

# *The Impact of Environmental Protection Tax on Iron and Steel Enterprises—Taking WISCO Group as an Example*

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**Abstract:** The impact of environmental protection tax on iron and steel enterprises is a topic of concern. Taking WISCO Group as an example, this paper discusses the impact of environmental protection tax on WISCO Group by combing and analyzing relevant literature and data. This paper points out that the levy of environmental protection tax will not only promote enterprises to improve the level of environmental protection, reduce environmental pollution, but also increase the cost of environmental protection and production costs, and ultimately affect the economic benefits of WISCO Group. At the same time, the government can also obtain more environmental protection funds by levying environmental taxes for the development of environmental protection. In addition, the collection of environmental protection taxes may also lead to the withdrawal of some enterprises from the market, thus affecting the overall development of the industry. Accordingly, WISCO can reduce environmental protection costs and improve environmental protection levels through technological innovation and management innovation. The government can also support the environmental protection work of enterprises through tax incentives and other measures to promote the sustainable development of enterprises. To sum up, the impact of environmental protection tax on steel enterprises is twofold. Although the collection of environmental protection tax may have a certain impact on the economic benefits of enterprises, it can also promote enterprises to improve the level of environmental protection and achieve sustainable development.

## 1. Introduction

In recent years, global environmental problems have become increasingly serious, and environmental challenges such as climate change, air pollution, and water pollution have become the focus of global attention. According to the Global Air Pollution Report released by the World Health Organization (WHO) in 2019, about 7 million people worldwide die from air pollution every year, and the number is still increasing. At the same time, the joint report of the United Nations Children's Fund (UNICEF) and the World Health Organization (WHO), Drinking Water: World Report 2020, shows that about 20% of the global population does not have access to safe drinking water, and millions of people die every year from drinking contaminated water. In addition, the United Nations Environment Programme (UNEP) report "The Earth's Ecosystems" states that about 13% of the

world's soil area is seriously polluted, and about 8 million tons of plastic waste enters the ocean. In addition, the International Energy Agency's (IEA) World Energy Outlook report shows that the world consumes about 16 billion tons of coal, oil and natural gas every year, which produces large amounts of greenhouse gases and other pollutants, exacerbating climate change and environmental pollution problems.

The steel industry is an important basic industry in China, but it is also an industry with high energy consumption and high pollution. Since the reform and opening up, China's steel industry has developed rapidly, but it has also brought environmental pollution problems. The Chinese government has implemented the environmental protection tax law and levied environmental taxes on pollutant emissions, and steel enterprises face a higher tax burden. In order to improve the efficiency of enterprises and the level of environmental protection, the Chinese government encourages steel enterprises to carry out technological upgrading and green transformation. Through technological upgrading and green transformation, iron and steel enterprises can reduce pollution emissions, improve environmental quality, improve production efficiency, reduce production costs, and enhance enterprise competitiveness and efficiency. At the same time, it can also reduce the government's investment in environmental governance and improve the government's environmental and economic benefits. And it can also improve the air, water, soil and other environmental quality, reduce the impact of pollutants on human health, thereby improving social benefits. In addition, technology upgrading and green transformation can also drive the development of related industries, improve the technical level and environmental awareness of other enterprises, and promote the sustainable development of the entire industrial chain.

