Policy Analysis of Extended Producer Responsibility System

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Abstract

Although the extended system of producer responsibility is not too late in our country, due to the lack of attention to environmental legislation and the weak awareness of environmental protection, our environmental legislation has always been in a weak state. So the system has not been fully implemented in our country. This paper will expound the system of producer responsibility from origin, definition, content of responsibility and the present situation of our country, and put forward some suggestions on the system of producer responsibility in China, so as to speed up the environmental legislation.

Keywords

Producer responsibility system, Life cycle, Cyclic utilization.

1. The Origin of EPR System Thought

The ancient Greek philosopher and statesman Aristotle once said, "the public things that belong to the most people are often the least taken care of. People care for all their own and ignore public things for the public. At most, he is only concerned about what is somewhat related to him." Although its grayish tone of speech implies sadness and regret, it also profoundly describes an objective existence of the public life in which we human beings inhabit and coexist, that is, the disregard for common things and the lack of environmental care policies. This also became the prototype of the British scholar Dr Harding's "tragedy of Commons". The increasingly serious environmental pollution of solid waste once again proves the "tragedy of common things" continues to spread, because of the absence of the main body responsible for the waste recovery and disposal stage after the product is consumed, the environmental pollution is worsening day by day. In order to safeguard public welfare and interests, the government assumed this responsibility, and then distributed the responsibility to taxpayers and the public through taxation and other means. However, the producers who benefit from the products do not participate in the allocation of responsibility for waste recycling, disposal and disposal after the product is consumed. As a result, the state of "the state undertakes, the public allocates, the producer does not care" for the maintenance of public environmental quality caused by the waste has emerged. The fundamental cause of such an awkward situation lies in the vacancy of the responsible subject. The introduction of extended producer responsibility (EPR) system makes up for the vacancy of the responsible body in waste management and puts an end to the occurrence and deterioration of the "tragedy of common things".

The idea of EPR dates back to Sweden's 1975 bill on recycling waste. Professor Thomas, the Swedish environmental economist who first proposed the concept, thinks that the EPR system is an environmental protection strategy aimed at reducing the environmental impact of products. It is achieved by making the manufacturer responsible for the entire life cycle of the product, especially for product recovery, recycling, and final disposal. Nowadays, with the depletion of resources and the enhancement of environmental awareness, many countries, led by the (OECD) countries of the

Organization for Economic Cooperation and Development, have started the system one after another. The extension of producer responsibility is actually to transfer part or all of the responsibility for waste management and disposal from the government to the producer to internalize the cost of waste management and disposal, thereby stimulating producers to redesign their products. Reduce the use of raw materials and harmful substances to achieve the effective use of resources. Therefore, EPR is the reflection of sustainable development thought at the enterprise level and the micro mechanism to realize sustainable development strategy.

2. Definition of EPR System

At present, in the definition of EPR, there are two different definitions of EU and US. The EU defines that producers must be responsible for recycling, recycling or disposal of products after they have been used. The strategy is to completely attribute responsibility for the disposal phase to the producer. Because the producer has control over the design of the product and the use of the raw material, the producer is responsible for the recovery, regeneration and disposal of the product after it has been used, forcing the producer to reconsider the design of the product and the choice of the raw material, for example, It is necessary to minimize the use of materials or products that are difficult to recycle, so as to reduce the impact of products on the environment. In 1996, the Presidential Advisory Committee on Sustainable Development recommended that the environmental impact of all stages of the product chain should be shared by the government, consumers and producers. Therefore, in the United States, P in EPR is changed from Producer (producer) to Product (product), which emphasizes that the impact of product on environment should be taken into account at every stage, not only at the abandoned stage. However, as a result, producers may lose the pressure and motivation to design products and choose raw materials, and cannot solve the problem from the source. As a result, most countries currently implementing the system use the EU definition.

Although there are different definitions of the EPR system, its general idea is the same, that is, the responsibility of waste disposal which was shared by the government and the taxpayer should be moved up and the producer should bear the responsibility. Therefore, synthesizing two different formulations, this paper holds that the so-called extended producer responsibility system is a main system to improve the environmental performance of product systems based on the principles of modern environmental management. It is the deepening and extension of the traditional polluter pays principle, which requires producers to be responsible not only for the environmental pollution generated in the production process, but also for the environmental impact of the product throughout its life cycle. That is, producers must be responsible for the entire life cycle of the product they produce (including the production process and the end of life phase), in particular for the recovery, dismantling, testing, reuse, recycling and disposal of EOL products, In order to achieve the purpose of recycling resources and environmental protection. This principle reflects an important shift in the pattern of environmental regulation in individual countries: (1) the focus of environmental protection has shifted from a production phase centred on limiting producer behaviour to an integrated product policy centred on reducing the environmental impact of the entire production system, (2) in terms of regulatory approaches, environmental protection policies have shifted from "end treatment" to "source control", and producers have been encouraged to adopt green designs in production. In order to reduce the cost of EOL product recovery in the future; (3) in the case of municipal waste disposal, the transformation from relying solely on government public expenditure to diversification of cost sharing model, in order to promote the government, producers, distributors, Consumers and other benefit individuals participate in the construction of circular economy.

