Mechanism Analysis and Countermeasures on Environmental Problem Caused by Furniture Industry Transfer

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Abstract. This paper described the environmental problems caused by the furniture industry transfer. Through the mechanism analysis on the cause of environmental problems, it put forward the countermeasures to improve.

1. Furniture industry migration and its environmental problems
Furniture industry is an important part of China’s light industry and an important industry related to national economy and people's livelihood. In the 1980s, owing to the inexpensive labor force and land in China, the world furniture manufacturing industry began to shift to China. Japanese and Italian furniture enterprises set up factories in China one after another. Almost all Hong Kong furniture industry moved to the mainland, mainly in Shenzhen, Dongguan and other places. Since the 1990s, Taiwan furniture enterprises moved to Shenzhen, Dongguan, Shunde and other places. More than 500 furniture factories have been established in the Pearl River Delta. There are more than 250 Taiwan-funded furniture enterprises in Dongguan alone. They are all large furniture export enterprises, some of them are multinational furniture groups, thus achieving the two famous furniture production bases of Shenzhen and Dongguan.

In recent years, with the shortage of raw materials, the increase of labor costs and the influence of government policies, furniture enterprises in the Yangtze River Delta and Pearl River Delta coastal areas have begun to transfer to the suburbs of cities, the central and western regions and inland cities. Industrial transfer plays an important role in optimizing industrial structure, realizing industrial restructuring and economic leapfrog development, and is also an urgent development and rise. For the central and western regions, the great transfer of furniture industry in the eastern coastal areas is undoubtedly a huge and attractive cake[1]. According to incomplete statistics, there are more than 30 furniture (household) industrial parks (bases) over 10,000 mu (1 Mu approximately equal to 666.7 m2) that have been built or planned throughout the country at present and more than 100 sites in the area of 300 mu to 900 mu, mainly distributed in Jiangsu, Anhui, Henan, Hebei, Hubei, Sichuan, Yunnan, Shanxi and other central and western provinces [2].

However, the transfer of furniture industry has brought many environmental problems while promoting regional economic growth, and the generation of environmental problems is closely related to the way of industrial transfer, as follows:

- Environmental pollution has shifted from the eastern region to the central and western regions. Some high-polluting furniture enterprises in eastern provinces such as Jiangsu, Zhejiang and Guangdong have settled in central and western areas such as Anhui, Sichuan and Guizhou, which has brought about greater environmental pollution.
• In the same region, developed areas transfer pollution to less developed areas. Taking Guangdong Province as an example, furniture enterprises in the coastal areas of the Pearl River Delta are transferring to the eastern and western wings of the lower labor force and more abundant raw materials, as well as to the mountainous areas of northern Guangdong and the mainland.

• Environmental pollution migrates from the city to the countryside. Industrial pollution relocation has been practised in major cities all over the country. Taking Beijing as an example, furniture enterprises have been closed down and moved out. In order to coordinate with the relocation of furniture enterprises in Beijing in 2014, furniture industry parks have been specially planned in Lutai Economic Development Zone of Tangshan, Hebei Province, and Fengnan District to undertake the transfer of furniture industry [3].

Many furniture enterprises have moved from the eastern coast to the central and western regions, from cities to rural areas, along with these processes, and they have also transferred pollution to the central and western regions and rural areas. Although the environmental quality of the eastern region has improved, the environment of the central and western regions has deteriorated further, and pollution has destroyed the environment of our country in a wider range, thus possibly forming a pollution situation from point to point and blooming in an all-round way.

On the other hand, the transfer of pollution damages the environmental rights of the transferred citizens and reduces the local environmental welfare. At the same time, the transfer of pollution transfers the social cost of environmental pollution to the transferred citizens, which is a very unfair act. In order to promote economic development, blindly reduce environmental standards, set up inappropriate preferential measures and attract foreign investment in underdeveloped areas, pollution-type furniture enterprises are not restricted in this process, and this idea of using environment for development is undoubtedly not advisable. Because of its concealment, pollution transfer causes harm and scope to local people, which is difficult for them to understand and imagine [3].