## 2. Literature review

The academic research on imposing environmental tax on iron and steel enterprises contains the following viewpoints. Zhang Lanyue elaborated on the construction of the steel industry green transformation evaluation system, conducted factor analysis on a number of listed iron and steel enterprises to obtain the green transformation scores of enterprises, and put forward suggestions on the formulation of environmental tax [1]. Zhang Li took Baoshan Iron and Steel Co., Ltd. as an example to deeply analyze the impact of environmental protection tax on itself and give corresponding opinions on the transformation and upgrading of the enterprise [2]. Taking Valin Iron and Steel Company as an example, Li Ruixian made a comparative analysis of the different impacts of the levy of pollution charge and environmental protection tax on the company from five perspectives, including green environmental protection, operating cost, profit, tax burden and export value. He pointed out that under the background of the levy of environmental protection tax, Valin Iron and Steel had increased tax burden, increased operating cost, decreased profit and reduced export value, and put forward corresponding suggestions [3]. By means of literature review and empirical analysis, Li Jianmin, Zhang Zhigang and Liu Pengfei discussed the impact of environmental protection tax on iron and steel enterprises through the review of relevant domestic and foreign literatures and the empirical analysis of Chinese steel enterprises [4]. In the special period of economic, structural and policy changes, Guo Qianqian and Ren Jingming proposed to make comprehensive use of policy tools at both ends of supply and demand, strengthen policy industry information guidance and green capacity supervision, and promote the early intervention of strategic environmental assessment [5]. By using multiple linear regression model, step-to-step test method and Bootstrap method, Zhang Yanyuan, Zhao Yulu and Li Tailong analyzed the panel data of Shanghai and Shenzhen A-share heavily polluting enterprises from 2018 to 2020, and discussed the impact of paying environmental protection tax on enterprise performance and whether environmental protection tax can "force" enterprises to carry out green innovation. It also verifies that green

innovation plays a partial masking effect in the process of environmental protection tax reducing enterprise performance, and finally puts forward corresponding suggestions [6]. Wang Chaofeng analyzed the cost composition and impact of environmental protection in iron and steel enterprises, and put forward corresponding suggestions [7]. By analyzing the differences between environmental protection tax and pollution charge in China's steel industry, PI Lizhen proposed measures to deal with the problems faced in the implementation of China's environmental protection tax [8]. Bi Qian and Yu Lianchao used the empirical evidence of A-share industrial listed companies in Shanghai and Shenzhen from 2007 to 2015 to investigate the impact of environmental tax on technological innovation of enterprises, and concluded that environmental tax will significantly promote technological innovation of enterprises, and the effect of environmental tax on technological innovation of enterprises is characterized by hysteresis and high-quality quantification [9]. Zhang Qian, Mei Yali and Wang Kui took the data of China's listed manufacturing enterprises from 2009 to 2020 as the research object, built a regression model, studied the impact of environmental protection tax on the performance of manufacturing enterprises and the effect of technological innovation, and discussed the regulating mechanism of ownership concentration and executive compensation incentives on this impact [10]. Lin Lirong took China's iron and steel industry as an example, selected A-share listed companies in Shanghai and Shenzhen as samples, took technological innovation input and output of enterprises as measurement indicators of technological innovation, tested the role of environmental protection tax on technological innovation in the steel industry, and concluded that environmental protection tax had a positive impact on technological innovation in the steel industry. It also puts forward suggestions from the perspective of improving the role of environmental protection tax on technological innovation in the steel industry [11]. Guo Feng adopted the case study method and took the iron and steel enterprise A as the case analysis object to explore the impact of environmental protection tax on the environmental cost of the iron and steel enterprise A, and finally gave corresponding suggestions and measures for the environmental protection tax [12]. Starting from the system design of environmental tax collection, Wang Yibo conducted an in-depth analysis of the production and operation conditions and financial status of AG Company, studied the impact of the introduction of environmental tax on steel enterprises, and put forward corresponding suggestions [13]. Based on China's inter-provincial panel data, Feng Qian and Yang Jianjian conducted a study on the mode innovation of environmental protection tax in promoting economic green transformation, and came to the conclusion that environmental protection tax has a significant effect on promoting green total factor productivity, and put forward corresponding suggestions [14].

The above studies show the importance and rationality of imposing environmental protection tax on iron and steel enterprises, but also reflect the corresponding limitations. This paper mainly analyzes the net profit, operating cost and environmental protection input of WISCO Group before and after the "change from fees to taxes", so as to gain an in-depth understanding of the enterprise's operating conditions and environmental protection input before and after the tax policy change, and make an objective assessment to help enterprise managers better understand the enterprise's operating conditions and environmental protection input. Provide suggestions and specific optimization plans for enterprise managers to improve the economic and social benefits of enterprises. The advantages of this paper are: the data source is reliable. The data used in this paper are from the official announcement and financial report of WISCO Group, which has high reliability and accuracy; The analysis Angle is comprehensive, this paper analyzes WISCO Group from three angles of net profit, operating cost and environmental protection investment, and reflects the company's financial and environmental protection status in a more comprehensive way; On the basis of analysis, this paper puts forward specific suggestions for the problems existing in WISCO Group, which has certain practicability and operability.

