management. This is where the reform ideas of building an integrated system to protect the global environment are projected. According to the reform plan, the environmental protection management functions that originally belonged to different departments were integrated and unified into an integrated system to protect the earth's environment. In this way, the functions of environmental protection are no longer scattered and overlapping, and the "resource accumulation and economies of scale effect" are realized, and the functions of ecological environmental protection and pollution prevention can realize overall management and overall management. This further enhances the authority and effectiveness of the ecological environment protection management system. As an important part of the modernization of the national environmental governance system and governance capabilities, it will certainly inject a strong impetus into the sustainable and healthy development of the earth's environment in a country or local area.
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