Logically, if the producer is required to be responsible for the environmental impact of the whole life cycle of his product and to design a good incentive mechanism, then the rational producer has the motivation to start from the source of the product design to reduce the end disposal cost. Therefore, EPR is actually an incentive and constraint mechanism, which attempts to control waste effectively at

the source stage of the product life cycle-product design stage-by implementing environmental governance in the downstream stage of the product life cycle. Building this "feedback loop" from downstream to upstream is at the heart of the EPR principle as distinct from simple waste recovery behavior.

3. The Responsibility Content of EPR System

One of the important characteristics of EPR system is that the physical financial responsibility of waste disposal which was borne by the government partially or wholly transfers to the upstream producer. Therefore, the scope of producer's specific responsibility under EPR system is much different from that of producer's traditional responsibility without EPR system. Huang compared the differences between those with EPR and those with no EPR related responsibilities, as shown in Table 1. Under the traditional scope of responsibility, the producer is responsible only for the stage of production of the product, shift responsibility to the central and local governments. see Table 1.

Table 1. Scope of responsibility with EPR and no EPR

Product life cycle	Production stages	End of life phase
Responsibility content	1. Prevention and management of environmental pollution during production; Economic and legal liability for the rational management of industrial waste.	Economic, legal, environmental and other specific responsibilities related to the management of discarded products
Traditional responsibility Division without EPR	Producer responsibility	Government responsibility
Division of responsibilities under EPR	Producer responsibility	Producer responsibility

4. Specific Content of Producer Responsibility Under EPR System

In Thomas's EPR, producer responsibility is divided into five basic types, namely product responsibility, economic responsibility, material responsibility, information responsibility, ownership responsibility, and the EPR model is established, as shown in figure 1. In its Guide to the Government's implementation of EPR, OECD follows the five types of responsibilities proposed by Thomas, but it believes that as long as they are material and economic, they should include: see Fig. 1.

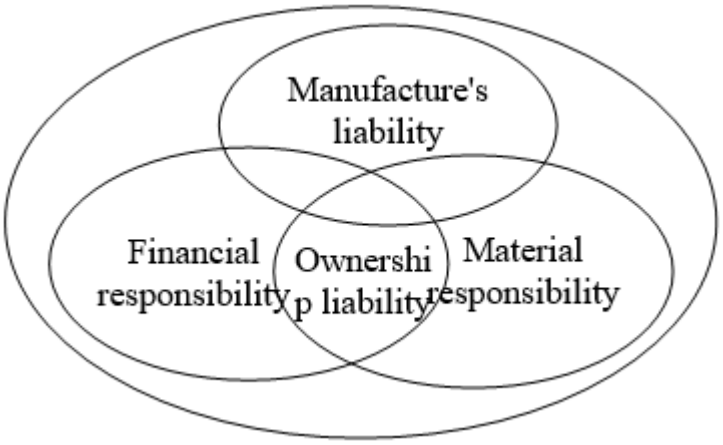

Fig. 1 EPR model of Thomas

4.1 Page Numbers.

①Material responsibility producer's direct or indirect product material management responsibility at the post-consumption stage after the product's use period.

②Economic responsibility or financial responsibility producer's waste at the stage of product use Full or partial responsibility for management costs, Including product recovery, classification and disposal.

4.2 Other Elements of Responsibility

①Information responsibility in different life cycles of a product, the producer is responsible for providing information about the product and its effects, such as environmental labelling, energy information or noise, etc.

②the producer of product liability is liable for the proven environmental or safety damage caused by the product, which exists not only in the stage of product use, but also in the stage of final disposal of the product.

③in the whole life cycle of the product, the producer only sells the right to use the product, retains the ownership of the product, and takes full responsibility for the product produced and sold.

