

Research on the Development of Green Finance of SPD Bank

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Abstract: *With the increasingly serious problem of ecological environment pollution in China, promoting the development of green finance in the banking industry has become an important means to promote the high-quality development of China's economy. As one of the first commercial banks to develop green finance in China, SPD Bank has accumulated rich experience in relevant businesses. This paper selects SPD Bank as the research object, analyzes its development process and current situation in green finance from the perspective of the application of green bonds and green credit, and puts forward suggestions on this basis.*

Keywords: *Commercial bank; Green finance; Green bonds; Green credit*

1. Introduction

High investment, high energy consumption, and high emissions have been a consistent and sustainable development model in China since modern times, causing unprecedented damage to the domestic ecological environment. China's economic development model urgently needs to be changed. In terms of finance, the development of green finance in China is still in its infancy. The state emphasizes the integration of green environmental protection concepts into financial instruments, and encourages the financial industry to devote itself to creating batch after batch of environment-friendly financial products^[1]. Scholtens, B.(2017) believes that financial institutions should establish more environmentally friendly financial markets^[2]. The introduction of green finance by commercial banks can meet the requirements and expectations of all walks of life, open up new standards for project investment and financing in green finance, and innovate financial products and services, which can not only promote the transformation and development of commercial banks and various enterprises, but also integrate economic and social benefits^[3]. Falcone, P.M.(2020) believes that the green finance policy can accelerate the transformation of production and consumption patterns^[4]. In 2016, China officially launched the green finance development strategy. Once the strategy was launched, SPD Bank successfully issued the first green finance bond in China^[5], realizing the official landing of domestic green finance bonds from institutional framework to products. In fact, as early as 2008, SPD Bank introduced advanced green concepts, and has now formed a relatively complete green finance business system, which is an excellent support for the implementation and promotion of green finance in China over the years. Therefore, this paper takes SPD Bank as the research object to analyze the development status of its green finance. Considering that SPD Bank has the most frequent use of green bonds and green credit, this paper focuses on these two types of financial instruments to analyze the development path and current situation of SPD Bank's green finance.

2. The history and current situation of SPD Bank's green finance

As one of the first commercial banks to develop green finance in China, SPD Bank launched the Comprehensive Plan for Green Credit in 2008, and on this basis, it constantly innovates in green finance business. SPD Bank has put forward the slogan of "green creates the future", opened five service fields of energy efficiency financing, clean energy financing, environmental finance, carbon finance, and green equipment supply chain financing, and developed ten innovative green finance products. In recent years, it has constantly strengthened cooperation with foreign capital, interacted frequently with international financial organizations, signed several green finance cooperation agreements, and launched some targeted guidance manuals. Not only that, SPD Bank has subdivided key areas in each service field and set up corresponding supporting financial products, such as financial

advisors, transaction fund custody, green PE, etc., focusing on introducing limited financial resources into the field of energy conservation and environmental protection. While exploring commercial opportunities in green projects, it continuously improves its business capabilities. Among the green finance products of SPD Bank, green bonds and green credit are the most frequently used and create the most value.

2.1 Green bonds

At the beginning of 2016, in response to the call of the national "green finance" policy, to adjust and optimize its own asset structure and further complete the carbon finance service system, SPD Bank issued the first phase of green finance bonds, and then issued a total of three phases of green finance bonds in the same year. These three green finance bonds are three-year or five-year fixed rate bonds with annual interest, which are open to members of the national banking market. SPD Bank itself cannot redeem them in advance. Similarly, investors are not allowed to redeem them in advance, which ensures the stability of funds and is conducive to the sustainable development of long-term projects. In addition, as the main underwriter of the bonds, Guotai Jun'an, together with CICC, Haitong and Huatai Securities, organized an underwriting team to underwrite the balance. The preferential coupon rate and AAA grade high-quality credit rating made this kind of green finance bonds popular among investors, with an average subscription rate of 1.94 times. Table 1 shows the relevant information of the three green finance bonds issued by SPD Bank in 2016.

