

## Carbon Finance's Development Present Situation and Countermeasure Research in Our Commercial Bank

Huilan Zhang<sup>1, a</sup>, Yali Yuan<sup>2, b</sup> and Jingwen Wang<sup>2, c</sup>

<sup>1</sup>Shijiazhuang information engineering vocational college, Shijiazhuang 050035, China;

<sup>2</sup>Shijiazhuang information engineering vocational college, Shijiazhuang 050035, China;

<sup>3</sup>Shijiazhuang information engineering vocational college, Shijiazhuang 050035, China;

<sup>a</sup>huilanzhang1978@126.com, <sup>b</sup>yuanyali80@126.com, <sup>c</sup>wuma999999@163.com

**Keywords:** low carbon economy; carbon finance; commercial bank; Clean Development Mechanism (CDM)

**Abstract.** It has become a common understanding among commercial banks to develop carbon finance. Carbon finance has provided opportunities for commercial banks to expand their business pipelines, stimulate finance innovation and fulfil social responsibilities. However, commercial banks are also facing problems like the lack of awareness of carbon finance business, the shortage of the talent due to credit domination and the high level of operational risk, and the deficiency of products and high level cost, which all make the development of carbon finance in commercial banks difficult. This article aims to provide relevant strategies in terms of establishing sustainable low-carbon development values and increasing the number of the talent; expanding the modes and areas of carbon finance business and innovating product types; taking precautions to control the risk of carbon finance business and reducing the cost of business.

Currently, carbon finance has become a new field for competitions among global finance organisations. As a result, to enhance the innovation of carbon finance market mechanism becomes irresistible. China is a country with high energy consumption, high pollution and high emission. The current financial mode could not satisfy the great demand of capital from the low carbon economy and it has become imminent to study problems concerning the development of carbon finance in China's commercial banks in a deep and systematic manner.

### 1. Carbon finance provides opportunities for commercial banks

#### 1) Expand commercial banks' business pipelines

In order to deliver the promise China has made in the Copenhagen Climate Conference, namely to cut the carbon dioxide emission of China's per unit of gross domestic product (GDP) by 40-45 percent by 2020 compared with the level in 2005, with the exclusion of the necessity of investment of the development of relevant upstream and downstream industries, China's National Committee of Experts on Climate Change estimates that the direct investment in low carbon area could reach one billion yuan (within 15 years) , and relevant departments in China are compiling the 'National Plan for Addressing Climate Change (2011-2020)' to guide the work on dealing with climate change. In the meantime, 60 percent of the emission reduction targets purchased by the developed countries are from China. China can provide 150-225 million tons of carbon dioxide approved emission reduction credits just in terms of clean development mechanism (CDM) and the turnover of carbon deduction could reach 2.25 billion dollars.

The direct investment and the increase of the turnover of carbon deduction bring many opportunities for commercial banks' business development. In general, commercial banks mainly develop their carbon finance services in the following two areas: firstly, the traditional support for investment and finance, namely setting up various low-carbon funds, environmental protection funds or loan support; secondly, financial intermediary service, mainly carrying out various financing, products innovation and relevant finance services by focusing on carbon transaction. Commercial banks could consider financing products witnessing fast development in terms of market size,

investment sphere and product types and also closely articulating with carbon emission transaction. According to requirements to financial services from carbon emission transaction in CDM programme, commercial banks could carry out financial intermediary services like financial consultation, investment enquiry, account management and financing guarantee, to expand business pipelines of commercial banks, to increase sources of income of intermediary business and then optimise commercial banks' income structure.

#### 2) Advance commercial banks' financial innovation

Objectively speaking, the need of cash flow for low-carbon finance development requires commercial banks to practise financial innovation and implement carbon finance business. Commercial banks need to provide relevant financial products and risk management services and to explore new business operation modes if requirements of investment and finance are formed because of the need for corporations to carry out equipments upgrade and technological transformation for low carbon programme, or requirements of enquiry business formed by expertise are concerned with carbon emission technology, methodology and related business management or requirements of transaction intermediary from the carbon transaction market and so on. In recent years, Chinese commercial banks have actively participated in carbon financial business exploration, for instance, the CDM programme enquiry service and projects financing business brought forward by Agriculture Bank of China, Shanghai Pudong Development Bank and Beijing Bank and 'carbon dioxide connected' domestic and foreign currency financing products introduced by Bank of China, Bank of Communication and Shenzhen Development Bank.

