



# Research on the Path of Commercial Banks Developing Green Finance in Hainan Free Trade Port under Low Carbon Background

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**Abstract:** The dual strategic context of low-carbon transition and Hainan Free Trade Port development has created vast opportunities for commercial banks to advance green finance. With its unique "green carbon + blue carbon" resource endowment and robust green finance demand, Hainan Free Trade Port presents significant challenges for commercial banks, including homogeneous product portfolios, insufficient cross-border service capabilities, weak risk management mechanisms, and incomplete professional support systems. Drawing on policy requirements from the "Implementation Plan for High-Quality Development of Green Finance in Banking and Insurance Sectors" and industry best practices, this study proposes optimization pathways for commercial banks' green finance development across four dimensions: innovative product design, cross-border financial expansion, enhanced risk control, and professional capacity building. These recommendations aim to provide theoretical insights and practical support for free trade port banks to seize green development opportunities and contribute to the construction of a low-carbon island.

**Keywords:** low-carbon context; Hainan Free Trade Port; commercial banks; green finance; development pathways

## 1. Introduction

Under the dual carbon goals, green finance has become the core engine driving the green transformation of the economy and society. As the primary force in allocating financial resources, commercial banks bear a crucial mission in supporting the development of green industries and guiding the low-carbon transition of traditional industries [1]. As China's only provincial-level free trade port, Hainan Free Trade Port boasts "green carbon" resources such as tropical rainforests and mangroves, along with extensive marine "blue carbon" ecosystems. Combined with the benefits of cross-border financial openness resulting from the island's customs-free operations, it serves as a vital testing ground for green finance innovation among commercial banks. Based on this, this paper systematically analyzes the existing challenges facing the development of green finance in Hainan Free Trade Port commercial banks under the low-carbon context, explores optimization pathways by integrating policy guidance and practical experience, and aims to empower commercial banks in advancing high-quality green finance development.

## 2. Current Challenges in the Development of Green Finance at Commercial Banks in the Hainan Free Trade Port

### 2.1 The product system suffers from severe homogenization, with distinctive resources failing to be fully utilized.

Commercial banks' green financial products remain predominantly traditional green credit, with insufficient innovation and distinctive features. Firstly, blue carbon financial products are still in their infancy. Carbon sink resources such as mangroves and seagrass beds have yet to be transformed into standardized financial products, resulting in limited scale and narrow coverage of carbon sink pledge financing and blue carbon credit products. Secondly, customized products targeting characteristic industries of free trade ports like tropical agriculture and ecotourism are scarce. Most products remain at the level of traditional credit modifications without deep integration with industrial low-carbon transition needs. Thirdly, product innovation focuses on single financing demands, lacking comprehensive financial solutions combining "credit + bonds + wealth management + insurance," making it difficult to meet the full lifecycle funding needs of green projects [2].

### 2.2 Insufficient cross-border financial service capabilities and limited release of opening-up dividends

The cross-border financial advantages enabled by the customs clearance operations of free trade ports remain underutilized. Firstly, there is insufficient supply of cross-border green financial products, with cooperation in green

project financing and cross-border green bond underwriting with ASEAN countries remaining at a framework level without substantive business breakthroughs [3]. Secondly, cross-border capital flow channels are inefficient, as overseas funds have limited access to participate in free trade port green projects, and a service system integrating domestic and international capital flows with cross-market resource integration has yet to be established. Thirdly, alignment with international green financial standards remains inadequate, lacking internationally recognized green project certification and carbon accounting standards, which hinders the large-scale development of cross-border green financial services.

### **2.3 Weak risk prevention and control mechanisms limit the motivation for business expansion**

Green finance projects are characterized by long cycles, slow returns, and uncertain environmental risks, yet commercial banks' risk management systems remain inadequate: First, the environmental, social, and governance (ESG) risk management framework is incomplete, lacking specialized environmental risk assessment models and tools that hinder accurate identification of potential project risks; Second, risk compensation mechanisms are underdeveloped—the provincial green finance risk compensation funds have not fully utilized their potential, leaving banks without effective channels to mitigate credit and environmental risks; Third, carbon accounting capabilities are insufficient, as most banks have not conducted carbon emission assessments for enterprises in key industries, making it difficult to implement differentiated investment and financing management based on carbon performance [4].

