

The Basic Paths and Management Countermeasures on Circular Economy Development of Enterprises

You Chuanxin, Shi Jiaojiao

School of Management, Yangtze University, Jingzhou, P.R.China, 434023

(E-mail: youchuanxin2004@163.com, shijiaojiao27@yahoo.com)

Abstract Nowadays, increasingly more people or institutions have realized the importance of circular economy, which is a new form of economy and a nice way for enterprises to achieve sustainable development. To develop circular economy, for enterprises, there are three basic paths: cleaner production, zoological industry chain and resource recovery. It is urgent for enterprises to change in strategy, idea, target, design, market, and management system for the sake of realizing circular economy and sustainable development.

Key words Circular economy; Sustainable development; Green management

1 Introduction

The word, circular economy, is put forward by an American economist in 1960s and short for floating economy of close-loop materials, which means converting traditional economy that depends on resource consumption to rise linearly into economy relying on ecological resource circulation to develop. After the United Nations Conference on Environment and Development (UNCED) in 1992, developing circular economy has been thought as the most significant and practical choice to implement strategy of sustainable development.

Developing circular economy has to follow “3R Principle”, that is, Reducing, Reusing and Recycling. Reducing is aimed at controlling the inlet and cutting down the amount of matter during production and consumption, thereby reducing the quantity of waste discharged fundamentally. While the aim of Reusing is to control process and improve the utilizing efficiency of products and service, which demands products and packaging materials be used many times in their original forms. Then Recycling is aimed at controlling the outlet, demanding that products be converted into recycled resources or harmless rubbish after finishing their functions.

2 The Basic Paths for Enterprises to Develop Circular Economy

As the cells of modern society, enterprises are the essential units and microeconomic foundation for developing circular economy and establishing a circular community. They make a great difference. Only with the active participation of enterprises and actual implementation of 3R Principle, can the whole society achieve sustainable development. In industrial system, there are three levels to achieve circular economy, that is, single enterprise’s cleaner production (CP), zoological industry chain and resource recovery. The achievements of the 3 levels are all centered around enterprises.

2.1 Cleaner production (CP)

Enterprises’ internal form of circular economy is cleaner production. CP means utilizing environmental strategy of general precaution in production process, products and service sustainably, thereby increasing ecological benefits as well as reducing the risks to humans and the environment. CP shows the Reducing Principle. There are three links to achieve CP. As to producing process, it requires saving raw materials and energy, eliminating poisonous raw materials, cutting down the amount of waste and lowering their toxicity. As to products, it demands reducing bad influences of the whole life cycle, from the supply of raw materials to products’ final treatment. Then to service, it requires taking the environment into consideration when designing or providing service. CP is a precautionary measure, it requires considering to prevent pollution and minimize short-term or even long-term risks to human health or the environment during producing or technical process in all stages of the whole life cycle of products or techniques. CP confirms to circular economy and is the basic form to achieve circular economy.

2.2 Zoological industry chains

The main path to achieve circular economy among enterprises is zoological industry chain, a new form of industrial organization designed and created according to circular economy and the theory of industrial ecology. Its main idea is guiding industrial production with ecological mode, thereby waste won’t be produced during production process, for the waste can be used as raw materials by another

factory. The world famous advocate of ecological industry, the president of the Resource and Environment Researching College of Canadian Dalhousie University, Kutai, gives a new content and meaning to waste produced by enterprises: "What called waste? Waste actually is resource placed wrong or not utilized correctly, that is, placing wrong quantity of resource at the wrong place and wrong time." In a zoological industry chain, the wastes or by-products produced by one enterprise are nutrients to another. In this way, enterprises in zoological industry chains can form inter-dependent relations, which is similar to the eco-industrial system in the process of ecological food chain.

2.3 Resource recovery

Resource recovery is one of the main paths for enterprises to achieve circular economy and indicates the Recycling Principle. It has to avoid the bad influences on our environment brought by waste and change the waste to treasure, hence achieving resource recovery. The technology system of circular economy promotes ecological environment protection on the basis of improving resource utilizing efficiency and by the means of resource recovery and harmless treatment.

3 Management Countermeasures on Circular Economy Development of Enterprises

3.1 To establish strategy of sustainable development

Traditional enterprise business strategies are always for the sake of attaining the market and achieving the most economic benefits. However, they have ignored the relations between enterprises and ecological environment, and not taken external diseconomies of enterprises into consideration. While circular economy stresses the harmonious development of economy, social system and environmental system, meantime, it demands to establish resource-saving production and consumption modes that are good for environment protection. Consequently, under the development mode of circular economy, enterprises ought to convert their business strategies into strategies of sustainable development and convert traditional economy that depends on resource-consuming into close-loop and floating economy relying on ecological resources. The former promotes economy to rise linearly following the path of "resource-product-pollutant", while the latter follows "resource-product-recycled resource".

