

Green Insurance Report (1)

Don't let the corporate
environmental pollution
liability insurance become invalid



SIP Lvse Jiangnan PECC

March 2021

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**Don't Let the Corporate Environmental Pollution Liability
Insurance Become Invalid**

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1. Background

Green insurance, also known as environmental pollution liability insurance, is an insurance policy that takes the liability for damage caused by pollution accidents to third parties as the subject matter^[1] and is a means of environmental risk management under market economy conditions.

Environmental pollution liability insurance originated in western developed countries and has been developed for half a century, and its system has been relatively mature. In the early stages of the development of environmental pollution liability insurance, the frequent occurrence of environmental pollution and the high cost of compensation imposed a huge burden on insurance companies. Initially, environmental pollution liability insurance only covers losses caused by sudden and accidental environmental pollution accidents. However, with the continuous improvement of the environmental pollution liability insurance system, many countries add the liability caused by accumulated and progressive pollution accidents to the sudden and accidental environmental accidents in order to meet the needs of different policyholders.^[2]

China's environmental pollution liability insurance started a little later than the developed countries in the West, because since the reform and opening up, the domestic economy has developed rapidly, but ecological degradation, resource scarcity, environmental pollution and other problems have come along and become increasingly serious, so in the 1990s, we began to pilot. Due to various constraints in China, the development was stagnant after 1996, but with the deepening of environmental pressure and social conflicts, a series of policies have been introduced since 2007 to encourage the development of green insurance. In December 2007, the former Ministry of Environmental Protection and the China Insurance Regulatory Commission jointly issued the Guiding Opinions on Environmental Pollution Liability Insurance, which officially started the piloting of green insurance in China. In 2013, two ministries and commissions jointly issued the "Guidance on the Piloting of Compulsory Liability Insurance for Environmental Pollution", which clarified the scope of pilot enterprises, insurance terms, and protection mechanisms for compulsory liability insurance for

environmental pollution, implying that compulsory piloting of environmental pollution liability insurance in high-risk environmental industries began.

2. Research significance and methodology

2.1 Significance of the study

The role of environmental pollution liability insurance as an environmental risk management tool is clear, mainly in terms of : (1) diversify business risk (2) reimburse pollution victims adequately, effectively and in time, resolving social contradictions; (3) supervise insured companies to strengthen daily environmental risk management through insurance clauses, such as insurance rates, deductibles, compensation limits and rescue costs. Although environmental pollution liability insurance has been developed in China for more than 30 years, the market recognition has yet to be improved. The Lvse Jiangnan Center for Public Environmental Concern Center (hereinafter referred to as "PECC") hopes that through the communication and feedback with the CBIRC and insurance companies, we can find out the current situation and problems of the development of environmental pollution liability insurance in China, propose corresponding solutions, and effectively promote the improvement and construction of the environmental pollution liability insurance system.

2.2 Methodology

Since 2014, national and local governments have been publishing on their websites the "List of Pilot Enterprises for Compulsory Liability Insurance for Environmental Pollution" or "List of Enterprises Participating in Liability Insurance for Environmental Pollution". PECC has compiled the environmental data of the insured or to-be-insured enterprises, and written to the insurance companies operating environmental pollution liability insurance in the enterprises' locations to understand the implementation and enforcement of environmental pollution liability insurance and the current status of the enterprises' insurance, helping the insurance companies identify the environmental risks of the insured enterprises, further enhancing the

enterprises' environmental social responsibility, and implementing the enterprises' pollution reduction work.

2.2.1 Implementation process

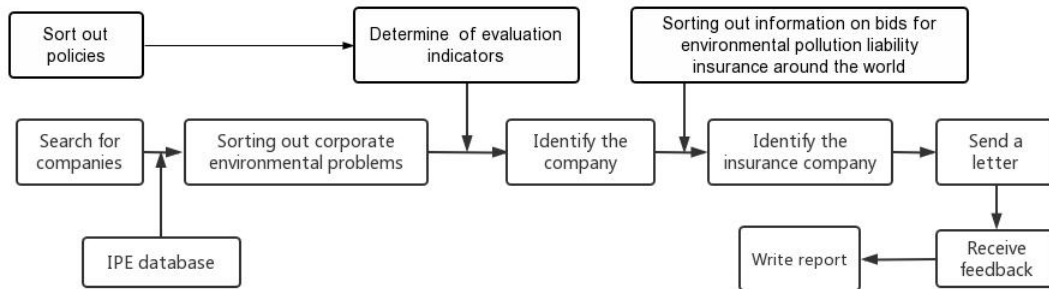


Figure 1: Flowchart of implementation

In the course of this report, information about insurance companies and insured companies was an important part of the content of this letter, and insurance companies were the recipients of this letter. Therefore, the selection of insured companies and the identification of insurance companies are crucial.