5. The Theoretical Basis of the Extended System of Producer Responsibility

5.1 Product Life Cycle Theory

Raymond Vernon, a professor at Harvard University in the United States, believes that the design, manufacture, use and recycling of products are regarded as a complete life process, and that products can have a negative impact on the environment at different stages of the life process. At this point, there should be a subject to take responsibility for these environmental impacts. By the end of the 1870s, Coca-Cola, the world's largest beverage manufacturer, had taken the lead in adopting life-cycle analysis methods and applying them to the comparative analysis of raw materials for different types of beverage packaging. And assess the possible adverse effects of emissions of these raw materials into the environment. In contrast, the research of product life cycle theory in China is still in the exploratory stage, both theoretical and practical research are relatively simple. However, from the introduction of a series of policies, we can see that the theory of product life cycle is being applied step by step in our country. For example, China has established a perfect responsibility system for environmental pollution of chemicals for life, in order to promote the production enterprises to shoulder their due responsibilities.

5.2 Circular Economy Theory

Circular economy is an effective combination of social and economic development and natural environment protection in China to achieve a win-win situation. "changing negative product terminal pollution control into active product management represents the advanced economic development model." Under the requirement of an extended system of producer responsibility, the producer must be held responsible for the environmental impact of the product, and under this pressure, the producer is bound to maximize the efficiency of the use of energy and raw materials, Maximize recycling of products you produce. In the end, the exploitation of natural resources will decrease, the pressure of resource depletion will be reduced, and the environmental impact will be reduced, and the natural resources will be further protected. Therefore, the extended system of producer responsibility is essentially consistent with the basic principles of circular economy.

5.3 Theory of Environmental Rights

"The so-called right to the environment means that every citizen has the right to live in a good environment, which is inviolable." The environmental rights enjoyed by citizens are innate. Any citizen has the right to protest when his environmental rights are violated, and the law should provide

protection. The core of the extended system of producer responsibility is to emphasize the responsibility of producers for the production, use and abandonment of products, which is conducive to the protection of citizens' equal environmental rights objectively.

Although recycling reverse logistics has been paid more and more attention by many enterprises and scholars in recent years, for most enterprises, it is neglected by managers for a long time. Lack of objective conditions and motivation for recycling reverse logistics activities. Therefore, in order to promote enterprises to carry out good recycling reverse logistics activities, alleviate the great pressure on the environment, need to have relevant systems to ensure that, in recent years, the environmental economists put forward by the EPR system can make up for the shortcomings in this respect. The extended producer responsibility system is a main system to improve the environmental performance of the product system based on the modern environmental management principle. It requires the producer not only to be responsible for the environmental pollution produced in the production process. Moreover, it is responsible for the environmental impact of the product in the whole life cycle, so as to realize the recycling of resources and environmental protection. It can be seen that EPR system will force enterprises to implement reverse logistics activities of product recovery more actively or passively, so as to achieve the goal of circular economy.

The EPR working group has made important contributions to the study of the theoretical system of EPR. It has published two monographs on EPR, one is "Extended producer responsiveness: a guidance manual for governments" (2001), and the specific contents of EPR system are systematically introduced. To serve as a reference manual for the implementation of the EPR system in other countries; Another "Economic aspects of extended producer responsibility" (2004), mainly introduces the objectives of the EPR system and the implementation of the EPR system implementation of the relevant evaluation of the implementation of the system, at the same time put forward the implementation of the EPR system of technological innovation; Reid Thomas (2002) points out that countries should trust the EPR system, but at the same time points out that each country should carry out relevant argumentation according to the actual situation of the country when adopting this system. (Reid Thomas (and Roland (2004) analyzes how Europe should formulate the relevant EPR system; The Australian Environmental Organization (2004) demonstrated the content of the EPR system and the feasibility of its implementation in Australia, and finally concluded that the EPR system could be implemented in the western part of Australia.

6. Present Situation of Implementing EPR System in China

Because our country has long paid less attention to environmental protection, we can see in legislation that the foundation of environmental legislation in China is relatively weak. In this case, the study of extended producer responsibility system in China lags behind that of developed countries such as Germany and the United States. In recent years, due to more and more serious environmental pollution, our country gradually began to focus on environmental protection, and then the extended system of producer responsibility gradually entered the public view. Huang Yi-wang and Ji Guojun studied how manufacturers make decisions on green design and production of their products under the constraints of environmental policies such as the upstream epr policy and the downstream Pigou tax collection. Liu Jian and Zeng Jianfeng studied the effects of levy and compensation policy on the operation strategy and profit recovery of reverse supply chain of household appliances. Wee and others analyzed the effects of sales price inventory cost and recovery rate on the reverse supply chain model of electronic products. From the supply chain level, Liu Huihui found that replacing the old with the new can effectively help the production and sales enterprises to improve the competitiveness of recycling, and the amount of the recovery of the production and sales enterprises is positively related to the total profits of the whole supply chain on the new and old products.