Table 1: Basic Information of SPD Bank green finance Bonds in 2016

	SPD green finance Bond 01	SPD green finance Bond 02	SPD green finance Bond 03
Coupon	2.95%	3.20%	3.40%
Bond duration	3 years	5 years	5 years
Face value	RMB 100 yuan	RMB 100 yuan	RMB 100 yuan
Total issuance amount	RMB 20 billion yuan	RMB 20 billion yuan	RMB 20 billion yuan

Data source: Annual Report of SPD Bank

The process of issuing green finance bonds by SPD Bank is mainly divided into three steps: first, preparation for issuance, then formal issuance, and finally follow-up. In the first step of issuance preparation, SPD Bank provided the projects to Ernst&Young Huaming Accounting Firm for screening. The firm selected the portion of projects that accounted for a large portion of the total funds for evaluation and review, and the final review results showed that all of these projects met the requirements. After the project implementation review was feasible, Shanghai Brilliance Credit Rating & Investors Service Co. Ltd. was hired by SPD Bank to conduct pre issuance rating certification for the bonds and complete information disclosure, ensuring that all funds raised from these bonds are applied to the green industry, and that the environment in which the funds are operated, the risks faced, and the final returns meet the expected standards of investors. In the second step of formal issuance, SPD Bank first set up a special account to record the issuance of green finance bonds, clearly listed the date of receipt, the amount of receipt, the transfer path, the final recovery of funds, and the direction of profit retention and distribution. The internal fund management of SPD Bank is very orderly, with clear rights and responsibilities. In addition, SPD Bank has also uniformly planned the timing and projects for raising funds to promote green project loan business in a planned manner, which is conducive to gradually and efficiently managing fund investment. After the payment is disbursed, SPD Bank started the third follow-up work, conducting regular checks on the efficiency of fund utilization and project implementation progress. Ernst&Young Huaming Accounting Firm will also analyze and certify SPD Bank's green development project management annually to ensure that the payment is indeed implemented in the green project. In addition, SPD Bank also stipulated that the raised funds cannot be invested in greenhouse gas emission intensive projects, high pollution projects, and high energy consumption projects during the idle period. However, within a certain amount range, the remaining funds are allowed to be used for appropriate investment to ensure the safety, liquidity, and profitability of the funds. After the audit report, there are no situations where SPD Bank does not meet the requirements in terms of fund use and management.

2.2 Green Credit

Since 2008, SPD Bank has formulated a series of policies to guide the flow of green credit funds, such as the Guidelines on Credit Investment Policies, the Guidelines on Marketing of Energy

Efficiency Source Efficiency Financing Projects, Green Creating the Future - Comprehensive Service Plan for green finance, and the Interim Measures of SPD Bank on Social and Environmental Risk Management. The common point of these policies is that they stipulate that green credit funds must be used for eco-friendly industries that are environmentally friendly and energy-efficient, limit the development of high emission and high pollution industries, help optimize and upgrade industrial structures, and ensure the achievement of economic efficiency goals while enhancing SPD Bank's own risk control capabilities.

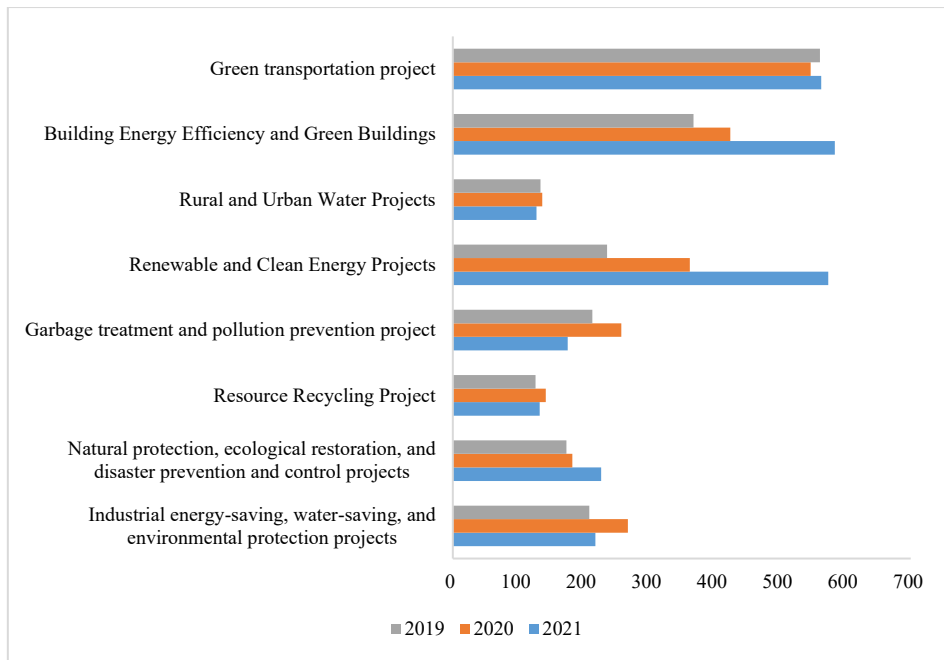
Under the increasingly sound policy guidance, SPD Bank has gradually formed five major sectors - energy efficiency financing (focusing on steel, chemicals, transportation, construction, etc.), clean energy financing (focusing on wind power, hydropower, solar energy utilization, etc.), environmental finance (focusing on water governance, urban environmental comprehensive governance, circular economy, etc.), carbon finance (focusing on the CDM trading system agreed upon under the Kyoto Protocol, etc.) Green equipment supply chain finance (focusing on new energy transportation tools, clean energy equipment manufacturing, etc.), and their supporting ten green finance innovative products. On the path of exploring green credit, SPD Bank actively collaborates with international financial organizations and local governments to expand capital circulation channels, negotiate technology sharing, and bring development opportunities to more green industries, greatly improving the financing environment of enterprises. The role of financial institutions in financing funds is more significant. In the new economic form of China, SPD Bank continues to innovate green credit products, making them more suitable for China's national conditions, more catering to Chinese enterprises, further promoting equipment upgrades and technological upgrades, accelerating the pace of industrial structure optimization, and promoting new achievements in China's ecological civilization construction. It is a successful example among the first batch of equatorial banks in China. Table 2 shows the innovative green credit products of Pudong Development Bank in 2021.