#### 3) Fulfil commercial banks' social responsibilities

As the core participant of the national economic operation system, commercial banks undertake social, economic and environmental responsibilities of building a harmonious society, protecting the stability of financial system and sustainable development environment. In terms of social responsibilities, commercial banks could spare more efforts in providing financial services around people's livelihood, providing financial guarantee for fighting natural calamities and disaster relief and providing publicity concerning finance in order to improve the general public's awareness of spotting and preventing financial risk; in terms of economic responsibilities, commercial banks could co-operate in practising national macro-control policies, controlling credit scale, optimising loan structure and supporting the development of agriculture, rural areas and farmers and small and medium-sized enterprises; in terms of environmental responsibilities, commercial banks could increase the green credit support to environment-friendly enterprises by restricting loans to industries with high energy consumption, high pollution and overcapacity.

As a result, it is not only beneficial for commercial banks to improve the level of their management skills, increase the ability of self-innovation and enhance the quality of financial services if they carry out carbon finance business by implementing environmental and social risks into their management systems and middle and long term strategies, but also helps commercial banks build the image of low carbon pioneer, become the undertaker of environment protection and social responsibilities, and finally realise the 'win-win' status between commercial banks and the society. For instance, the Industrial Bank and international financing corporation have initiated loss-sharing system to issue energy-saving and emission-reduction credit; the Industrial Bank is the first bank to issue the 'Sustainable Development Report' and it undertakes commercial bank's social responsibilities and sustainable development to achieve the win-win status among enterprises, the society and the environment, which has greatly promoted the Industrial Bank's position in the market and its brand image.

## **2. Analysis of the current situation of the development of carbon finance in China's commercial banks**

1) The lack of awareness of carbon finance business and the shortage of the talent in commercial banks

Due to the fact that the concept of carbon finance has been introduced into China only for a short period of time and the depth and width of its publicity is limited, in addition, there is a lack of understanding about the profit space, the operation mode, the risk management, the transaction regulations and the social benefits of carbon finance business including CDM and green credit, a lack of mature carbon transaction system and platform, a lack of professionals familiar with and specialised in carbon finance business, carbon finance business in China's commercial banks mainly focus on lower reach of the industry and the segments with low added values. For example, the CDM programme enquiry service and projects financing business brought forward by Agriculture Bank of China, Shanghai Pudong Development Bank and Beijing Bank and 'carbon dioxide connected' domestic and foreign currency financing products introduced by Bank of China, Bank of Communication and Shenzhen Development Bank. So Industrial Bank is the only bank in China at present to officially adopt the 'Equator Principles'.

In comparison with the traditional financial business, carbon finance business needs professionals with comprehensive knowledge of finance, law, mathematics, foreign languages, project management, chemistry and so on, the storage and accumulation of the talent with comprehensive knowledge in China's commercial banks could not meet the need. Meanwhile, the shortage of special organisational setting and the talent with comprehensive knowledge in carbon finance business within commercial banks also leads to the fact of lacking internal momentum for commercial banks to practise carbon finance business.

#### 2) Credit dominant and lack of products in commercial banks

At this stage, most of commercial banks in China mainly focus on resolving the problem of capital shortage for enterprises and industries concerning environmental protection, clean energy and recycle economy and providing financing support for energy-saving and emission-reduction projects, which is known as green credit policy. For example, the Industrial Bank signing co-operation agreement with IFC, Shanghai Pudong Development Bank and Beijing Bank have both introduced green-credit related products for energy-saving and emission-reduction, clean energy application and renewable energy exploration projects and provided credit support for energy-saving environment protection corporations in order to improve the energy utilisation efficiency and develop and utilise renewable resources and clean energy. When comparing with abundant carbon finance business in foreign banks, new credit types in traditional credit business in commercial banks in China are insufficient, except for the CDM programme.

