

## **Study on Control of the Enterprises Environmental Cost Based on the Circular Economy Perspective**

Jing Xu, Chuang Gao

Harbin University of Commerce, Harbin, Heilongjiang, China

Harbin University of Commerce, Harbin, Heilongjiang, China

xujing2011@163.com, 519182798@qq.com

**Keywords:** Circular Economy, 3R Principle, Environmental cost control

**Abstract:** In recent years, the global ecological environment has been deteriorated, how to control the enterprises environmental cost has been taken seriously. 3R principle of circular economy has important significance on control of enterprises environmental cost. Control of enterprises environmental cost has several weak sides such as methods imperfect, incomplete control and system imperfect. According to the principle of reduction, reuse, recycle based on circular economy, this article puts forward some suggestions include higher resources price, disposing and reusing waste, segmenting and integrating the work flow.

### **The Significance of Enterprises Environmental Cost Control Based on Circular Economy**

**To Reduce the Environmental Cost:** Control of the enterprises environmental cost based on the circular economy perspective can be combined with life cycle method which means executing the plan of environmental cost control throughout the whole cycle of enterprises. Meanwhile, applying for activity-based cost method, material flow accounting and resource value flow accounting can analyze cost driver clearly and achieve the aim of reducing environmental cost. Circular economy plays an important role in environmental cost control

**To Reduce the Environmental Risks:** With the increasing seriousness of environmental problems, precaution and control of environmental cost has drawn more attention, the environmental laws and regulations are being improved, and social responsibility is also growing. Enterprises will face lawsuits, fines and the risks of reputation damage with the regardless of environment, the control of environmental cost based on circular economy perspective can reduce the environmental risks of the enterprises.

**To Implementation of Modern Enterprise System:** Modern enterprise system requests that enterprises change the development model from pursuing self-interests only into coordinating social development demand and its own interests. Control of the enterprises environmental cost based on the circular economy perspective, on the one hand, can reduce environmental pollution and promote the sustainable economic development, on the other hand, standing in the perspective of enterprises itself, environmental cost control can reduce the costs of products, improve enterprise image and enhance its competitive ability in the whole market.

**To Achieve Sustainable Development:** The traditional form of “pollution first, treatment after” model of development has been not applicable. Human society is paying a heavy price for environment destruction. The protection of the environment is not only the macro social problem, but also the implement in the microscopic main body of the enterprises. Circular economy is an important form of practice to realize sustainable development strategy with the minimum of resource consumption and environmental cost.

### **The Present Problems of Enterprise Environmental Cost Control in Our Country**

**Lack of Consciousness of Environmental Cost Control:** Our economy has adopted an extensive development approach for a long time. To pursue benefits maximization regardless of taking resource

waste, waste gas emissions and other environmental cost into account, most companies have not realized the importance of environmental cost control and established the consciousness of environmental cost control.

**Lack of Environmental Cost Accounting Method System:** From the principle of reduction, reuse and recycling of circular economy, effective configuration of capital is the important aspect of sustainable development. But most enterprises lack of related original data about environmental cost control as well as the system of accounting methods, and have no related forms of environmental cost forecast, planning, accounting and feedback.

**In-comprehensive in the Scope of Environmental Cost:** Special cost control concept only considers environmental cost within the enterprise, the potential environmental cost are negligible. Companies focus on internal cost reduction and ignore the external environment pollution and waste, which increase the profitability in short-term, and indirectly encourage resource consumption and damage to the environment. In-comprehensive in environmental cost control will lead enterprises to a way far from resource recycling.

**Inefficient in Preventive and Feedback Control:** Sound environmental cost control system is the foundation of thorough environmental cost control in enterprises, but in the actual process of environmental cost control, most enterprises adopt the method of post-processing and ignore the concept of circulation. This way of governance embodied in only making confirmation of environmental cost has already happened and did not change the original production process. The investment in prevention and control tends to be insufficient, meanwhile, enterprises are always inactive to govern the environmental cost which occurred already, and inefficient in preventive and feedback control system would lead enterprise and social environment crisis.

### **Measures of Enterprises Environmental Cost Control under the Circular Economy Perspective**

**Price Resources Differently and Promote the Reduction of Resources:** Enterprises need to pay a resource cost for consumption of natural resources and operation enterprises. At present our country prices resources differently according to their various application, such as for electricity, household electricity and industrial electricity fee standards exist certain differences. But overall, the market price and the difference in terms of natural resources are both low in our country, which make the dynamics of resource conservation and recycling insufficient. Relevant departments should improve the charging ratio of heavy pollution industry and relevant industry. Although to some extent, this measure will improve the environmental cost of enterprises, but it is helpful for enterprises to improve the efficiency of using natural resources and promote the reduction in unnecessary resource consumption, so as to promote circular economy and sustainable development.