2.2.1.1 Enterprise screening

In this report, the screening of enterprises is divided into: (1) Retrieve and integrate the list of companies. The list of insured or soon-to-be-insured enterprises is retrieved from the websites of national and provincial, municipal and autonomous governments. (2) Sort out the environmental performance of enterprises. Based on the environmental database (www.ipe.org.cn) established by the Institute of Public & Environmental Affairs (IPE), which is an authoritative public interest platform for environmental data in China, we compiled statistics on the environmental violations of enterprises. (3) Determine environmental risk indicators for enterprises as the basis of the selection in this period. By referring to the environmental risk assessment guidelines issued by individual provinces and municipalities^[3], PECC believes that environmental penalties, environmental supervision, and the normalcy of online monitoring should be included as environmental risk assessment indicators. (4) Identify enterprises. Combining the environmental risk indicators and the environmental violation records of enterprises

according to the IPE database, 1,116 enterprises with environmental violations in 2019 and 2020 were selected as the targets of this report.

2.2.1.2 Identification of insurance companies

Environmental pollution liability insurance applies the principle of territorial jurisdiction, and the policy of it varies slightly from region to region, and the way enterprises choose insurance companies also varies slightly. Some regions adopt the bidding method to confirm the insurance company to be chosen by local enterprises, such as Jilin and Liaoning Provinces, and this information can be obtained through government websites; in some regions enterprises choose their own insurance companies according to their needs instead of bidding.

After confirming the locations of the 1,116 screened enterprises, if the government website of the enterprise's location publishes information on the bidding for environmental pollution liability insurance, the target of the letter will be determined based on the bidding results. If the bidding information is not released in the enterprise's location or the enterprise is recommended to choose independently, then refer to the bidding results released in other regions and select the most likely insurance company to write to, such as the local branches of such insurance companies as People's Republic of China Property and Casualty Insurance Co., China Pacific Property & Casualty Insurance Co., and China Life Property and China Life Property & Casualty Insurance Co..

2.2.2 Overview of the enterprises

2.2.2.1 Distribution of enterprises

The 1,116 enterprises screened are located in 15 provinces, municipalities and autonomous regions across China, and their distribution by province and city is shown in the figure below. Shanxi Province released the list of pilot enterprises for compulsory environmental pollution liability insurance in June 2020, totaling 1609, and screened out the largest number of enterprises with environmental violations, 389, accounting for 34.9%, while some cities in Jiangsu, Guangdong, Zhejiang, and Fujian Provinces also released the list of pilot enterprises in 2020, and screened out a

relatively large number of enterprises. The number of enterprises in the four provinces was 297, 135, 76 and 75 respectively, accounting for 52.2% of the total.