Although there is no explicit extended system of producer responsibility in China, it has been reflected in relevant laws and regulations. For example, Article 17 of the Law on the Prevention and Control of

Environmental pollution of solid wastes, promulgated in 1995, stipulates that "producers, sellers and users of products shall, in accordance with relevant regulations of the State, recycle and utilize, for example, packaging and containers of products that can be recycled", The revised law has been implemented since April 1, 2005, in which the extended responsibility of the producer is clearly stipulated, and the Regulation on the Recycling of end-of-life vehicles, which was formulated and implemented in June 2001, The state exercises special industry administration over scrap auto recycling industry, and applies qualification determination system to scrap car recycling enterprises. Article 16 of the draft of the regulations on pollution Control and Management of Electronic Information products issued by the Ministry of Information Industry at the end of 2003 stipulates that "the producer shall bear the relevant responsibility for the recovery, disposal and reuse of the discarded products". In addition, at the "National Workshop on Industrial Standards for extended producer responsibility system and Technology Policy on Recycling and Comprehensive benefits of Electronic waste", held in April 2004, The extended system of producer responsibility in China is specially discussed. The establishment of the Management measures for Recycling and Utilization of used and used Household Appliances and Electronic products has also been completed and promulgated and implemented in 2005. However, the implementation of our enterprises is not optimistic. According to statistics, at present, there are 31.5 billion TV sets, 11.3 billion refrigerators and 11.7 billion washing machines in our country. Most of these electrical appliances entered the home in the middle and late 1980s, according to the service life of 10 to 15 years. In the near future, China will enter the peak period of renewal of used household appliances. In addition, there were only 1 million mobile phone users in China in 1991. By the end of September 2016, the average number of mobile phones held in China was 96 units per 100 people. Based on an average of 3 years of service per mobile phone, there are as many as 150 million mobile phones that will be scrapped each year in China. With mobile phone accessories and batteries generating about 1 million tons of e-waste, e-waste is growing 4.5 times faster than normal waste. However, China has been actively exploring before establishing and perfecting the extended producer responsibility system. On January 7, 2004, with the approval of the State Council, the National Development and Reform Commission decided that Zhejiang Province, Qingdao is a pilot province in the construction of a national recycling system for used household appliances and electronic products, which aims to establish a standardized recycling system for used household appliances and electronic products. Qingdao takes Haier and other enterprises as the pilot, adopts the "professional product recovery system" model, and Zhejiang Province adopts the "common product recovery system" model to set up a unified processing center. In December 2016, the General Office of the State Council issued the "Plan for the implementation of the extended producer responsibility system" (hereinafter referred to as the "EPR implementation Plan"), which will be fully deployed to build an extended system of producer responsibility in China, which will be able to promote production. The implementation Plan of EPR puts forward that by 2020, the relevant policy system of the extended producer responsibility system will be initially formed, the ecological design of products has made great progress, and the standard recovery and recycling efficiency of abandoned products of key varieties have reached an average of 40 percent. By 2025, the laws and regulations related to the extended producer responsibility system were basically perfect, and the ecological design of products was widely implemented. The proportion of recycled raw materials for key products reaches 20%, and the average recovery and recycling utilization ratio of discarded products reaches 50%. The "EPR implementation Plan" is the top design of advanced production and life mode, and is a major measure to speed up the construction of ecological civilization.

7. Conclusion

Although the extended system of producer responsibility is not too late in our country, due to the lack of attention to environmental legislation and the weak awareness of environmental protection, our environmental legislation has always been in a weak state. So the system has not been fully implemented in China. The extended system of producer responsibility in developed countries in

Europe and the United States has basically achieved good development results in their own countries and has a positive effect on the prevention and control of environmental pollution and the protection of the ecological environment. At present, the ecological environment situation of our country is grim, the environmental pollution events occur frequently, it is urgent to carry out the extended system of producer responsibility in an all-round way. At this time, China can learn from the advanced experience of foreign countries, perfect the extended system of producer responsibility and vigorously develop circular economy. To solve the problem of pollution of solid waste is beneficial to the construction of resource saving and environment-friendly society in our country. With China gradually began to attach importance to environmental legislation, a series of laws have been issued, and more practical experience has been accumulated, the conditions for the establishment of a perfect extended producer responsibility system in China have gradually matured. The author has made a detailed statement in the main body of the reasons such as the imperfect legislative system, the narrow scope of the implementation object and the poor maneuverability. At the same time, the author has made a preliminary discussion on these problems. However, the difficulty of establishing a perfect extended system of producer responsibility may not be just the part proposed by the author.With the development of practice and exploration in China, with the participation of scholars and ordinary people, the extended system of producer responsibility in China will make good progress in the near future.

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