Table 2: Green Credit Innovation Products of SPD Bank in 2021

product name	Information
Sustainable development related loans in the infrastructure sector	The financing interest rate is linked to the "environmental performance" and "social performance" indicators of carbon reduction in electricity consumption. The financing company's carbon reduction in the previous year is evaluated annually based on authoritative industry data.
Carbon neutrality linked loan	The loan interest rate is linked to the contribution of the project to the carbon peak and carbon neutrality goals, and the financing cost changes inversely with the power generation and carbon emission reduction. Linked loans operate through the efficient credit system of "carbon green gold" and the "green credit consensus system" of professional third-party institutions.
Carbon neutrality linked loan in the field of ecological restoration	The loan interest rate is linked to the restoration of ecological vegetation and the improvement of carbon sequestration capacity in the crown. Based on the evaluation results of third-party green certification institutions, the financing enterprise's ecological restoration business spraying area in the previous year is confirmed. On the basis of the achievement of the enterprise's target value in the previous year, the loan interest rate is lowered in a step-by-step manner.
Landing renewable energy subsidy and rights confirmation loan	We have provided a loan of approximately 10 million yuan to Shanghai Green Environmental Energy Co., Ltd. The green projects managed by the company can reduce China's standard coal consumption by approximately 400500 tons and carbon dioxide emissions by approximately 1089100 tons annually.

Data source: SPD Bank Corporate Social Responsibility Report 2021

In recent years, the scale of SPD Bank's green credit business has continued to expand and shown a steady increasing trend. According to the 2021 Corporate Social Responsibility Report of SPD Bank, as of the end of 2021, the green credit balance of SPD Bank reached 3113.5 billion yuan, an increase of 947.5 billion yuan compared to 2020. In the process of issuing green credit, SPD Bank has invested the most in building energy conservation and green building projects, rising from 368.04 billion yuan in 2019 to 583.89 billion yuan in 2021. The statistics of green credit situation of SPD Bank from 2019 to 2021 are shown in Figure 1.



Data source: SPD Bank Corporate Social Responsibility Report 2021

Figure 1: Green Credit Situation of SPD Bank from 2019 to 2021

3. Analysis of the Reasons for SPD Bank to Introduce green finance

3.1 Macro factor: policy support

The introduction of China's national policies on green finance has prompted SPD Bank to accelerate the development of relevant businesses. Since 2016, various organizations have successively issued a number of policies to promote the construction of the green finance system. The policies focus on the development of green finance and advocates the innovation of financial instruments such as green bonds, green credit and green insurance. On the one hand, green development has been elevated to a national strategy, indicating the importance of environmental protection and energy conservation. On the other hand, the attributes and role of finance have been emphasized, emphasizing that both financial channels and economic benefits cannot be neglected. SPD Bank actively responds to the national policy call and takes the lead in implementing green finance into its business. It can not only seize the preferential policies given by the country, but also become the first batch of Equatorial banks in China, which is conducive to improving the reputation and business diversification of SPD Bank, and using its rich experience to make great contributions to the issuance, circulation procedures and rating standards of innovative green finance products in China's financial industry. It also paves the way for optimizing SPD Bank's own rating and can gain a greater competitive advantage in green credit business. Table 3 shows some policies related to green finance in China in recent years.

