

Green insurance helps achieve the "dual carbon" goals

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Abstract

With the development of the economy and society, green insurance is receiving more and more attention in its role in helping to achieve the "dual carbon" goal. China is currently in a crucial period of transforming its economic structure and development mode, and green insurance, as an important part of the financial system, plays an irreplaceable role in accelerating economic and social development. Although China started relatively late in the development of green insurance compared to other developed countries, it has gradually developed and improved to form a relatively complete system. However, there are still many problems that need to be solved in its development process. Therefore, this article will study the concept of green insurance, the current situation of green insurance development, the problems that green insurance faces and other aspects, analyze how to further play the role of green insurance, and help achieve the "dual carbon" goal.

Keywords: Green Insurance, Dual Carbon Target, ESG Sustainable Development Concept, Asset Side Liability Side

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1.Introduction

In his speech at the General Debate of the 75th Session of the United Nations General Assembly, President Xi Jinping announced China's vision for carbon peaking and carbon neutrality to the world for the first time: "China will scale up its nationally determined contributions and adopt more forceful policies and measures. We aim to have carbon dioxide emissions peak before 2030 and achieve carbon neutrality before 2060." The "dual carbon" goals represent a crucial strategic decision made by the Communist Party of China (CPC) Central Committee and the State Council in balancing domestic and international priorities. The 20th National Congress of the CPC pointed out that the insurance industry has significant potential to contribute to the implementation of the "dual carbon" strategy.

China is currently in a critical phase of transforming its economic structure and development model. The demand for green finance from green industries, green economy, and sustainable development continues to expand. As an integral part of the financial system, the insurance industry plays a unique and irreplaceable role in accelerating the promotion of economic and social development. As an emerging management-oriented financial instrument, green insurance is not only a key component of green finance development, but also a vital vehicle for the insurance industry to root itself in ecological progress and participate in the domestic and international efforts to achieve the "dual carbon" goals. Furthermore, it aligns with the core trajectory of national development, thus becoming a focal point of attention in academic and theoretical circles at present.

2. Relevant Concepts of Green Insurance

Green insurance in China was first mentioned in the Several Opinions on the Reform and Development of the Insurance Industry issued in June 2006. Starting with environmental liability insurance, the significance of environmental pollution liability was recognized. In December 2007, the Guiding Opinions on the Work of Environmental Pollution Liability Insurance was promulgated, initiating the pilot program of environmental pollution liability insurance and marking the establishment of the green insurance system. With the continuous development and improvement of the legal system, policies related to green insurance in China have been accelerated in their implementation, and the definition of green insurance has also been continuously deepened.

By 2022, the former China Banking and Insurance Regulatory Commission (CBIRC) had successively issued the Guidelines for Green Finance in the Banking and Insurance Industry and the Notice on the Statistical System for Green Insurance Business, which for the first time provided a standardized definition of green insurance. Specifically, green insurance refers to the general term for economic activities through which the insurance industry provides risk protection, capital

support, and other services in areas such as environmental resource protection, social governance, the operation of green industries, and green consumption in daily life.

The definition of green insurance also differs in its narrow and broad senses. In the narrow sense, green insurance is a type of non-traditional environmental liability insurance (Pollution Liability Insurance), which can be understood as an insurance product or risk management mechanism tailored to address risks in green industry sectors, such as wind power generation, soil salinization remediation, and marine purification projects. In the broad sense, green insurance, with its dual attributes of liability and asset, functions as a "financial valve". It can provide economic support for the transformation of green industries from three dimensions simultaneously: the liability side, the asset side, and the operation side.

Therefore, green insurance has inherent focal points in promoting the achievement of the "dual carbon" goals. It should start from the asset side and liability side to provide protection or solutions for risk mitigation in the context of sustainable development. Meanwhile, through the utilization of insurance funds, it can drive the development of ESG (Environmental, Social, and Governance) sustainability. The management role of green insurance in the development of green finance has been elevated to a new level.