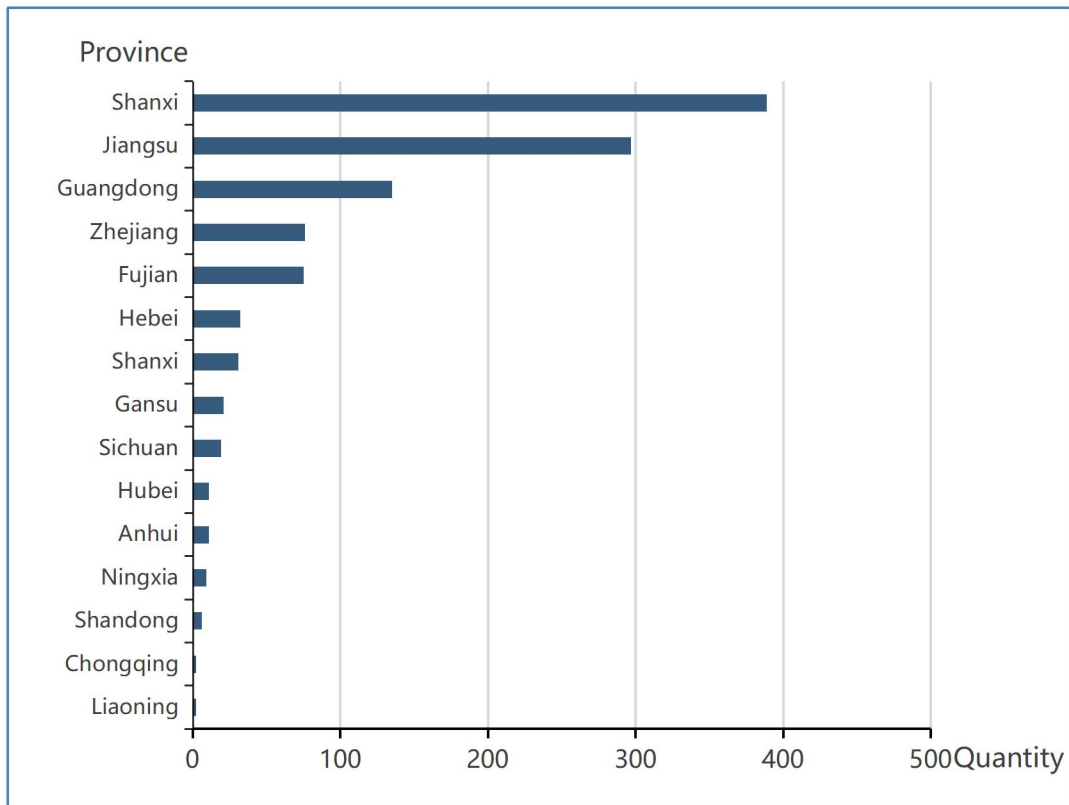


Figure 2: Distribution of enterprises by province

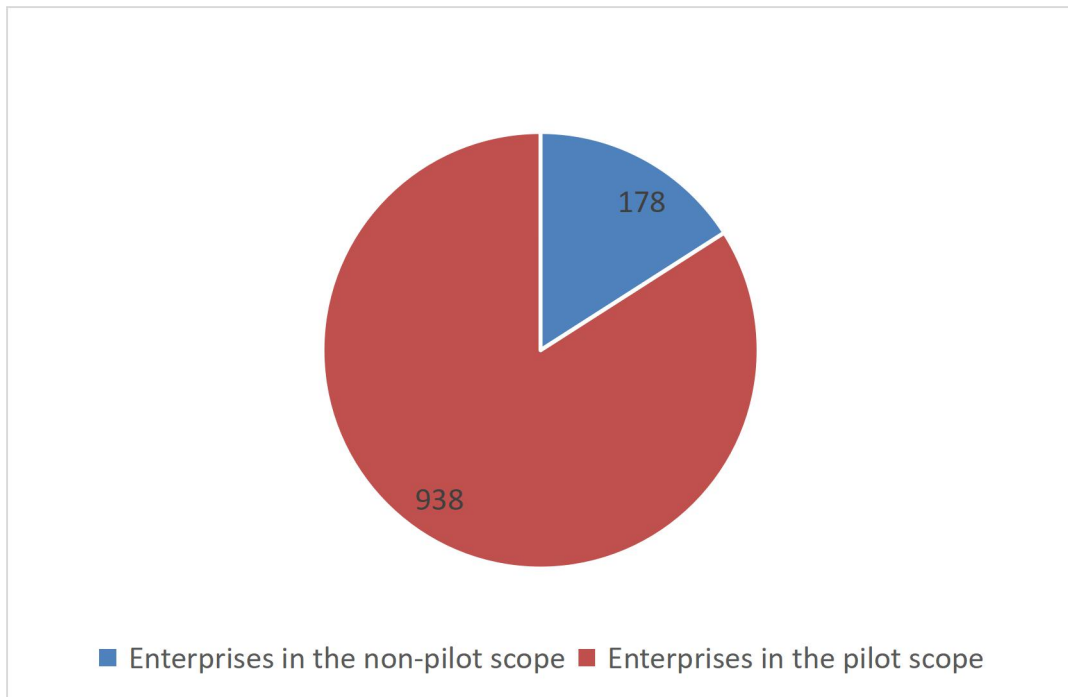


Figure 3: The proportion of enterprises in the pilot scope and non-pilot scope

According to Document No. 10 issued by the Ministry of Ecology and Environment in 2013, the pilot enterprises for compulsory environmental pollution liability insurance include (1) enterprises involved in heavy metals; (2) enterprises that have been included in the scope of insurance according to relevant local regulations; (3) other enterprises with high environmental risks (including oil and gas extraction, petrochemical, chemical, hazardous waste and other industries). 938 enterprises in this report belong to the compulsory pilot enterprises, accounting for 84% of the total number, while the remaining 178 enterprises are not included.