3.2 To change management goals and management thoughts

Management goals are the most important elements that have influence on enterprises' managing activities, hence developing circular economy requires enterprises to change management goals. In extensive economic growth mode, enterprises pursue the expansion of the quantity of products and pay no attention to economic benefits, so the growth mode has been abandoned by increasingly more companies. While for enterprises in the intensive economic growth mode, their goals are to improve economic benefits, which are rational choices for enterprises in keen market competition to achieve development. However, the requirements of market to enterprises changes from time to time. With people paying more attention to environment protection, the market has some demands to enterprises on the protection of our environment. Companies that are in keeping with the trend towards environment protection can establish better corporate images, besides, good environment management may also be a key element to achieve competitive advantages for enterprises. Hence under the development mode of circular economy, enterprises ought not merely to pursue economic benefits, they should achieve success in economic and ecological benefits, which is the internal requirement to develop circular economy.

Enterprises under circular economy mode pay attention to the environment and save resources consciously, in addition, they include the value of environmental resources in accounting system in production, which is an important for enterprises to make policies and measure their benefits. Under traditional development mode of economy, which thinks resources are cheap and environment is priceless, enterprises pay little attention to the effects, like the fall of ecological level and social welfare level, led by the waste of resources and environment damages. If the wastes of resources and environment pollution aren't included in the accounting system in production, the economic benefit index calculated in this way completely neglects environmental benefits. When economic benefit index ascends, there may be a fall in environmental benefit index. In some areas where the environment is damaged seriously, the extent of the fall in environment benefits is even over the rise in economic benefits, which results in a fall in social benefits. If enterprises include resource and environment value in accounting system in production, they should take both economic and environmental benefits into consideration during producing or managing activities and try to achieve harmonious development

between them. In this way, environmental benefits are included in the management results of enterprises, when economic benefits rise, so do environmental benefits.

3.3 To implement green management

To develop circular economy, enterprises have to implement green management. The contents of green management are green design, the choice of green materials, green production, green packaging, green marketing, green technology innovation and achieving green attestation.

Green design is the basic demand to promote and the primary joint of circular economy. It demands considering environmental attribute of products first within products' life cycle and taking environmental effects as the most important parameters, that is, apart from taking products' function, quality and cost into consideration, the recycling and treatment of products are included as well. For instance, following the circulatory line, raw materials-products-waste-raw materials, to design products. At the stage of thinking how to design, it is essential to make cutting down energy consumption, being easy to dismantle, being possible to recycle and reuse and eco-environment protection as the requirements of design criteria, just the same as the elements of products' function, quality and cost, and make sure that they can be implemented successfully during production process.

The choice of green materials is the key link to control resource-wasting and environmental pollution fundamentally. During the process of choosing green materials, it mainly chooses those environmental friendly, have low resource consumption, low cost and easy to recycle and reuse.

Implementing green production is the core for enterprises to promote green management. Green production is cleaner production (CP), the production process of enterprises is the main source of environmental pollution, CP can avoid or reduce pollution the most directly. CP means cleaner production process and cleaner products, the former demands no or little pollution to the environment during production process, while the latter demands no damage to the environment when products are used or discarded.

Green packaging is making policy decisions of choosing packaging materials, designing package and package's after treatment according to the minimum environment damage principle. What green packaging pursues itself is reducing the consumption of packaging materials and solid waste produced by package under insuring the packaging results of products.

Green marketing, that is to say, during the whole marketing process of market surveying, product developing, product price fixing and promotion activities, it is essential to follow green theory of keeping ecological balance and attaching importance to environment protection, hence achieving harmony between enterprises' development and our society's benefits. There are several aspects of its contents. First, it is necessary to promote green price and establish a new idea of environment's compensatory use. Enterprises ought to include the expenses of environment protection and environment consumption in products' cost, hence forming green cost and making it a part of green price. Next, enterprises had better guide consumers to reduce the bad effects of products on environment during consumption process. Then, during the process of pre-sales, sale and after-sales service, enterprises ought to follow the requirements of saving resources and reducing pollution.

Green technology includes environmental engineering technology used to eliminate pollution, resourcization technology and cleaner production technology. The key to establish green technology system is adopting the technology of cleaner production and new techniques or technology that are harmless or have low harm, thus, it is possible to reduce the consumption of raw materials and energy, achieve little input, high production and low pollution, and eliminate pouring of environment pollution in production process.

Achieving green attestation is an internal requirement of green management, it symbolizes that the results of implementing green management have been accepted by our society. Green consultation system, that is, products that are in keeping with special demands on environment protection during all the process of developing, producing, using and recycling, harmless or have little harm to ecology and good for resource recovery, are granted green attestation through the audit of relevant departments of government or authorities. Green attestation is the pass of products in market as well as enterprises' green image. Only have a pass, can products go to international market.

4 Conclusion

Circular economy is of great significance, if enterprises can follow those basic paths mentioned above to development circular economy, they will succeed in today's keen competition and finally achieve sustainable development. It is good for our industrial structure to change or even advance to the

higher class. In addition, our economy can develop more healthily, which is beneficial for us in the long term.

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