3. Current Development Status of Green Insurance in China

3.1 Ping An of China upgrades green initiatives to support "Dual Carbon" goals

In response to the national goals of carbon peaking and carbon neutrality, Ping An of China has comprehensively upgraded its green finance initiatives since 2021. It took the lead in China to formulate and release the "Green Finance +" Upgraded Action Plan. Relying on the group's integrated financial advantages, Ping An gives full play to the roles of green insurance, green investment, and green credit, and adopts robust measures to promote the development of green insurance.

For green projects and industries such as renewable energy, circular economy, green buildings, and forestry, Ping An of China develops and promotes applicable insurance products and services, and provides certain preferential subsidy policies. The launch of Guangdong's first "Forest Carbon Sink Remote Sensing Index Insurance" is a practical example of Ping An Group's active efforts in developing green finance and practicing the ESG concept of sustainable development in recent years. This insurance utilizes satellite remote sensing monitoring technology, models and calculates forest stock volume based on remote sensing image data, and further converts it into carbon sink volume, which serves as a quantitative basis for underwriting and loss estimation. Through the dual responsibilities of carbon sink loss compensation and incentive subsidies, it provides risk protection

for the government to promote carbon sink trading; meanwhile, it participates in carbon sink trading to increase subsidy amounts, further boosting the enthusiasm of both policy implementation and market participation.

As of June 30, 2022, the scale of green investment of Ping An of China had reached RMB 249.355 billion. Among this, in the first half of 2022, the original premium income from environmental sustainable insurance products reached RMB 76.971 billion. Ping An of China is committed to becoming a world-leading green financial group to support the national goals of carbon peaking and carbon neutrality.

3.2 PICC strengthens green insurance for "Dual Carbon" goals

To support the development of green insurance and achieve the "dual carbon" goals, the People's Insurance Company of China (PICC) has continuously optimized and enriched the types of green products and services on the underwriting side, providing insurance solutions for key areas such as pollution reduction and carbon emission reduction, and energy transition.

In 2022, PICC's green insurance products provided a total risk coverage of RMB 68 trillion. It has continuously innovated green insurance products while focusing on serving fields including clean energy, pollution and consumption reduction, climate change response, ecological environment protection, and green transportation. PICC has explored the "carbon sink + insurance" model, innovating various products such as mangrove carbon sink value comprehensive insurance and bamboo forest carbon sink value comprehensive insurance, and promoting the organic integration of forest insurance with carbon sink value, carbon sink pledge, and carbon sink financing.

At the same time, PICC has also promoted the implementation of pilot projects for mandatory environmental pollution liability insurance, and continuously promoted the "Wuxi Model" and "Quzhou Model" of environmental liability insurance. It has provided environmental liability insurance risk protection services for 3,927 enterprises and identified more than 30,000 environmental risk hazards. In terms of new energy vehicle insurance, PICC underwrote 3.9955 million new energy vehicles, providing risk coverage of RMB 8.84 trillion.

4. Reference to International Experience in Green Insurance

Compared with China, green insurance in foreign countries started earlier and has relatively more mature systems. Globally, there are three main types of well-developed green insurance systems in foreign countries: first, the green insurance system represented by the United States, which is dominated by mandatory insurance and supplemented by voluntary liability insurance; second, the green insurance system represented by Germany, which combines mandatory liability insurance with financial guarantees or sureties; third, the green insurance system represented by the

United Kingdom, which is dominated by voluntary liability insurance and supplemented by mandatory liability insurance only in specific areas.

4.1 The United States

Currently, the United States implements a green insurance system dominated by mandatory insurance and supplemented by voluntary liability insurance. The U.S. government attaches great importance to the development of green insurance. As early as the 1960s, the United States began to promote green insurance. With government support and guidance, its green insurance sector has now developed relatively maturely, with a wide range of insurance products that basically cover environmental pollution protection businesses across all industries. The United States also includes liability for damages that may be caused by the storage of toxic and hazardous substances within the scope of mandatory liability insurance.