2.2.2.2 Overview of corporate violations

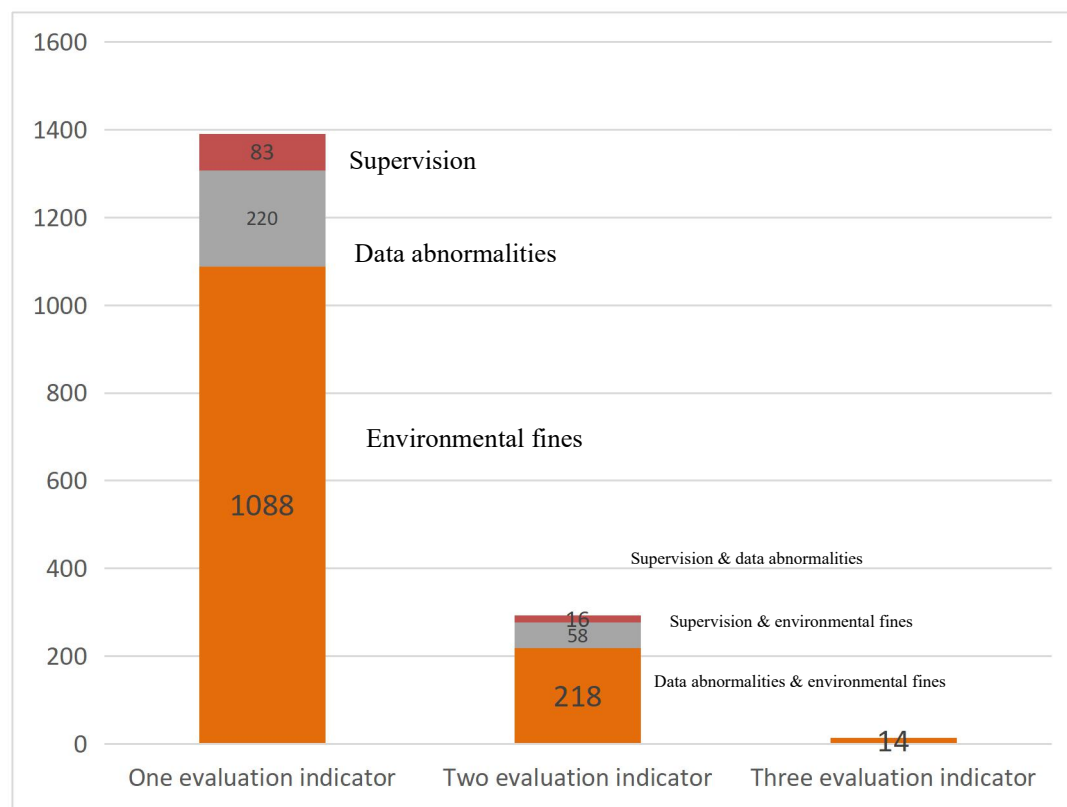


Figure 4 Number of enterprises with one, two and three environmental risk assessment indicators

The above chart shows the number of enterprises with single, two and three environmental risk assessment indicators (environmental fines, supervision and data abnormalities) among the 1,116 enterprises, of which the number of enterprises with fines in the single risk assessment indicator is the largest, amounting to 1,088, accounting for 97.5%. The amount of fines varies, with three enterprises having

environmental fines of up to tens of millions, 43 enterprises having fines higher than 1 million, and 25 enterprises having minor environmental violations and fines of less than 10,000. Enterprises with both environmental fines and data abnormalities accounted for the largest number of enterprises with both evaluation indicators, 218, accounting for 19.5%. The number of enterprises with all three evaluation indicators was smaller, only 14.

3. Current status and problems in the development of environmental pollution liability insurance

According to the screening of enterprise and confirmation of insurance companies, PECC sent letters to 232 local branches, in which 16 insurance companies are involved. So far, nine local branches of five insurance companies called on their own initiative and communicate with PECC, The content of the communication includes the insurance status of the enterprise, the content and evaluation of environmental risk assessment, etc. According to this communication, PECC found that the following problems exist in the environmental pollution liability insurance market.

Insurance companies	Number of companies
Shandong Jiu'an Insurance Brokerage Co.	21
Datong Central Branch of Ping An of China Property and Casualty Insurance Company, Ltd.	16
Sunshine Property & Casualty Insurance Co., Ltd., Jiangsu Province Branch	43
Ping An Property & Casualty Insurance Company of China, Shenzhen Branch	150
China Pacific Property Insurance	19

Co., Ltd.,Zhangzhou Central Branch	
PICC Property and Casualty Insurance Co., Ltd.,Yan' an City Branch	37
China Pacific Property Insurance Co., Ltd., Sanming Central Branch	11
China Pacific Property Insurance Co., Ltd.,Taiyuan Central Branch	40
Ping An Property & Casualty Insurance Company of China, Sanming Central Branch	8

Table 1: Insurance companies with positive feedback and enterprises involved

3.1 The willingness of enterprises to insure is not strong, and the attitude of insurance companies should be changed from passive to active

