

# **From High Carbon Dependence to Green Metamorphosis:**

## **Financial empowerment programme for low carbon transition in Chongqing<sup>1</sup>**

**Abstract:** As a traditional industrial region, Chongqing has long faced significant challenges in transforming its heavy industrial structure and reducing coal dependency. In 2023, coal consumption accounted for 49.4% of the total energy use, while the energy consumption of the six major energy-consuming industries made up over 80% of the total industrial energy consumption—making Chongqing’s green transition an arduous task. To address this, Chongqing has explored and built a collaborative mechanism featuring policy guidance, financial innovation, and enterprise leadership. The government has released a transition finance support catalogue, strengthened fiscal incentives and assessment constraints, and established the Yangtze River Green Finance Connect system to promote policy and regulatory coordination. Meanwhile, financial institutions have set up dedicated green departments, developed innovative products (such as carbon-linked loans and pollutant

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<sup>1</sup> Case provided by the Policy Research Project Team on "Green Finance Promoting Comprehensive Green Transformation of Society and Economy" of the China Council for International Cooperation on Environment and Development (CCICED)

discharge right pledge loans), explored mechanisms to link interest rates with emission reduction results, and relied on digital platforms to accurately identify the needs of small and medium-sized enterprises (SMEs) and expand the coverage of transition finance. Enterprises have proactively engaged with transition finance, with core enterprises playing the role of “chain leaders” to drive coordinated transformation across the upstream and downstream of industrial chains. This model has created a replicable and scalable pathway for financial support in transition for high-carbon regions and holds significant reference value for the green transition of resource-based cities across China.

**Keywords:** Regional transition, policy empowerment, financial innovation, digital development

## I. Background

As a traditional industrial base, the industrial structure of Chongqing is characterized by difficult emission reduction, with a high proportion of coal energy and a large number of high-carbon industries. In 2023, coal consumption in Chongqing accounted for 49.4% of the total energy consumption. Furthermore, the six major energy-consuming industries accounted for 83.4%<sup>2</sup> of the total

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2 “Chongqing Statistical Yearbook 2024”

industrial energy consumption. Achieving a green, low-carbon transition in Chongqing is a complex undertaking, given the city's historical heavy industrial structure, rigidity in energy structures, and technology substitution costs, among other constraints. To make progress, concerted efforts are required from the policy, financial, and enterprise sectors to build a synergistic policy-finance-enterprise trinity ecosystem. Specifically, all parties should jointly develop a comprehensive, top-level implementation framework, establish a transparent and effective operating system, and bolster the development of green financial instruments and innovation. Furthermore, it is essential to expand the scope of green financial instruments and to provide robust support for the growth of green environmental protection enterprises and the transition of high-carbon enterprises through financial assistance. At the same time, there is an urgent need to strengthen the innovative development of green financial instruments, expand their coverage and support, and provide strong financial support for the development of green enterprises and the transition of high-carbon enterprises.

## II. Main Practices

(1) Government level: Clear standards with a carrot-and-stick approach combining fiscal incentives and performance

accountability.

First, in terms of standard definition, the Chongqing Municipal Government has issued the Catalogue of Transitional Financial Support Projects of the Chongqing Municipality (2023 Edition). This catalogue primarily encompasses the domains of energy, agriculture, the chemical industry, iron and steel, building materials, and non-ferrous materials. Meanwhile, high-quality projects will be consistently delivered to financial institutions by various departments through the Yangtze River Green Finance Connect green financial big data comprehensive service system. This system is expected to establish an effective connection between the scope of financial support for transition and the service system.

The second aspect is financial support. It formulates a fiscal support list, allocates special financial resources, and offers strong assistance to both the development of new energy systems and the low-carbon transformation of traditional industries. The Chongqing Municipal Government has allocated financial resources to support the green transition of enterprises. In 2023, the Chongqing Municipal Bureau of Finance established a list of financial guarantees for major events around major decision making and deployment of carbon peaking and carbon neutrality, and it has promoted the extension of

financial funds from back-end guarantees to policy research and project reserves. As of September 2024, the city has invested 26.1 billion yuan in financial funds to support dual carbon, primarily used to build a new energy system; support the green and low-carbon transition of traditional industries; and adjust the transport structure, etc. A series of tax exemptions and preferential subsidy policies have effectively alleviated the burden on green industries and enterprises.

The third is the assessment mechanism, which incorporates the disbursement performance of green loans and transition loans into the assessment system for district and county leading officials, thereby strengthening the responsibility of local authorities in promoting green finance. Chongqing Municipality has included green and transitional lending in the assessment indicators for district and county officials, with increasing weights to strengthen the responsibility of local governments to promote green finance. While supporting the development of green and low-carbon projects, Chongqing Municipality has also made efforts to limit the growth of high-carbon industries.