To support the development of green insurance, the United States established a dedicated operational insurance institution—the Pollution Liability Insurance Association, which later evolved into the American Insurance Company [3]. In response to different environmental risks, U.S. insurance companies implement differential premium rates: different premium rates are applied to insured enterprises based on the specific environmental risks they face. This practice enhances the effectiveness of green insurance in covering environmental pollution risks.

4.2 Germany

Germany currently operates a green insurance system that combines mandatory liability insurance with financial guarantees or sureties. The German government plays a leading role in the practice of green insurance in the country. Meanwhile, Germany's relatively comprehensive environmental legal system has laid a solid foundation for the development of green insurance, such as environmental pollution liability insurance.

Germany has mandated environmental damage liability insurance since 1990, requiring all industrial and commercial enterprises in the country to purchase environmental liability insurance. To reduce environmental pollution risks and ensure the ability to fulfill compensation and remediation liabilities, liable parties will either purchase environmental pollution liability insurance or seek financial guarantees from financial institutions or the government. Information on green finance policies embodied in Germany's environmental policies plays a powerful role in promoting the participation of enterprises and individuals in the construction of the green financial system.

4.3 The United Kingdom

The United Kingdom currently implements a green insurance system dominated by voluntary liability insurance, with mandatory liability insurance applied only in specific fields. Generally, enterprises decide independently whether to purchase environmental liability insurance. For sectors

such as oil exploitation and nuclear energy, the United Kingdom explicitly mandates compulsory insurance through legislation. In the nuclear energy industry, the Nuclear Installations Act enacted by the United Kingdom in 1965 clearly stipulates that operators of nuclear installations must purchase mandatory liability insurance, with a minimum insured amount of 5 million pounds sterling.

The United Kingdom's differentiated insurance strategies for different enterprises not only help meet the personalized needs of different industries and effectively assist enterprises in risk diversification but also contribute to saving social costs and directing social funds to industries with greater demand for green insurance. By implementing a green insurance system dominated by voluntary insurance and supplemented by mandatory insurance, the UK makes its green insurance system more flexible—adjustments can be made in response to the needs of social development, ultimately achieving full coverage of environmental liability insurance.

5. Problems of Green Insurance in Supporting "Dual Carbon" Goals

5.1 Singular form of green insurance product innovation

Currently, most innovative green insurance products in China still focus solely on risk compensation, and they are mainly offered by property and casualty insurance companies, without fully integrating the concepts of green ecology and sustainable development. Although China's green insurance products have undergone continuous innovation in recent years, they are predominantly centered on green liability insurance series. Products in other categories fail to fully cover the new scenarios and demands arising from green transformation. For instance, compensation insurance products in personal insurance that address air pollution, water pollution, noise pollution, and urban light pollution, as well as agricultural insurance products covering crop income generation and forest vegetation, could all be categorized and underwritten as green insurance.

Meanwhile, green insurance in China started relatively late, and most green insurance products are still in the pilot phase, with shortcomings in underwriting capacity, product pricing, and risk assessment. Evidently, to achieve the goal of low-carbon transformation across society, green insurance products need improvement in terms of underwriting scope, underwriting intensity, and product innovation.

5.2 Lack of interdisciplinary talents and inadequate talent training systems

As a new type of insurance involving complex fields, green insurance requires not only talents proficient in financial knowledge (such as insurance, actuarial science, and investment) but also

those skilled in environmental governance and pollution measurement — more importantly, it demands interdisciplinary talents specializing in green insurance and green finance.

Although insurance programs have become more prevalent in colleges and universities in recent years, channeling more talents with insurance expertise into the market, big data statistics show that the number of insurance majors entering the insurance industry is far lower than that of graduates from other financial disciplines. This reflects a mismatch between insurance-related employment and human resource planning: insurance majors have low adaptability to market needs, failing to achieve "specialization in their respective fields."