**Treat and Reuse Pollutants and Promote the Recycling of Resources:** In the process of production, the enterprise does not consider the measurement and disclosure of the external environment, such as exhaust gas and pollutants. Pollutant emissions will cause harm to the environment and the cost of environmental governance, government and related departments should set relevant policies to promote the treatment and reuse of pollutant, such as increasing pollutant detection costs and processing costs. The internalization of external environmental cost is a reasonable solution to promote the recycling of resources, it will affect the cost and price of products. Enterprises need to promote the purification and reuse of waste, in order to get the cost and price advantage, enterprises need utilize technology to cut the costs, meanwhile, acquire revenue from resources reuse. Only in this way can enterprises maintain the product price's competitive advantage and realize the recycling of resources. Costs and revenue from pollutants are shown in Fig.1.

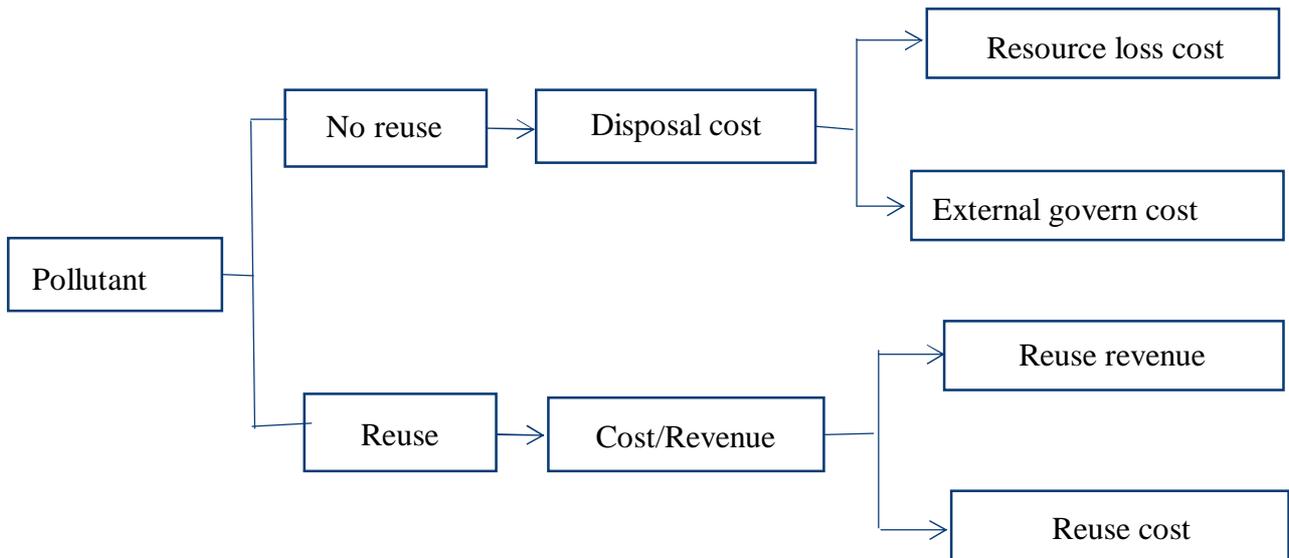


Fig.1 Pollutant Reuse

**Achieve the Reuse of Resources by Process Segmentation and Integration:** The organization form of modern enterprise pays more attention to daily operation and functional division. Under the enterprise overall goal, the various functional departments take division of responsibilities aiming to implement standardization and highly efficient operational mechanism. But in unity form and highly specialized production mode, the connection and integration between the different departments are relatively weak, it will result in an increase in management and resources control cost. In order to reduce the waste of resources repeatedly and realize the related resources recycling, enterprise should pay attention to the integration of the similar process and also the causal relationship between different works on the basis of highly specialized. Process segmentation and integration avail enterprises to achieve environmental cost control under the perspective of circular economy.

**Construct Comprehensive Environmental Cost Control Mode:** For traditional develop mode, circular economy is a meaningful change. Under the guidance of circular economy thought, the environmental cost control model extended to the whole of enterprise life cycle stage. Considering environmental factors in the process of research and development, procurement, production, sales and after-sales stage could avail enterprises much about advanced prevention and afterwards feedback. For instance, enterprises may use environmentally friendly materials in product design stage and purify or regenerate the pollutants. Fig.2 shows the comprehensive environmental cost control mode.