The fourth is data support. The Changjiang Green Finance Connect System accesses enterprises' carbon accounts, enabling real-time monitoring of carbon emission data and providing transparent

and verifiable data. To effectively match demand for transition and financial services, the Chongqing Business Administration Department of the People's Bank of China has explored the establishment of the 'angtze River Green Finance green finance big data comprehensive service system. Since 2019, the Yangtze River Green Finance system has gradually connected to the Chongqing Enterprise Carbon Account Platform. This real-time monitoring system provides data on the calculable index data of enterprise carbon emission reduction, offering regulators the necessary information to evaluate and verify the carbon emission reduction effect of enterprises or projects. It also verifies the truthfulness of the information disclosed by financial institutions and the compliance of the direction of policy support. By the end of December 2024, the system intelligently identified more than 2,700 green projects, with a financing docking amount of over 280 billion yuan.

(2) Financial institution level: Precisely meeting enterprise needs through financial innovation and digital empowerment.

First, in terms of policy response, multiple banks have established dedicated departments and formulated special systems. For example, they have set up Green Finance Departments and implemented a one-vote veto system for high-energy-consumption,

high-emission, and overcapacity (HHEO) projects, thereby driving the tilt of resources toward low-carbon sectors. For instance, the Postal Reserve Bank has established a dedicated green finance division to encourage the development of environmentally sustainable business practices across the organization, with the aim of providing preferential pricing for projects focused on transition. Similarly, Industrial Bank has implemented an industry-wide management mechanism for transition finance, imposing a limit on the “two highs and one leftover” projects, and introducing a one-vote veto system. Furthermore, China Merchants Bank has reinforced its commitment to transition by integrating loan pricing with the effectiveness of corporate emission reduction. Finally, Chongqing Agricultural and Commercial Bank has set up a special department for green and low-carbon transition to ensure resource optimization and process efficiency. China Merchants Bank has linked loan pricing to the emission reduction effect of enterprises in order to strengthen incentives for transition. In addition, Chongqing Agricultural and Commercial Bank has set up a green finance division. This division is working to create transition loans and to design transition programs in accordance with industry standards set by the People's Bank of China. The scope of support covers high-carbon industries, such as agriculture, building materials, coal and electricity, iron and steel, and

energy.

Second, in terms of product innovation, financial institutions have launched specialty products, such as carbon-linked loans and water abstraction/pollutant discharge right pledge loans, with interest rates linked to emission reduction performance, thereby revitalizing ecological assets and reducing financing costs. Specifically, Three Gorges Bank, Bank of Chongqing, and Industrial Bank of Chongqing Branch have launched products (such as a pre-pledge loan for water intake rights and a pledge loan for sewage rights) at an early stage in the country, making effective use of the stock of ecological resources and promoting the transition of high-carbon industries. Bank of Chongqing and China Merchants Bank launched carbon-linked loans, in which the interest rate is directly tied to the emission reduction effect or energy intensity of the enterprise, as in the case of chemical enterprises in Changshou District. Three Gorges Bank and other institutions explored carbon emission reduction bill discounting, combined with supply chain finance, to reduce the financing costs for small and medium-sized enterprises.

Third, in terms of digital empowerment, financial institutions rely on digital platforms to accurately identify the transformation needs of small and medium-sized enterprises (SMEs), support

inclusive finance, and extend credit support to the industrial chain through the "core enterprise + upstream and downstream" model. For instance, the Bank of Chongqing provided customized financial solutions for SMEs through its Wind Chime Intelligent Evaluation platform. This platform accurately explores potential customers in the field of green and low-carbon transition and assists them in their low-carbon transition. The “core enterprise + upstream and downstream” model was employed by Chongqing Agricultural and Commercial Bank and other institutions to provide supporting loans to suppliers of Kowloon Vanbrugh, including power supply and equipment enterprises. This formed a closed loop for the transition of industrial chains. The supply chain finance function of banks was to provide credit extensions to small and medium-sized enterprises, thus solving the problem of insufficient collateral. On the consumption side, Ant Financial identified demand for green consumption through the integration of e-commerce consumption data and Alipay green scenes (such as the Ant Forest), lent 16 billion yuan for green consumption in 2024, and explored products, such as trade-in and green goods consumption credit. The exploration would extend to these products.

(3) Enterprise level: Proactively accessing financial resources through emission reduction innovation to achieve significant decarbonization outcomes.