2. Analysis on the environmental problems of furniture industry migration
Based on the severe situation of environmental problems in the transfer of furniture industry in China, it is necessary to analyze the factors affecting the occurrence of this phenomenon, so as to solve this problem.

2.1. Differences in internalization of environmental cost between industrial transfer land and undertaking ground
Generally speaking, industrial transfer and investment are not the root cause of environmental problems. The root cause of environmental problems is that the environmental costs of economic activities have not been internalized or not all internalized because of the failure of market and government. Environmental cost refers to the sum of the costs needed to solve and compensate environmental pollution, ecological damage and resource loss in the process of production, transportation, use and recovery of products. The degree of internalization of environmental costs is bound to increase with the development of local social economy. However, due to the differences in resource enjoyment, economic development level and environmental standards, there are also great differences in the internalization of environmental costs in different regions, which is directly reflected in the gradient of environmental costs among regions.

Taking the treatment of volatile organic compounds (VOCs) as an example, the VOCs emissions from furniture production process mainly come from the painting process. In the furniture painting process, VOCs in coatings and diluents will be discharged into the workshop environment in the form of gases. Without effective collection and treatment of VOCs in workshop environment, VOCs will be discharged into the outside atmosphere, which is the cause of VOCs pollution in furniture manufacturing industry. In the actual production process, furniture manufacturers need to install collection facilities to collect VOCs, and then use terminal purification equipment to deal with VOCs. The cost of treatment is relatively high. At present, in the furniture industry, only a few furniture enterprises located in the eastern coastal developed areas collect VOCs, and some of them dispose and
re-discharge VOCs, while most of them release VOCs freely into the atmosphere. In addition, in order to reduce pollutant emissions, some furniture enterprises have begun to upgrade the production links, replacing traditional paints with water-based paints. But if the enterprise transforms from the traditional ordinary paint production line to the water-based paint production line, the production process and production equipment need to be reformed. For example, the water-based paint requires high drying conditions, and the enterprise needs to add drying equipment when spraying, so the change of production process will certainly raise the cost. Moreover, the long drying time of waterborne paint products and the reduction of production efficiency will also bring about the improvement of production costs. Obviously, when a furniture enterprise bears a higher environmental cost, and the ability of internalization of environmental cost is small, if the cost of transferring pollution through industrial transfer is small, the enterprise has the tendency of transferring pollution outward in order to maximize profits.

2.2. **Difference of environmental standards between industrial transfer land and undertaking ground**

The environmental standard is a standard that according to the requirement of human health, ecological balance and socio-economic development on environmental structure and state, on the basis of comprehensive consideration of national natural environmental characteristics, scientific and technological level and economic conditions, the proportion, layout, composition of various environmental factors and some technical requirements for environmental protection are limited. According to the level of pollution transfer, this difference includes not only the difference of international environmental standards but also the difference of domestic environmental standards[3].

**2.2.1. Differences in international environmental standards.** For the same economic activities, developed countries allow much smaller emissions of pollutants, while developed countries have higher restrictions on harmful substances contained in their products. Therefore, in order to obtain the same economic profit, the economic cost of engaging in the same economic activities in developed countries must be much higher. The huge price difference reduces the competitiveness of environmental pollution products. Therefore, in order to maximize profits, manufacturers in developed countries focus on developing countries, looking for new places of activity, and alleviating domestic environmental pressure. As a rising developing country, China is becoming the main area of pollution transfer in developed countries. It is through foreign investment that developed countries transfer many pollution-intensive industries to developing countries with low environmental standards, including China, so as to save costs. The lower environmental standards formulated by developing countries also provide an opportunity for developed countries to transfer pollution[3].