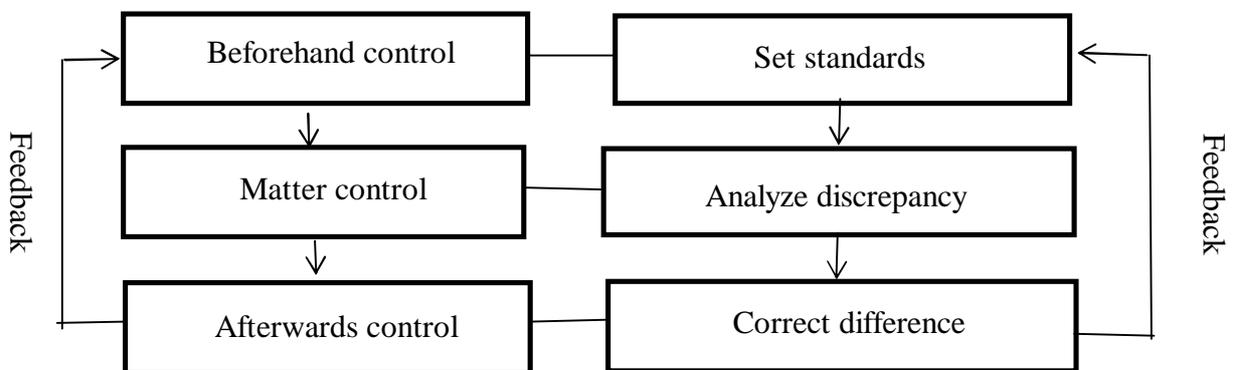


Fig.2 Comprehensive environmental cost control

**Set up Accounting Methods System of Environmental Cost:** Definition of environmental cost and unified standard of accounting method does not exist yet. Enterprise should build a series of environmental cost accounting method system according to the characteristics of the environmental

cost. As the development and perfection of accounting methods, such as activity-based cost method, material flow accounting and resource value flow accounting methods have been widely used. Although most enterprises still use the traditional cost accounting method, but the emergence and development of these methods have provided new thought and feasible method for environmental cost control. Enterprises should cultivate specialized talents and establish relevant organization so as to set up a suitable and appropriate accounting methods system.

**Set the Evaluation Standard of Environmental Cost Performance:** Under the perspective of circular economy, the effort of the environmental cost control need evaluation system, both quantitatively and qualitatively. Integrating the concept of the balanced score card, enterprises can consider evaluating the effort of environmental cost control. Environmental performance evaluation standard can be designed from three dimensions including the dimensions of resource utilization, circulation characteristics, and ecological efficiency. The specific content is shown in Table.1.

Table.1 The evaluation standard of environmental cost performance

<b>the evaluation standard of environmental cost performance</b>	the dimension of resource utilization	Raw material consumption of per unit product
		Energy consumption of per unit product
		Water consumption of per unit product
	the dimension of circulation characteristics	Ratio of recycled waste gas
		Ratio of recycled of waste water
		Ratio of recycled of solid waste
		Ratio of recycled material
		Ratio of recycled energy
	the dimension of ecological efficiency	Waste gas emission of unit profit
		Waste water emission of unit profit
		Solid waste emission of unit profit
		Waste management costs of unit profit

## Conclusion

Environmental cost control has the characteristics of complexity, long-term and strategic management. There are some certain obstacles for enterprises to shift consciousness and implement the comprehensive environmental cost control. Taking environment factors into consideration may increase the short-term costs and occupy human and material resources, however, the environmental cost control has its strategic importance. Enterprises should attach importance to environmental cost control and turn it into practice for the sake of sustainable development of enterprise itself and whole society.

## Acknowledgments

Social science research program of Heilongjiang province, *Enterprise Environmental Performance Measure Research Based on the Social Responsibility*, Item number, 13E028

Graduate student innovation project of Harbin University of Commerce, *Research on the Game Analysis of Internalization of Environmental Cost and Realization Path*, Item number, YJSCX2014-313HSD

## References

- [1] Anne-Marie Tillman. Significance of Decision-making for LCA Methodology [J]. *Environmental Impact Assessment Review*, 2000(3):113-123.
- [2] Hutchinson P.D. Environmental Accounting: Issue, Reporting and Disclosures [J]. *The Journal of Applied Business Research*, 2000 (16): 37—46.
- [3] Qinghua Zhu, Yong Geng, Joseph Sarkis, Kee-hung Lai. Evaluating green supply chain management among Chinese manufacturers from the ecological modernization perspective [J]. *Transportation Research Part E*. 2011 (6)
- [4] A. Chaabane, A. Ramudhin, M. Paquet. Design of sustainable supply chains under the emission trading scheme [J]. *International Journal of Production Economics*. 2010 (1)
- [5] Giannis T. Tsoufas, Costas P. Pappis. Environmental principles applicable to supply chains design and operation [J]. *Journal of Cleaner Production*. 2005 (18)