From the perspective of insurance companies, they lack relevant training and awareness-raising activities on green knowledge and theories for employees. As a result, employees have insufficient and incomplete understanding of green products, fail to fully implement the concept of green and sustainable development, and lack access to talent development mechanisms and incentive policies. This reduces employees' enthusiasm for green products, hinders the effective development of green product businesses, and slows down the development of green insurance in China to a certain extent.

5.3 absence of unified Evaluation standards

Unlike other types of insurance, green insurance not only covers a wide range of insurance subjects but also imposes high requirements on environmental measurement and supervision. The insured subjects of green insurance can include individuals, property, and even the environment of an entire region. Particularly for regional environments — an area untouched by other insurance products — existing standards and processes of other insurance products cannot be applied or replicated. Therefore, a dedicated system for measurement and supervision needs to be established.

Furthermore, China's laws and systems related to green insurance are not yet improved, and the lack of unified evaluation standards and risk assessment mechanisms is unfavorable to the continuous innovation and in-depth development of green insurance. Most green insurance products in China are still in the pilot phase, and the development of green insurance business is also in its initial stage. The insufficient accumulation of historical business data and practical experience has led insurance institutions to lack sound risk assessment mechanisms and environmental pollution damage assessment mechanisms. This situation not only easily causes information asymmetry between policyholders and insurance companies but also increases the risk of moral hazard and adverse selection.

5.4 Lack of linkage and synergy between liability & asset sides

The development of green insurance in China suffers from a lack of linkage between the liability side and the asset side. To expand the coverage of green insurance, joint efforts from both the liability underwriting side and the investment side are required.

From the liability underwriting side: Insurance companies fail to consider the impact of ESG factors and the concept of sustainable development on insurance business, which impairs their ability to identify and manage the increased insurance claim risks caused by climate change and environmental pollution. The insurance industry should further expand its service scope to other green fields, such as green energy, green transportation, green buildings, promotion of low-carbon technologies, forest carbon sinks, and mitigation of catastrophic risks, while accelerating the innovation of green insurance products.

Beyond innovating green products on the liability side, insurance companies should also channel more financial resources into green industries on the asset side. Currently, ESG development faces issues such as insufficient support for the company's underlying operations, a small number and scale of products, and a single type of assets. The ESG system of insurance companies should be guided by social value, evaluating corporate value from a holistic perspective; at the same time, it should fully consider the orientation of national development strategies and the characteristics of the times, flexibly aligning with changes in policy goals.

Additionally, insurance companies should expand the investment scope of green insurance, continuously increase investment and research efforts in key areas such as clean energy, energy conservation and emission reduction, upgrading of traditional industries, clean transportation, green buildings, and pollution control, so as to promote industrial upgrading and transformation.

6. Recommendations for Green Insurance to Support "Dual Carbon" Goals

Although green insurance in China is still in the development stage and has room for improvement compared with developed countries, it will play a significant role in promoting the achievement of "dual carbon" goals if its positive functions are fully leveraged. To further advance the high-quality development of green insurance, efforts should be made to upgrade it in aspects such as innovating green insurance products, cultivating interdisciplinary talents, improving the green insurance legal system, synergizing the asset and liability sides, deepening the concept of green development, and consolidating the foundation for development.

6.1 Innovate green insurance products and enhance service quality

With the continuous development of local green insurance markets and the expanding coverage of green insurance, there remains a structural imbalance between the supply and demand of green insurance products. Insurance institutions should continuously innovate green insurance products and services, and expand the underwriting scope and service areas of green insurance.

Green insurance should innovate its products and services from perspectives including adjusting the energy structure, developing green transportation, promoting the green transformation of the construction industry, advancing green and low-carbon technologies, enhancing ecological carbon sequestration capacity, and participating in the multi-stakeholder governance of environmental risks. Top-level design for green insurance development should be formulated to build a new power system with new energy as the mainstay, implement pollution and carbon reduction actions in key areas, and advocate green and low-carbon lifestyles.