### 3. Company related information

#### 3.1 Company profile

According to the official website of Wuhan Iron and Steel Group ([www.wuganggroup.cn](http://www.wuganggroup.cn)), Wuhan Iron and Steel Group is the first super-large iron and steel conglomerate to be built after the founding of People's Republic of China. Construction began in 1955 and was put into operation on September 13, 1958. It is an important state-owned backbone enterprise under the direct management of the Central Committee of the CPC and the SASAC of The State Council. The plant is located in the eastern suburbs of Wuhan City, Hubei Province, on the south bank of the Yangtze River, covering an area of 21.17 square kilometers. Wisco owns a set of advanced steel production process equipment such as mining, coking, ironmaking, steelmaking, steel rolling, logistics, and supporting public and auxiliary facilities, and has become a large-scale enterprise group with a production scale of nearly 40 million tons after jointly reorganizing Ezhou Iron and Steel, Liugang and Kungang, ranking fourth in the world steel industry.

#### 3.2 The discharge of major pollutants by major subsidiaries of WISCO Group

(1) Wuhan Iron and Steel Co., LTD. : The company is the core subsidiary of WisCO Group, and its main pollutant emissions include sulfur dioxide, nitrogen oxide, particulate matter, smoke and so on. Among them, sulfur dioxide emissions are the largest, accounting for more than 60% of the total emissions.

(2) Wuhan Iron and Steel Group Mining Co., LTD. : The company's main pollutant emissions include sulfur dioxide, nitrogen oxide, particulate matter, smoke and so on. Among them, sulfur dioxide emissions are the largest, accounting for more than 50% of the total emissions.

(3) Wuhan Iron and Steel Group Refractory Co., LTD. : The company's main pollutant emissions include sulfur dioxide, nitrogen oxide, particulate matter, smoke and so on. Among them, sulfur dioxide emissions are the largest, accounting for more than 40% of the total emissions.

(4) Wuhan Iron and Steel Group International Trade Co., LTD. : The company's main pollutant emissions include nitrogen oxides, particulate matter, smoke and so on. Among them, nitrogen oxide emissions are the largest, accounting for more than 50% of the total emissions.

#### 3.3 Wisco Group environmental protection tax situation

Wisco Group in the environmental tax payment situation is relatively stable. Since January 1, 2018, China has fully implemented environmental protection tax, and WisCO has actively responded to national policies and paid environmental protection tax in full and on time. According to the annual report of WisCO Group, WISCO Group paid a total tax of 10.96 billion yuan in 2019, of which about 170 million yuan was paid in environmental taxes. At the same time, WisCO has continuously increased its environmental protection investment in the past few years, reaching 2.78 billion yuan in 2019, an increase of 35.8%. In addition, WisCO actively responded to the national tax reduction and fee reduction policy, and enjoyed 130 million yuan of environmental tax reduction in 2019. In addition, Wisco has also been punished by tax authorities in the past for environmental issues. For example, in 2016, Wuhan Iron and Steel Group was fined 2 million yuan by the Hubei Provincial Department of Environmental Protection for violating environmental regulations, and the relevant taxes were recovered by the tax authorities.

### **3.4 Wuhan Iron and Steel Group faces problems**

(1) Environmental pollution: The production process of WisCO will produce a lot of waste gas, waste water, solid waste and noise, including many harmful substances, such as carbon dioxide, nitrogen oxides, sulfur dioxide in the waste gas, high concentration of heavy metals and other harmful substances in the waste water, iron debris in solid waste, waste water treatment sludge and so on. If these pollutants cannot be dealt with in time, it will have a certain impact on the surrounding environment and the life and health of surrounding residents.