As a financial insurance product, the role of environmental pollution liability insurance is obvious, not only to disperse the risk of enterprises, but also to fully, timely and effectively pay off pollution victims and resolve social conflicts. However, from the current communication with insurance companies, Most of the companies that take out environmental pollution liability insurance are explicitly required to do so by the government, and the willingness of other enterprises to take out insurance is not strong. For example, the Datong Central Branch of Ping An of China Property and Casualty Insurance Company, Ltd. said that at present, basically, enterprises that are compelled by the government to take out insurance will do so, and those that are not will rarely choose to take out environmental liability insurance. In the analysis of enterprise data in the early part of this report, it was found that there were also enterprises in the non-mandatory pilot scope taking out environmental pollution liability insurance. Although the number was not large, it still accounted for about 1/6 of the total number of

enterprises. It can be seen that although the willingness of non-compulsory enterprises to take out environmental pollution liability insurance is not strong, a small number of them have chosen to do so.

In the process of insurance, what is the position of the insurance company? In the process of communication with insurance companies, many of them said that the choice is mainly in the hands of enterprises, the position of insurance companies in the underwriting process is actually very passive. For example, the People's Republic of China Property and Casualty Insurance Company Limited Yan'an City Branch said that the environmental pollution liability insurance is only one of the enterprise financial insurance business, and the proportion is not large, so insurance companies are more passive. Insured enterprises and insurance companies follow the principle of two-way choice in the allocation of resources in the environmental pollution liability insurance market. Even if the market recognition of environmental pollution liability insurance is not high, insurance companies should play their leading role and their market position should not be ignored.

3.2 Unregulated market for environmental pollution liability insurance and inconsistent requirements for insurance company

3.2.1 "Ornamental" environmental risk assessment

A good environmental risk assessment is a prerequisite for environmental pollution liability insurance and is also conducive to improving the level of environmental risk management of enterprises. This clearly requires enterprises to conduct environmental risk assessment and confirm the risk level of the enterprise before taking out environmental pollution liability insurance. However, through these communication letters, Lvse Jiangnan learned that most enterprises do not carry out environmental risk assessment before taking out environmental pollution liability insurance, and the reason is that insurance companies do not make mandatory requirements for this, and it depends entirely on the enterprises' own will.

The reasons why enterprises choose not to carry out environmental risk assessment also vary. For example, the Datong Central Branch of Ping An of China Property and Casualty Insurance Company Limited indicated that some enterprises insured by

environmental pollution liability insurance do not consider it necessary to carry out environmental risk assessment, and if they do not, the environmental risk factor will be 1 directly, and the corresponding premium will be higher. For example, Sanming Central Branch of China Pacific Property and Casualty Insurance Co., Ltd. said that enterprises insured by environmental pollution liability insurance chose not to do risk assessment because of the high cost of carrying out environmental risk assessment, and also said that they would like to receive support from the IPE database and Lvse Jiangnan for environmental data in the future if needed.

Taiyuan Central Branch of China Pacific Property and Casualty Insurance Co., Ltd. said that before underwriting, the enterprise will confirm the risk level by self-assessment according to the environmental risk assessment form issued by the Shanxi Provincial Department of Ecology and Environment, but in fact, in the "Environmental Risk Prevention and Control Service Guide for Enterprises Insured by Shanxi Province Compulsory Environmental Pollution Liability Insurance (for Trial Implementation)" jointly issued by the Shanxi Provincial Department of Ecology and Environment and Shanxi Bank Insurance Regulatory Bureau the first point of the "work requirements" clearly requires that "each contracting body should commission experts or competent professional technical service organizations to pay for the environmental risk assessment of the enterprises to be insured, determine the environmental risk level of the enterprises, calculate the insurance cost and inform the insured enterprises before underwriting ", instead of the enterprises themselves filling in forms to make the assessment.

3.2.2 Lack of awareness of insurance companies' monitoring of corporate environmental performance

According to the first point of the fifth article of document No. 10 issued by the Ecological Environment Bureau in 2013, the government strongly supports the development of environmental pollution liability insurance not only because it can help enterprises diversify risks, pay victims in a timely manner and maintain social stability, but also because it hopes that insurance companies can pay continuous attention to and monitor the environmental risks of enterprises during the underwriting process and enhance the environmental responsibility of enterprises. However, according to the

feedback from the current communication, insurance companies rarely pay attention to the environmental performance of enterprises after underwriting environmental pollution liability insurance, and do not play the role of supervision and prevention of environmental risks of enterprises by environmental pollution liability insurance. For example, Jiangsu Province Branch of Sunshine Property Insurance Co. China Pacific Property and Casualty Insurance Company Limited Zhangzhou Central Branch replied that the environmental risk assessment of enterprises would be carried out according to the scale of the enterprises, with large enterprises being assessed by a third-party risk assessment agency and small enterprises being assessed by the company's internal risk assessor, but the environmental performance of enterprises would not be paid attention to during the insurance liability period.