Table 3: Some policies related to green finance in China

Release Time	Policy Name
2016.8.31	Guiding Opinions on Building a Green Finance System
2017.3.22	Guidelines for Green Bond Business of Non-Financial Enterprises
2017.12.26	Implementation Plan for the Evaluation of Green Banks in the Chinese Banking Industry (Trial)
2018.11.10	Green Investment Guidelines (Trial)
2021.5.27	Green finance Evaluation Scheme for Banking Financial Institutions

Data source: Chinese government website

3.2 Micro factor: SPD Bank's own development needs

In response to the national call and fulfilling social responsibilities, the ultimate goal of SPD Bank's development of green finance business is to meet its own demand for green capital and achieve

diversification of operation and income. SPD Bank itself has a huge demand for green credit, such as loan applications for energy-saving industries and low-carbon construction industries. In the process of carrying out the special business of green finance, SPD Bank issued green finance bonds, provided financial advisory services for green finance, and attracted a large number of green fund financiers and investors by taking advantage of preferential tax policies, preferential interest rates, green project priorities and other policies. The establishment of the green business section by SPD Bank has prompted it to continuously innovate and enrich its products and services, thereby meeting the needs of more and more investors and financiers, enhancing its market influence, and showing a positive overall return trend.

4. Problems faced by SPD Bank in using green finance tools

4.1 Green bonds

Firstly, SPD Bank needs to pay attention to the market risk of green bonds. The changes in market interest rates are uncertain, and the influencing factors of market interest rates are highly diverse, such as macroeconomic factors, policy adjustments, and international financial market conditions. The interest rate of green finance bonds issued by SPD Bank is fixed during the duration, and the yield of bonds will not be affected when the market interest rate drops, but the yield of green finance bonds in this period will relatively decrease with the rise of the market interest rate. Secondly, SPD Bank needs to pay attention to the liquidity risk of green bonds. After the bonds are issued and circulated in the national interbank bond market, it is not easy for bondholders to temporarily seek the next trading partner to resell the bonds in a short period of time. The discount rate and transaction amount all need to be considered from multiple perspectives, so there will be risks in the transfer process. SPD Bank may face liquidity difficulties and cannot achieve the expected project expansion. Furthermore, uncontrollable factors such as the invasion of natural disasters and changes in industry conditions in bank operation management and company project implementation may lead to a liquidity gap or a decline in operating efficiency for green credit enterprises, which may result in the inability to repay debts on time and lead to default.

4.2 Green Credit

Although SPD Bank's green credit business has taken the lead in the domestic banking industry, there are also some problems. Firstly, there is a lack of specialized departments to coordinate the green credit business of SPD Bank, which has a significant impact on the implementation of green credit. Compared with other lending enterprises, green credit enterprises have many prominent shortcomings, such as delayed progress in various evaluation work, low efficiency in fund transfer, and inadequate follow-up project supervision work. As a result, the risk of increasing non-performing loan ratios in SPD Bank will increase. Secondly, the implementation information of SPD Bank on green credit is mainly recorded in the "Social Responsibility Report", and the information disclosure is not clear and complete enough. Many key points are nowhere to be found by the public, and data updates are not timely implemented. Third, from the business cooperation information of SPD Bank, it can be seen that SPD Bank has cooperated with some international financial institutions for a long time. For example, in 2009, SPD Bank and the French Development Agency jointly launched the Renewable Energy Guidance Manual. However, it did not actually introduce some international environmental standards or norms, and there must be conflicts between international and domestic green finance in some aspects. The failure to fully align with international standards has to some extent hindered the development of SPD Bank's own green credit. Fourthly, in terms of shaping the green credit product system of SPD Bank, investors are also unable to feel the connotation of the "green" label based on product pricing. These products do not provide much discount to financing parties, and it is normal for borrowers to have low enthusiasm. Fifth, the promotion of green credit products is insufficient. Due to the lack of complete information on green credit in the regular financial reports and bulletins of Pudong Development Bank, most investors are puzzled by green credit products, and the means of promoting green credit products by banks are limited to on-site consultation by enterprises.

5. Suggestions on the construction of green finance tools of SPD Bank

5.1 Green bonds

First of all, for the risk of interest rate fluctuation, SPD Bank should pay more attention to a series of preparatory work in the early stage, strengthen risk management and control, and make the business process more standardized. It can hire several professional institutions to supervise the whole process of bond issuance and circulation, flexibly price according to the needs of investors, evaluate the corresponding interest rate risk of the issued bonds, and accrue interest rate risk compensation reserves for the possible interest rate risk. Secondly, in view of the liquidity risk of green bonds, SPD Bank should innovate the bond varieties on the basis of the existing green bond products, allow bonds to be traded smoothly in the inter-bank bond market, focus on the research and development of green finance bonds with high liquidity, strict screening conditions for both investment and financing parties, accurately assess the risk coefficient of financing parties, and limit the use of raised funds, minimize corporate behavioral risk while ensuring high liquidity of bonds. Furthermore, in response to uncontrollable factors, SPD Bank can appropriately insure or cooperate with insurance institutions, with insurance institutions or both parties jointly bearing the risks, protecting the interests of investors while also diluting the risks borne by the bank itself to a certain extent.