Case 1: New Materials Technology Private Enterprise A. The Chongqing Agricultural and Commercial Bank launched a transition loan financial product and issued 1.5 billion yuan of loans for Private Enterprise A. Concurrently, the branch allocated 500 million yuan and 600 million yuan in the form of loans to enterprises supplying power and equipment to Private Enterprise A, thereby augmenting the project's construction guarantee. In 2024, as the company sought to expand its production capacity, it encountered a shortage of liquidity funds. In response, Chongqing Agricultural and Commercial Bank proactively approached the company to address this need, offering liquidity fund loans amounting to 0.7 billion yuan. In order to encourage enterprises to reduce their energy consumption and participate in low-carbon transition, Chongqing Agricultural and Commercial Bank also agreed with enterprises to link the loan interest rate to the carbon emission standards for enterprise transformation<sup>3</sup>. In 2023, the total amount of carbon emissions reduced by Private Enterprise A was 1,369,200 tonnes, and the carbon emission reduction efficiency was 39.12 tons per billion yuan. In 2024, the company's annual output value reached 16.7 billion yuan, representing a year-on-year increase of 20.3%. In addition to promoting green and low-

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<sup>3</sup> If the enterprise's emission standard is lower than or equal to the target value, the loan execution rate will remain unchanged. However, if the target value is exceeded, the interest rate will be increased in order to implement reverse constraints on customers.

carbon transition, Private Enterprise A leveraged its position as a key enterprise in the industrial chain to encourage the participation of small and medium-sized ship transport enterprises in the Wanzhou Transition Finance Project Pool. Furthermore, it prioritized collaboration with enterprises that meet the standards of the Wanzhou Transition Finance. Attracted by the transport demand of over 10 million tonnes of aluminum ore per year, many ship transport enterprises took the initiative to purchase new energy ships and transform traditional power ships to achieve low-carbon transition.

Case 2: Chemical Industry State-owned Enterprise B. The Bank of Chongqing has customized its transition financial service program in collaboration with the Corporate Carbon Account built by Chongqing Credit Information Company. The bank has issued a transition credit loan of 10 million yuan to the enterprise and linked the loan interest rate to the energy intensity of the product. The enterprise can therefore obtain an interest rate reduction preference of 20 basis points (bps) each when it achieves the target value of the transition. When the policy of transforming the loan subsidy is considered, it is expected that the enterprise's financial costs will be significantly reduced. Recent data indicates that since 2012, State-owned Enterprise B's comprehensive energy consumption output value has decreased by 25.3%. This is in line with the company's high-

speed development, which has enabled further energy savings and emission reductions. As a result, State-owned Enterprise B has become a leader in the field of organic chemistry and has successfully achieved green transition.

### III. Lessons Learned

**First, top-level design has been strengthened, and responsibilities have been consolidated at all levels.** Chongqing Municipality has clarified the key areas and directions of low-carbon transition through the formulation of a series of policy documents, such as the Catalogue of Financial Support Projects for Transition in Chongqing Municipality. These documents provide clear policy guidelines for financial institutions and enterprises. Concurrently, the Chongqing Municipal Finance Bureau has established a list of financial guarantees for major events, facilitating precise alignment of financial resources and providing a robust policy foundation and financial assurance for green, low-carbon transition.

**Second, the demonstration effect of typical enterprises can be extended to the supply chain level.** Core enterprises can rely on market influence to promote the low-carbon transition of upstream and downstream small and medium-sized enterprises, forming a spillover effect through the “technology demonstration + commercial

support” model. By driving upstream suppliers to embrace low-carbon transition through the provision of loans and financial subsidies, it has not only established a full-chain green transition ecosystem across the entire supply chain, but also effectively promoted the implementation of green and low-carbon transformation on a broader scale. Meanwhile, the experience of successful enterprises can effectively reduce the cost of trial and error for other enterprises in the transition process, thus improving the efficiency of green transition for the entire industry.

**Third, a balance needs to be struck between financial innovation and risk management.** Specifically, it is necessary to balance the “two highs and one leftover” lending restrictions with transition financial support, and, under the premise of total control, to tilt credit resources to high-quality, high-carbon enterprises through list management and the implementation of differentiated credit policies. As transition finance has high defined costs and low yields, it needs to be incorporated into policy incentive systems, such as carbon emission reduction support tools and government guarantee funds, to reduce the operating pressure on financial institutions.

**Fourth, the development of digital platforms has been enhanced to facilitate the effective integration of financial**

**resources.** The construction of digital platforms and the sharing of information provide technical support and information guarantees for green low-carbon transition. It improves information transparency and circulation efficiency and reduces information asymmetry, thus reducing the risk of financial institutions and improving the operational efficiency of the green financial market. For instance, the Yangtze River Green Finance green finance big data comprehensive service system facilitates the precise docking of green projects, the precise granting of credit by financial institutions, and the collection of the full amount of green finance.