At the same time, financial derivatives like carbon swap transaction, carbon insurance, carbon security, carbon futures and carbon fund are also deficient in innovation. Only the odd intermediary business have been gradually carried out in Bank of China, Industrial Bank, Shenzhen Development Bank, Bank of Communication, Everbright Bank, Shanghai Pudong Development Bank and Agriculture Bank of China, like low-carbon finance and low-carbon credit card.

#### 3) The risk and cost of carbon finance in commercial banks are high

Currently, the biggest risk facing commercial banks practising carbon finance is policy risk. As is known, the expiring date of 'Kyoto Protocol' is 2012 and whether the question of greenhouse gases emission could be resolved in a timely manner and whether all systems would be remained after 2012 are facing huge uncertainty. Meanwhile, related emission-reduction certifying policies are uncertain as well. For example, the current CERs, which is certified and issued by following set standards and procedures by specialised supervision department, may not be awarded to successful programme and not achieve the desired CERs outcome because of changes in technology and policy intention. Furthermore, as carbon finance is a new thing in China, there are no related law and regulations. Commercial banks are facing legal risk of unknown business scope and complicated legal network while practising carbon finance business. In the meantime, commercial banks are also facing risks like energy-saving and emission-reduction technology risk due to the fact that China is still in the application conversion stage, credit risk because corporations are unable to repay their loans, moral risk because of favourable terms for low-carbon credit, and price and exchange rate fluctuation risk of carbon emission price in carbon transaction market.

It is a new business field for commercial banks to carry out carbon finance business and it requires a substantial amount of capital as the technology cost to research and develop various business operation modes and transaction rules. In addition, the international specialised organisation is required for the verification of programme approval and certification and that transaction cost is very high for commercial banks. Meanwhile, introduction of talents familiar with carbon finance and professional knowledge training will also increase the cost of banks' labour cost. In terms of the opportunity cost, the development of carbon finance business weakens traditional business and leads to reduced income. All mentioned above lead to the high cost for commercial banks to carry out carbon finance business.

### **3. Strategies for developing carbon finance business in China's commercial banks**

1) Establishing sustainable low-carbon development values and increasing the number of the talent

It has become a trend to develop low-carbon economy. Commercial banks should attach importance to carbon finance business from the strategic point of view and deeply understand the driving role carbon finance plays for the sustainable development of commercial banks in improving risk management system, optimising credit structure, expanding business pipelines, promoting Income diversification, strengthening international co-operation and building brand reputation. Furthermore, commercial banks should implement internally the corporation culture of 'low carbon development, energy saving and emission reduction' and low carbon value.

Commercial banks should also actively improve the structure of carbon finance organisation and become responsible for the implement of carbon finance by restructuring the current organisation or establishing new organisation specialised in carbon finance. In terms of the talent, commercial banks could recruit talents with professional knowledge or restructure and train existing human resources in order to gradually build a high-quality team specialised in carbon finance business. Solid professional knowledge, sound organisational structure and abundant number of talents provide support and momentum for carbon finance business in commercial banks. Whether it is at present or in the future, commercial banks should place the three factors in important positions and implement them as a long-term policy.

2) Expanding the modes and areas of carbon finance business and innovating product types

Apart from providing green-credit support mode financing for energy-saving and carbon-reduction project, carbon finance business modes also include project support mode and solution platform mode. In July 2009, Shanghai Pudong Development Bank participated as the exclusive financial consultant in two hydropower projects with the combined installed capacity of nearly 70000 kilowatts in Shaanxi and it introduced CDM development and professional transaction organisation. Shanghai Pudong Development Bank provided project financing, but also coordinated the project owner in selecting foreign CERs buyers with good transaction reputation and performance capability and provided project consultation service for the project owner to secure reasonable CERs quotes. All these actions helped the project owner secure competitive transaction price and lead to the successful signing of 'Emission Reduction Purchase Agreement' (ERPA) between CERs buyer and seller. The project owner completed CERs transaction thanks to the one-stop financial consultation service and advantages in pipelines, information and capital settlement provided by Shanghai Pudong Development Bank. This kind of carbon finance business mode is known as project support mode, also known as Pufa mode. Solution platform mode is a kind a business mode in carbon finance business in which commercial banks aim to expand their intermediary business income to the utmost. In this mode, commercial banks replace or partially replace the earlier stage CDM project consultation intermediary and replace or partially replace foreign partners in CDM projects. Commercial banks could group and innovate according to financial requests in different areas and different CDM projects to meet different requirements. Meanwhile, commercial banks should actively explore new business fields, for instance they can refer to the case of ABN AMRO Holding. ABN AMRO Holding focuses its carbon finance business fields in carbon transaction business and