5.2 Green Credit

Firstly, SPD Bank should establish a specialized functional organization or hire a professional team to be responsible for the bank's green credit business. SPD Bank can establish a sustainable financial office area specifically responsible for green credit, clarify the responsibilities and requirements for the employees in this office area, make green credit a long-term development strategy of the company, or establish a green credit working group in the head office department, with the head office taking the lead in guiding the development of green credit. Secondly, SPD Bank should compile detailed information related to green credit and present it to the industry to demonstrate its determination to implement green credit, thereby enhancing the bank's credibility and reputation. Only by accepting supervision from all levels of society can SPD Bank timely introduce a wide range of suggestions and promote the diversified development of green credit business. Moreover, SPD Bank can introduce some international environmental standards to improve its own green credit system, strengthen cooperation with various international financial institutions, learn from the advanced experience of international banking green credit, develop new green credit products, improve green finance technology, and enhance the risk assessment and control ability of green credit and its international influence. In addition, when pricing green credit products, SPD Bank should provide appropriate interest rate discounts to lenders in order to attract more customers. Finally, SPD Bank must strengthen the promotion of green credit products, innovate promotion channels and means, and enable the green credit product system to truly play its role. This is also the top priority of SPD Bank's current green credit business development.

6. Conclusion and outlook

6.1 Conclusion

At present, the ecological environment problem in China is becoming more and more serious under the influence of the "two high and one surplus" industry. The transformation of domestic economic growth mode can be achieved by developing green finance. As one of the first Equatorial banks in China, SPD Bank is ahead of other domestic banks in the development of green finance business, which is a good demonstration of green finance business operation in China. At present, SPD Bank has formed a complete system in green finance business, but there are still many areas to be improved, such as introducing green finance special talents, adding green finance office areas, adopting or introducing international standards, etc., so as to further enhance the specialization of green finance business.

6.2 Outlook

Whether from the perspective of the development history of green finance abroad or the implementation status of green finance in China, policy support and capital replenishment at the national level are indispensable. These two aspects emphasize guiding financial institutions and

enterprises to actively cooperate with the implementation of the green finance strategy. Now that the strategic direction is clear, the country will continue to update and improve relevant policies, and banks will also welcome more preferences. Since 2008, SPD Bank has started the exploration of green finance, and now has formed a complete system dedicated to serving green finance, and even shouted "green creates the future". Although as the first issuer of domestic green finance bonds, SPD Bank has not received much preferential policies. If SPD Bank can strengthen cooperation with the government and win more preferential policies in the future, the bank can launch green products that attract more investors. With the support and guidance of the government, SPD Bank can improve its own operating system and perhaps gain more public trust, which is a very favorable condition for absorbing savings. In addition, the government's behavior indicates the direction and strength of policy preference. On the one hand, it may inspire enterprises to dig out the huge business opportunities carried by green finance, so as to consciously reduce energy consuming and polluting projects. On the other hand, SPD Bank can also more accurately predict the positive benefits that green finance services can bring to itself from the policy tilt, and all the positive benefits are ultimately "intangible capital".

Over the past decade, SPD Bank has accumulated a lot of green finance operation experience, and has achieved the goals set at the beginning of the period in terms of emission reduction and environmental protection every year. The low-carbon data is quite impressive, which can be said to have achieved remarkable results at present. SPD Bank's development and innovation in green finance products and services is relatively fast, but horizontal competition is also gradually fierce. Therefore, SPD Bank will certainly speed up the innovation of bond varieties, increase green credit support, build a special green finance service department as soon as possible, increase the publicity of online and offline products and services, and actively strive for more customer resources.

SPD Bank has rich experience in foreign cooperation, and has even become a highlight of its green finance. Based on the historical experience of cooperation with foreign institutions, SPD Bank should still make significant efforts in international cooperation. Integrating with the international market will not only enhance the bank's reputation and expand more extensive customer resources, but also is expected to introduce international advanced measurement technology and evaluation standards through in-depth exchanges and experience exchanges, and then through localized processing, better benefit the domestic green finance industry, which is conducive to the promotion of China's environmental protection cause.

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