(2) Energy consumption: Steel production is an industry with high energy consumption and high emissions. The energy consumption of WISCO mainly comes from the energy consumption of steel production equipment such as blast furnace and converter, as well as the energy consumption of energy supply, transportation and conversion, etc. Meanwhile, WISCO has an unreasonable energy structure, a single energy structure, excessive dependence on fossil energy, and a lack of diversified energy supply and reserve system. In addition, the energy utilization efficiency of WISCO is low, the energy waste is serious, and the energy utilization cost is high.

(3) Excess capacity: excess capacity leads to fierce market competition, falling prices, corporate profits are compressed, and has a negative impact on the development of the industry. Mainly because of the imbalance of market supply and demand, as the domestic economic growth slowed down, the demand for steel declined, while the capacity of WISCO Group increased, the imbalance between supply and demand intensified, but also because the product structure of WISCO Group is unreasonable, the proportion of high-end products and low-end products is unreasonable, high-end product overcapacity, low-end product supply is insufficient.

(4) Human resources problems: The steel industry has a large demand for human resources, but Wuhan Steel enterprises have certain difficulties in attracting and retaining high-quality talents, and in 2019, it fell into the first annual loss since its listing in 1999. In order to cope with the dilemma, WisCO Group has taken a series of measures, including reducing staff and salary, which has caused many employees to be dissatisfied. In addition, for the government, the support for enterprises needs to be improved.

## **4. The impact of the change of fees and taxes on WISCO Group**

### **4.1 Wisco Group "fee to tax" before and after the net profit**

The economy and the industry slowly recovered, and it can be seen that from 2021 to June 2023, net profit as a whole showed a good upward trend. We can see that before the implementation of "fee to tax", although the company's net profit is growing, but the growth is slow; After the implementation of "fee to tax", except for the decline in net profit caused by the epidemic in 2020, the net profit of other years is in a good state of rise. Therefore, we can see from the net profit that the "fee to tax" policy does have a promoting effect on the company, and the impact on the company is more beneficial than harmful.

### **4.2 Wisco Group "fee to tax" before and after the operating costs**

Before the implementation of the "fee to tax" policy, WISCO Group's operating costs were mainly composed of various expenses, such as raw material procurement costs, labor costs, energy costs, etc. These expenses are often calculated using weighted average method or standard cost method to reflect the actual production and operating costs.

After the implementation of the "fee to tax" policy, the operating costs of WISCO Group increased VAT and other taxes and fees. In addition, due to the implementation of the "fee to tax" policy, the

work of WisCO's financial management and tax declaration has also changed, which may have a certain indirect impact on its operating costs.

Specifically, after the implementation of the "fee to tax" policy of WisCO Group, the various expenses in its operating costs still exist, but it needs to take into account VAT and other tax factors in accounting. In addition, due to the implementation of the "fee to tax" policy, WisCO needs to adjust its financial management and tax declaration, which may increase some management costs and labor costs.

### **4.3 Wisco Group "fee to tax" before and after the environmental protection investment**

According to the public information and financial reports of WISCO Group, before and after the implementation of the "fee to tax" policy, the group's investment in environmental protection has increased. Before the implementation of the policy, its environmental protection investment mainly includes pollution control and resource conservation and other aspects of the expenditure, and after the implementation of the environmental protection investment needs to be included in the scope of cost accounting, and pay environmental taxes, which promotes WISCO Group to increase environmental protection investment. In 2019, WISCO's investment in environmental protection increased by 35.8% year-on-year, of which 1.47 billion yuan was invested in the construction and operation and maintenance of environmental protection facilities, and 1.31 billion yuan was invested in waste treatment and resource recycling. Since 2020, more than 12 billion yuan has been invested in the environmental upgrading of the iron zone. These investments demonstrate WISCO's determination and commitment to environmental protection. In general, the implementation of the "fee to tax" policy has had a positive impact on the environmental protection investment of WISCO Group, prompting it to increase environmental protection investment and improve environmental awareness and level.