To achieve the low-carbon transformation and upgrading of green transportation, underwriting should cover fields related to new energy vehicles and rail transit construction, as well as property insurance and liability insurance for the construction industry. It should also provide coverage for R&D cost losses and patented new materials during the promotion of green and low-carbon technologies.

The "insurance + technology" model should be promoted, and a green insurance resource database should be established to supervise the green ecosystem. Big data should be used to analyze the potential demand structure of the green market and formulate corresponding management strategies, thereby promoting the further development of the insurance market.

6.2 Cultivate professional interdisciplinary talents

The green insurance market requires interdisciplinary talents, and relevant authorities should actively promote the cultivation and reserve of professional interdisciplinary talents in green insurance. Currently, insurance programs offered by colleges and universities mainly focus on two directions: insurance theory and actuarial science, lacking courses related to green environmental liability insurance.

Colleges and universities should offer relevant professional courses to equip students with basic knowledge and insurance literacy, while opening the door to professional development for interested students, thereby cultivating more professional talents who can contribute to the development of the green insurance industry.

Enterprises should, through insurance industry associations, actively organize lectures and training sessions on green and low-carbon transformation, green insurance, and green finance to improve the professional literacy and business capabilities of relevant personnel. This will ensure that green insurance practitioners have a solid foundation in green concepts and provide theoretical and technical support for the development of green insurance.

At the same time, the salary and welfare levels of relevant personnel should be improved to attract more talents to the field. An effective talent training system should be improved to drive innovation in both the depth and breadth of green insurance.

6.3 Improve the green insurance standard system

The development of green insurance cannot do without policy guidance from the government, and a sound legal and regulatory system is crucial for promoting the green transformation of insurance. Laws can further clarify the insurance liability, exclusions, compensation limits, and compensation plans for green environmental insurance, and formulate unified standards to facilitate the pricing of insurance product premiums. Only with unified industry standards can the insurance market be better supervised and its further development promoted.

Enterprises must operate in compliance with laws and regulations. They can learn from mature international models and adopt a combination of mandatory insurance in key areas and voluntary insurance in other areas, which not only strengthens environmental protection but also expands the coverage of green insurance.

At the same time, China should participate in the formulation of international standards for green insurance to enhance its influence and voice in the global green insurance field. In addition, the information disclosure system should be further improved, including promoting the ESG information disclosure system for insurance institutions and enhancing the information disclosure system of the insurance industry.

With the improvement and deepening of the legal and regulatory system, as well as the strengthening of policy guidance, the green insurance support system is gradually being improved, which in turn promotes the transformation and upgrading of the industry.

6.4 Synergize efforts on both the asset and liability sides

Green insurance should accelerate business innovation on the liability side, improve incentive systems on the asset side, optimize green investments, speed up the development of ESG products, and expedite the construction of an ESG investment concept system.

The long-term, stable, and flexible nature of insurance funds is highly compatible with the concept of green investment, and it also helps insurance funds improve the maturity matching level of assets and liabilities. Insurance funds can fully support the development of green and low-carbon industries such as energy conservation, environmental protection, and new energy through green bonds, debt plans, stock investments, and public/private equity funds, thereby achieving in-depth integration with green investment.

The insurance industry should increase research and investment in key areas such as clean energy, energy conservation and emission reduction, upgrading of traditional industries, green transportation, green buildings, and pollution control. It should play a leading role in capital allocation in the long run, continuously promote industrial upgrading and transformation, expand green investment areas, and improve the green investment system.

The insurance industry should strengthen investor education. In the future market, green investment should become a mainstream investment direction for investors. Efforts should be made to accelerate the cultivation of an investment market guided by the concept of green development, encourage long-term funds such as insurance and pension funds to flow into green investment areas, and foster a social-wide concept of green and sustainable development, thereby optimizing the green investment ecosystem.

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