### **2.4 Incomplete professional support system and room for improvement in service quality and efficiency**

Commercial banks face a mismatch between their green finance service capabilities and business development needs. Firstly, inadequate organizational support persists: most banks lack dedicated green finance management departments, with related operations scattered across various business lines and lacking coordinated oversight. Secondly, there is a shortage of interdisciplinary professionals proficient in both financial services and carbon accounting, ecological conservation, and cross-border financial regulations, which hinders business innovation and risk management expertise [5]. Thirdly, digital empowerment remains insufficient, as unified green finance digital platforms have not been established. Functions such as carbon trading integration, environmental data retrieval, and risk assessment remain fragmented, resulting in suboptimal service efficiency.

## **3. Optimization Path for Green Finance Development in Commercial Banks of Hainan Free Trade Port**

### **3.1 Focus on distinctive resources and innovate differentiated green financial products**

Building on the resource endowment and industrial characteristics of "green carbon + blue carbon" in the free trade port, we aim to develop a distinctive product system: First, deepen blue carbon financial innovation by creating products such as mangrove carbon sink pledge loans and seagrass bed ecological restoration credit, collaborating with third-party institutions to establish blue carbon carbon sink accounting standards, and promoting market-based monetization of blue carbon resources. Second, optimize green financial services for specialty industries by launching "carbon sink + agriculture" bundled loans and specialized credit products for eco-tourism low-carbon upgrades, providing customized financing solutions for tropical fruit cultivation and recreational fisheries. Third, enrich comprehensive financial product offerings through tools like green credit asset securitization, green wealth management, and green trusts, establishing an integrated "financing + investment + services" financial service system to meet funding needs throughout the lifecycle of green projects.

### **3.2 Leveraging the benefits of customs closure to expand cross-border green finance services**

Leveraging the cross-border financial liberalization policies of the Free Trade Port, we aim to establish competitive advantages in cross-border green financial services through three key initiatives: First, innovating cross-border green financing products by collaborating with ASEAN financial institutions to issue cross-border green bonds, providing syndicated loan support for green projects along the China-Laos Railway and cross-border wind power cooperation initiatives. Second, establishing a cross-border green financing platform through the Free Trade Port Green Project Cross-border Financing Database, streamlining approval processes for overseas capital participation in green projects to attract international investment. Third, advancing international standard alignment by developing green project certification and carbon accounting standards compliant with the "Implementation Plan for High-Quality Development of Green Finance in Banking and Insurance Sectors," thereby promoting mutual recognition of cross-border green financial products.

### 3.3 Strengthen risk prevention and control to build a robust safety barrier for business development

Establishing a risk prevention and control system compatible with green finance operations: First, enhance ESG risk management mechanisms by developing specialized environmental risk assessment models and incorporating indicators such as carbon emission intensity and environmental compliance into customer credit rating systems. Second, strengthen risk diversification strategies through active participation in provincial green finance risk compensation funds, and develop products like environmental liability insurance for green projects and carbon price fluctuation insurance to mitigate credit and market risks. Third, improve carbon accounting capabilities by applying mature carbon accounting methodologies and technologies to conduct carbon emission calculations for key industries and products, optimize asset structures based on carbon performance metrics, and progressively reduce the carbon intensity of asset portfolios.

## 4. Conclusion

In the context of low-carbon development, commercial banks in Hainan Free Trade Port must prioritize green finance development as both a strategic move to seize policy opportunities and achieve organizational transformation, and a critical responsibility in advancing the Free Trade Port's low-carbon island initiative. Current challenges including product homogenization, insufficient cross-border services, weak risk management systems, and professional competency gaps stem from inadequate resource utilization, insufficient institutional innovation, and incomplete support frameworks. By innovating specialized products, expanding cross-border operations, strengthening risk controls, and enhancing professional capabilities, commercial banks can significantly improve the relevance and effectiveness of green financial services, thereby creating a win-win scenario that aligns financial business growth with the Free Trade Port's green transition goals.

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