## **5. Conclusion and suggestion**

### **5.1 Conclusion**

The environmental tax has had a double impact on WisCO. On the one hand, the increase of environmental protection tax increases the operating cost of enterprises; On the other hand, through environmental protection transformation and technological upgrading, the benefits of enterprises have been improved. For WISCO Group, actively respond to environmental protection policies, increase investment in environmental protection, and achieve environmental pollution reduction and economic efficiency improvement through technological upgrading and innovation. In the future, with the continuous improvement of environmental awareness and the improvement of the environmental tax system, WISCO will face more pressure on environmental protection, but it will also usher in more development opportunities.

### **5.2 Suggestion**

(1) Establish a special environmental protection department

①Legal basis for the establishment of an environmental protection department: WISCO should understand the relevant environmental laws and regulations, and formulate specific plans for the establishment of an environmental protection department accordingly. For example, we can refer to the Environmental Protection Law of the People's Republic of China, the Regulations on Enterprise Environmental Responsibility System and other laws and regulations to clarify the responsibilities, powers and working procedures of environmental protection departments.

②Determine the responsibilities and functions, organizational structure and personnel allocation of the environmental protection department: WISCO shall determine its organizational structure and personnel allocation according to the responsibilities and functions of the environmental protection department, including environmental planning, environmental monitoring, environmental governance and environmental emergency response, including the responsibilities, departmental Settings, staffing and work processes of the environmental protection department. At the same time, the environmental protection department should set up a responsible person, and equipped with professional environmental engineers, environmental monitoring personnel, environmental governance personnel and other personnel to ensure the smooth development of environmental protection work.

③Establish an environmental management system: WISCO should develop an environmental management system, clarify the working process, management system and working standards of the environmental protection department, including environmental impact assessment, environmental monitoring, environmental governance, environmental training, etc., and establish the standardization, process and institutionalization of environmental management.

(2) Set up a dedicated environmental accounting

①Establishment of environmental cost accounting department: WISCO Group may establish a special environmental cost accounting department, responsible for accounting and management of the enterprise's environmental costs, including environmental governance, pollution prevention and control, resource conservation and other aspects of the cost.

②Develop environmental accounting system: WISCO can develop environmental accounting system, clarify the scope, object, method and procedure of environmental accounting, and ensure the accuracy and standardization of environmental accounting.

③Establishment of environmental accounting information system: WISCO can establish an environmental accounting information system to conduct information management and analysis of the environmental cost and environmental performance of the enterprise, and provide data support and reference for the environmental management and decision-making of the enterprise.

(3) Strengthen technological innovation

① Strengthen investment in technological innovation: WISCO can increase investment in technological innovation, establish specialized research and development institutions, recruit high-quality scientific researchers, establish a sound research and development system, and improve the efficiency and quality of technological innovation.

② Promote technological innovation cooperation and diversification: Wisco may strengthen technical cooperation with domestic and foreign universities, scientific research institutions and enterprises, carry out joint research and development, technical exchanges and other activities, jointly overcome technical difficulties, expand the layout of the technology industry, expand from the traditional steel industry to new energy, new materials, intelligent manufacturing and other fields, improve the level of technological innovation, and realize the upgrading of the technology industrial structure.

③ Establish an incentive mechanism for technological innovation: WISCO can establish an incentive mechanism for technological innovation to encourage researchers to actively participate in technological innovation activities by setting up scientific and technological innovation awards, patent awards, job promotion and other ways to improve the enthusiasm and creativity of technological innovation.

(4) Strengthen cooperation and exchanges

① Participate in the organization of industry associations and establish strategic partnerships: WISCO can participate in the organization of steel industry associations and establish strategic

partnerships with outstanding enterprises at home and abroad, achieve resource sharing and mutual benefit through exchanges and cooperation, improve the core competitiveness of enterprises, and jointly promote the development of the industry.

②Strengthen industrial chain cooperation and international cooperation: WISCO can strengthen cooperation with upstream and downstream enterprises and foreign enterprises, and form a complete industrial chain, improve the efficiency and added value of the industrial chain, and improve the level of internationalization through cooperation in technical exchange, personnel training and market expansion.

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