**2.2.2. Differences in domestic environmental standards.** Because of the different degree of regional economic development, even the environmental standards of different provinces and municipalities in China are quite different. China's environmental standards are divided into national and local levels. The national standards are universal. Therefore, in order to take care of the situation in all parts of the country, the national environmental standards formulated are inevitably lower for some developed areas. In view of these circumstances, the Environmental Protection Law and the Measures for the Administration of Environmental Protection Standards stipulate that provincial people's governments may formulate local environmental quality standards and local pollutant discharge standards for projects not specified in national standards. Since the reform and opening up, great progress has been made in eastern China. In order to maintain a certain environmental quality, environmental standards have been continuously improved. Most of the central and western regions still adopt national standards so far, so their environmental standards are lower than those of developed regions, which makes the production costs of products vary greatly in the east, central and western regions, which provides conditions for the westward migration of polluting enterprises in the east [3]. According to the requirement of Beijing Clean Air Action Plan for 2013-2017, Beijing plans to implement more than 100 technological renovation projects for air pollution control and environmental protection this
year. In particular, it will strictly control the emission of pollutants from the household industry, involving the treatment of volatile organic compounds, desulfurization, denitrification, dust removal and other aspects. Beijing Municipal Bureau of Quality and Technology Supervision issued a circular on soliciting opinions from Beijing local standard Air Pollutant Emission Standard for Wooden Furniture Manufacturing Industry at the end of September 2014. The new standard is called "the most stringent in history". In addition to stipulating air pollution emission concentration limits, detection and control requirements in the production process of wood furniture manufacturing industry, it also stipulates coatings in furniture production links. The nature, usage, production environment, production process and equipment are also specified in detail. Comparing the emission standards of air pollutants in wood furniture manufacturing industry in Anhui Province, only referring to the national standards, we can see the differences between the two places.

2.3. Lack of environmental supervision in the process of industrial transfer

Although the state has formulated many policies to strengthen environmental protection, the drive of economic interests in practice led to law-abiding. In order to attract investment, some local governments have opened the back door. Some transfer enterprises have promulgated environmental inspection qualified marks for their unqualified pollution emissions. Some products of industries are banned by the state, but they have relaxed investment access through various measures. It is precisely because of the inadequate implementation of existing environmental policies and environmental standards that further led to the transfer of pollution in the process of industrial transfer [3]. At present, many small and medium-sized furniture enterprises have environmental protection certificates such as China's excellent green environmental protection products and green environmental promotion products, but only a small number of enterprises can produce environmental protection inspection reports. In fact, many furniture enterprises pay directly for the environmental inspection qualified signs issued by the government or associations, and the lack of supervision of the relevant parts also causes consumers to buy confusion.

2.4. Differences in public awareness of environmental protection

Due to the underdeveloped economy, the underdeveloped areas, such as some central and western regions of China, are still in a state of half-food and clothing, and the public awareness of environmental protection is relatively weak compared with the citizens of big cities. In addition, the pollution transfer in furniture industry transfer is concealed, the public can not accurately understand the impact of pollution transfer on the environment and the harm to their health, so they can not correctly form a conscious sense of resistance to pollution enterprises and the transfer of pollution industry, and become the recipient of the results of pollution transfer without paying any attention[3]. The migration of furniture industry can bring visible direct economic benefits to less developed areas. People only see its positive effect on income increase for a moment, but ignore the environmental pollution it may cause. The last line of defense against pollution transfer is nothing. Although the method of pollution first and treatment later in developed areas has been proved to be extremely wrong by practice, the government and people in some less developed areas have not learned from it and are still repeating the old road.