environmental-protection concept finance. In carbon transaction business field, commercial banks could reply on their vast customer resources to obtain profits by providing related proxy service or participating in carbon transaction business for all parties in carbon transaction. Environmental-protection concept financing product asks the commercial bank to select listed corporations with good reputation in practicing environmental protection as samples and design related index to introduce profit and index related environmental-protection finance product.

While learning from successful experience in business innovation from ABN AMRO Holding, Shenzhen Bank, Bank of China, commercial banks should actively participate in carbon finance products innovation and developing structural products related to carbon transaction. Except for futures and option and carbon emissions trading, commercial banks should spare more efforts in exploring traditional business like letter of credit business, factoring business, bill-financing business and CDM project integration. Products which could be innovated include asset securitisation of receivable carbon emissions, providing letter of indemnity, factoring and financing business and developing covered-interest arbitrage like financial derivatives. For instance, in 2008, Industrial Bank and Shanghai Pudong Development Bank consecutively signed 'Loss Sharing Protocol' with IFC and shared the risk of carbon finance business in the form of insurance.

3) Taking precautions to control the risk of carbon finance business and reducing the cost of business

For the smooth development of carbon finance business, commercial banks should build risk management system for carbon finance business. Firstly, it is an important structural guarantee for commercial banks to prevent carbon finance risk by building efficient and comprehensive carbon finance risk management structure. For instance, commercial banks could build vertical integration and mutually independent risk management organisational structure. Commercial banks could build an independent carbon finance risk management committee under the board as the highest management organisation for commercial banks' carbon finance management strategies and policies; establish a department to practically execute carbon finance risk management and to be responsible for the plan of carbon finance risk management system, the design of business flow and supervision, early warning and management of carbon finance risk. Secondly, establish scientific and comprehensive risk early warning systems for different risks. For example, for policy risk, commercial banks should closely monitor international climate corporation, domestic energy-saving and emission-reduction policy and changes of banks' monitoring policies and new regulations; in the process of contract formulation, commercial banks could consult or appoint law firms specialised in international law to make sure law application and legal jurisdiction are favourable to commercial banks in order to reduce legal risk; reduce loan credit risk through syndicated loan, staged investment and monitoring capital flows. Finally, design reasonable and efficient carbon finance risk management mechanism. Scientific, reasonable and efficient carbon finance risk management mechanism is an important guarantee for commercial banks' carbon finance risk management and the core factor for commercial banks' long-term mechanism for carbon finance risk management. Commercial banks' carbon finance risk management mechanism should include supervision, implementation, risk control, products investment and retail products development. For operational risk and project risk, the emphasis of commercial banks' monitor and implementation mechanism should be placed on establishing concrete projects' monitoring system and projects' dynamic investigation and tracking mechanism; for liquidity risk, the emphasis of commercial banks' risk control should be placed on industry structural adjustment and establishing social environment change evaluation mechanism; for financial market risk, the emphasis of commercial banks' development mechanism for investment products and retail products should be placed on developing climate changed related investment products and establishing climate change related retail strategy.

## References

- [1] Yuwei Zhang, Analysis of the development status and Prospect of China's banking industry under the background of low carbon economy[J],Journal Of Financial Development Research. 2010,pp.74-78
- [2] Manyi Wang,Nan Wang, Carbon finance business of commercial bank under the low carbon economy[J], People's Tribune, 2010,pp.130-131
- [3] Aniu Sun, Analysis of problems and Countermeasures on the development of carbon finance in China[J], Wuhan Finance Monthly,2010,pp.19-20
- [4] Xiaolin Shi, Construction of long term mechanism of our country commercial bank carbon finance internal risk management[J], Finance Forum, 2010,pp.21-26