3.2.3 Excellent case sharing

Although most insurance companies fail to fulfill their responsibilities, there are individual insurance companies with a strong awareness of environmental responsibility, such as Ping An of China Property and Casualty Insurance Company, Shenzhen Branch, which said that the environmental risk assessment of enterprises will be entrusted to professional environmental assessment agencies, and will continue to pay attention to the environmental performance of enterprises during the insurance liability period, and will come into the factory for environmental risk due diligence and daily monitoring. It will also organize enterprises to participate in emergency environmental training, which is worth learning from other insurance companies.

3.3 Summary

As mentioned earlier, up to now, PECC has only received unsolicited calls from 5 insurance companies involving 9 local branches, and most of the insurance companies refused to respond to the public's concerns. PECC hopes that these insurance companies will break the silence and respond positively to the questions raised by the public, strengthen interaction with multiple parties, and promote the friendly construction of the development mechanism of environmental pollution liability insurance, so that green insurance can play an important role in promoting pollution reduction in enterprises.

Insurance companies	Location of non-responding branches
PICC Property and Casualty Company Limited	Hefei, Huaibei, Xuancheng, Fuzhou, Nanping, Ningde, Quanzhou, Sanming, Zhangzhou, Baiyin, Gannan, Linxia, Qingyang, Zhangye, Dongguan, Foshan, Guangzhou, Shenzhen, Baoding, Hengshui, Huangshi, Wuhan, Xiangyang, Yichang, Huaian, Lianyungang, Nanjing, Nantong, Suzhou, Taizhou, Wuxi, Suqian, Xuzhou, Yancheng, Shizuishan, Yinchuan, Chengdu, Dazhou, Deyang, Yibin, Datong, Jincheng, Jinzhong Linfen, Lvliang, Shuozhou, Taiyuan, Xinzhou, Yangquan, Yuncheng, Changzhi, Hanzhong, Xianyang, Yulin, Hangzhou, Huzhou, Jiaxing, Jinhua, Lishui, Ningbo, Quzhou, Taizhou, Chongqing
Ping An Property & Casualty Insurance Company of China Ltd	Hefei, Huaibei, Xuancheng, Fuzhou, Nanping, Ningde, Quanzhou, Zhangzhou, Baiyin, Linxia, Qingyang, Zhangye, Dongguan, Foshan, Guangzhou, Baoding, Hengshui, Taizhou, Yancheng, Shizuishan, Yinchuan, Dazhou, Deyang, Mianyang, Yibin, Jincheng, Jinzhong, Linfen, Luliang, Shuozhou, Xinzhou, Yangquan, Yuncheng, Changzhi, Hanyang, Yanan, Yulin, Chongqing
China Pacific Property Insurance Co., Ltd.	Fuzhou, Nanping, Ningde, Quanzhou, Dongguan, Foshan, Guangzhou, Shenzhen, Baoding, Hengshui, Huaian, Lianyungang, Nanjing, Suzhou, Taizhou, Wuxi, Suqian, Xuzhou, Yancheng, Baiyin, Gannan, Linxia, Qingyang, Zhangye, Dazhou, Deyang, Mianyang, Yibin, Datong, Jincheng, Jinzhong, Linfen, Lvliang, Shuozhou, Xinzhou, Yangquan, Yuncheng, Changzhi, Hangzhou, Huzhou, Jiaxing, Jinhua, Lishui Ningbo, Quzhou, Taizhou, Chongqing
China United Property Insurance Company Limited	Baiyin, Gannan, Linxia, Qingyang, Zhangye, Baoding, Hengshui, Chengdu, Dazhou, Deyang, Mianyang,

	Yibin, Wuxi, Yancheng, Shenyang
China Dadi Property Insurance Co., Ltd.	Hefei, Huabei, Xuancheng, Datong, Jincheng, Jinzhong, Linfen, Lvliang, Shuozhou, Taiyuan, Xinzhou, Yangquan, Yuncheng, Changzhi, Dongguan, Foshan, Shenzhen, Shizuishan, Yinchuan, Hanzhong, Xianyang, Yanan, Yulin
China Life Property and Casualty Insurance Company Limited.	Datong, Jincheng, Jinzhong, Linfen, Lvliang, Shuozhou, Taiyuan, Xinzhou, Yangquan, Yuncheng, Changzhi, Hangzhou, Huzhou, Jiaying, Jinhua, Lishui, Ningbo, Quzhou, Taizhou, Xuzhou
Huatai Insurance Agency & Consulant Service Limited	Shandong
Jiang Tai Insurance Brokers Co., Ltd.	Yangzhou, Dongying, Jinan
Chang An Property and Liability Insurance Ltd.	Nanjing
Sunshine Property & Casualty Insurance Co., Ltd.	Wuxi
Zking Property & Easuaety Insurance Co., Ltd.	Taizhou, Wuxi, Xuzhou, Yancheng
Ancheng Property & Casualty Insurance Co., Ltd.	Xuzhou
Changjiang Property Insurance Co., Ltd	Xiangyang, Yichang
Minan Property and Casualty Insurance Company Limited	Shenyang