3. Environmental problems and countermeasures of furniture industry migration

3.1. Improving the relevant domestic laws and regulations

China's laws and regulations on environmental pollution transfer have basically been in line with internationalization, and there are still many areas to be improved. Firstly, efforts should be made to build a legal system for furniture industry transfer and environmental sustainable development. This includes three main points: adjusting the existing laws and regulations, incorporating the coordinated development of economy and environment into the legislation of these laws and regulations, perfecting the law of environment and resources to establish a complete legal system consisting of
basic environmental law, individual substantive law and procedural law and paying attention to the
domestic legislation that links up with international environmental treaties and standards, so as to
promote the conformity of domestic law with international standards[3].
Secondly, in order to solve the problem of pollution transfer in industrial gradient transfer, we
should clearly stipulate the orientation of foreign investment and investment attraction in the law of
investment attraction and related regulations of investment attraction, and impose special restrictions
and strict supervision on direct investment in high-pollution and high-energy-consuming furniture
enterprises. Specific government regulation means are as follows: firstly, according to the overall
requirements of national environmental protection, publish the specific blacklist of pollution-intensive
furniture enterprises, and divide the investment projects into four categories according to the safety
level: encouragement, permission, restriction and prohibition. According to different classifications,
adopt corresponding countermeasures, strengthen the supervision and monitoring management of
projects that have been approved for construction and commissioning, and establish and follow up
with them. It will prevent their potential negative impact by tracking system and long-term
environmental impact archives[3].
Finally, the criteria for attracting foreign investment are further refined. Although some of the
pollution transfer has been prevented to a great extent by national laws, there is a lack of binding force
on furniture enterprises due to the difference of environmental standards between the eastern, central
and western regions of China, resulting in different product costs. There are no corresponding
regulations for potential major pollution risks, so we should improve the criteria for attracting
investment in all parts of China as soon as possible.

3.2. Establishment and perfection of green GDP accounting system by the government
Green GDP accounting is a part of green national economic accounting. It emphasizes deducting the
ecological environment cost after the current GDP, so it can reflect the real level of economic
development. Through green accounting, we can re-examine, measure and grasp our development path.
On the specific construction of green GDP accounting system, we can start with relatively simple and
easy-to-investigate indicators, such as public environmental quality assessment, air environmental
quality change, drinking water environmental quality change, forest cover growth rate or urban
greening rate, growth rate of environmental protection investment, number of mass environmental
appeal events, resource consumption of jurisdictions or competent departments, and other indicators as
well as departments. The implementation of environmental protection laws and regulations, etc., will
gradually improve the green GDP accounting system to cover all aspects of economic life [3].
Because of the technical and conceptual barriers, green GDP can not be introduced in a short time.
Before establishing a complete green accounting system, the feasible method is to increase the
environmental protection score in the existing evaluation system, restrain the impulse of local
excessive GDP growth, and urge local governments to consider environmental protection factors while
promoting economic development[1].

3.3. Supporting and encouraging enterprises to take the way of environmental technology reform
After the promulgation of pollution related standards in furniture industry, enterprises should rectify
according to the standards. If they do not meet the standards, they can only close down. In the future,
the emission standards of pollutants in furniture industry may be integrated into the whole country. At
that time, the Beijing-Tianjin-Hebei, Yangtze River Delta and Pearl River Delta regions will carry out
environmental protection technological reforms. It is only a temporary expediency to move the factory
site to Hebei and other cities. The fundamental solution is to carry out environmental protection
reforms. The government should improve and implement the policies and measures to support the
technological transformation of enterprises, innovate the mode of capital investment, strengthen
statistical monitoring and analysis, guide social investment and optimize the structure of industrial
investment.
3.4. Constructing rural environmental protection system

Our country's law guarantees citizens' environmental rights, but it does not explicitly stipulate citizens' environmental rights. In view of the current situation of furniture industry transfer, the state should clearly implement the basic content of rural residents' environmental rights. To narrow the gap between urban and rural areas in China's current legal system of environmental supervision, increase the openness and transparency of rural environmental information, mobilize the enthusiasm of farmers to participate in environmental supervision, and effectively and timely convert the original environmental data into environmental information understood by the rural public [4].

We will further improve the rural ecological compensation system and the environmental public interest litigation system. In the way of remedy for rural residents' environmental rights, we can set up corresponding remedies according to the characteristics of rural areas. For example, on the basis of the imperfect rural social security system, applying the environmental liability insurance system, also known as "green insurance", can transfer the risk of environmental pollution from enterprises to insurers, and farmers can get compensation in time. At the same time, special rural legal aid institutions can be established to improve the rural environmental legal aid system in China.

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