Table 2: Non-responding insurance companies

In addition, the government requires enterprises to make good environmental risk assessments and requires insurance companies to regularly check the risk potential of enterprises in the hope that enterprises can identify their own environmental risks in a timely manner and improve their risk management. The parties involved in environmental pollution liability insurance are mainly enterprises and insurance

companies, and enterprises take out environmental pollution liability insurance in order to transfer the risk of damage caused by major environmental pollution accidents that may occur in the future to insurance companies. In recent years, it is common for insurance companies to pay for environmental pollution accidents, ranging from tens of thousands to millions of RMB. In 2012, A chemical enterprise in Shanxi had an aniline leak and the insurance company paid 4.05 million RMB; in 2016, accidental spills occurred in a chemical enterprise in Ningxia and the insurance company paid 406,000 RMB. In 2020, an insurance company paid RMB 100,000 for an exhaust gas leak in a plating enterprise in Ningbo.

PECC suggested that insurance companies should strictly control the environmental performance of enterprises according to relevant policy requirements, urge enterprises to actively cooperate in environmental risk assessment and do their due diligence, and pay attention to and monitor the environmental performance of enterprises in a timely manner during the underwriting process to help them screen for significant environmental risks.

4. The position of the Banking and Insurance Regulatory Commission and its attitude

In view of the environmental performance of the enterprises concerned in this report and the problems in the implementation and enforcement of environmental pollution liability insurance identified during the communication and feedback with insurance companies, PECC wrote again to 14 provincial and municipal banking and insurance commissions on January 29, 2021, seeking to learn about the insurance status of the enterprises mentioned in the letter and the attitude of the banking and insurance commissions towards the environmental performance of enterprises and the problems in the environmental pollution liability insurance market. To date, eight commissions have been contacted.

Anhui Banking and Insurance Regulatory Commission	In the process of verification
Chongqing Banking and Insurance Regulatory Commission	
Fujian Banking and Insurance Regulatory Commission	Not accepted /

Ningxia Banking and Insurance Regulatory Commission	Environmental liability insurance is led by the environmental protection department
Zhejiang Banking and Insurance Regulatory Commission	
Gansu Banking and Insurance Regulatory Commission	
Sichuan Banking and Insurance Regulatory Commission	At the discretion of the insurance company
Jiangsu Banking and Insurance Regulatory Commission	Feedback will be given within 60 working days
Guangdong Banking and Insurance Regulatory Commission	No response
Hubei Banking and Insurance Regulatory Commission	
Liaoning Banking and Insurance Regulatory Commission	
Shandong Banking and Insurance Regulatory Commission	
Shanxi Banking and Insurance Regulatory Commission	
Shanxi Banking and Insurance Regulatory Commission	
Shanxi Banking and Insurance Regulatory Commission	

Table 3: Responses from banking and insurance commissions of different provinces

In 2018, the Ministry of Ecology and Environment scrutinized and adopted in principle the Management Measures for Compulsory Liability Insurance for Environmental Pollution (Draft), whose Chapter 1, Article 4 mentions that "Insurance Supervision and Administration Agency of the State Council shall implement supervision and management of the insurance company's compulsory liability insurance business for environmental pollution in accordance with law." PECC believes that for the development and construction of the environmental pollution liability insurance system, the banking and insurance regulatory commission should play a supervisory role, pay attention to the problems in the implementation and execution of environmental pollution liability insurance, supervise and guide insurance companies to do a good job of environmental risk assessment of environmental pollution liability insurance insured enterprises, regulate the environmental pollution liability insurance market, so that environmental pollution liability insurance can play its proper role.

In addition, China's environmental pollution liability insurance is still in its initial period, whether for financial and insurance institutions or other relevant parties

(including the government, enterprises, social organizations, etc.), it is a brand new field that needs to be explored and studied together by adhering to the cooperative concept of linking multiple parties and building trust. PECC hopes that the banking and insurance commissions and a number of insurance companies that have not yet responded will respond to public concerns as soon as possible and actively seek solutions.

5. Recommendations

5.1 Multi-pronged approach to increase the incentive for enterprises to take out insurance

At present, the government encourages enterprises to take out environmental pollution liability insurance, and some provinces and cities have corresponding encouragement policies for insured enterprises. In the "Rules for the Implementation of Environmental Pollution Liability Insurance Policy in Jiangsu Province (for Trial Implementation)" jointly promulgated by seven departments in July 2019 including Jiangsu Provincial Department of Ecology and Environment, Department of Finance. it is mentioned that "enterprises that have taken out environmental pollution liability insurance in Jiangsu Province since September 30, 2018 will be subsidized at a rate of no more than 40% of the annual premium paid", so as to encourage enterprises to actively take out environmental pollution liability insurance. In recent years, many provinces and cities began to pilot mandatory environmental pollution liability insurance, and some environmental high-risk industries must take out environmental pollution liability insurance. There are also provinces and cities directly publicized " The list of pilot enterprises that are compelled to take out environmental pollution liability insurance", but the lack of corresponding penalties for uninsured enterprises that should be insured, so the enterprise's incentive to take out insurance is obviously insufficient. Therefore, the government needs to be lenient and strict to improve the incentive of enterprises to take out insurance.

Also, to improve the rate of environmental pollution liability insurance coverage, in addition to relying on administrative means to promote, the system and design, protection measures and so on of environmental pollution liability insurance product itself is also a major factor to attract enterprises to take out insurance. Developing the insurance products according to the characteristics of enterprises by insurance company, is also a means to promote the reduction of enterprise pollution. In essence, environmental pollution liability insurance is actually a financial product trading, only to seize the customer's "risk pain points", so that the customers' real needs are met and customers will have the will to insure.

5.2 Develop and scientific and reasonable technical guidelines for environmental risk assessment and enforce implementation of it

Enterprises need to complete environmental risk assessment and determine the level of environmental risk before taking out environmental liability insurance, so that insurance companies can make scientific and reasonable pricing accordingly. But at present there are only a few regions in the country that have issued technical guidelines for assessment, which is one of the reasons why the promotion of environmental pollution liability insurance is not successful. Therefore, it is crucial for the smooth development of environmental pollution liability insurance to improve the technical guidelines for environmental risk assessment. The geographical differences between regions in China and the environmental risk sources between industries are also different. For example, the main risk sources of enterprises engaged in printed circuit boards include warehouses for storing hazardous chemicals, areas for producing electroplating etching, places for temporarily storing hazardous waste, and treatment facilities for waste water and waste gas, while the main risk sources of enterprises engaged in producing lead batteries include lead melting furnaces, powder making machines, board casting machines, paste mixing machines, board coating machines, sulfuric acid storage tanks, chemical warehouses, and treatment facilities for waste water and waste gas^[4]. Therefore, each region should formulate reasonable and feasible technical guidelines for risk assessment according to the local situation, combined with the characteristics of the industry, and enforce the implementation, so that insurance companies can have a basis and justification to follow.

5.3 Enhancement of professionalism of insurance companies and awareness of responsibility for environmental monitoring

Environmental pollution liability insurance, as its name implies, is an insurance tailored to the environmental pollution risks of enterprises, which is specific and requires higher professional capacity. Some insurance companies need to work together with other insurance companies and environmental risk assessment agencies because of the lack of professional talents and independent underwriting and claims handling capabilities, which to a certain extent restricts the development of environmental liability insurance. Therefore, it is quite important to improve the professional level of insurance company staff, which not only helps the smooth development of environmental pollution liability insurance, but also strengthens the environmental responsibility awareness of insurance companies. After the enterprises have taken out environmental pollution liability insurance, they always pay attention to the environmental performance of the enterprises, and can also help the enterprises to eliminate the environmental hazards at the first time, and give practical and effective rectification measures, so as to improve the environmental risk management and guidance of insurance companies to the insured enterprises.

5.4 Government departments play a supervisory role to regulate the environmental pollution liability insurance market

China's environmental pollution liability insurance development is still immature, and the relevant system still needs to be improved. Although the national and local governments have issued a series of policy documents to encourage the development of environmental pollution liability insurance, but there is still a lack of corresponding legislative support, resulting in an unregulated development of the environmental liability insurance market and inconsistent practices among insurers and companies. Therefore, government departments should play a supervisory and management role, actively guide insurance companies and enterprises to carry out environmental pollution liability insurance in a scientific and reasonable manner in accordance with national regulations, and regulate the development of the environmental pollution liability insurance market.

Special thanks: Blue Map Enterprise APP for supporting the corporate environmental data in this report

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