Political Economy
Letters

Research on climate investment and finance pilots for carbon emission dual control management

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- What is Climate Investment and Finance? The essence of climate investment and finance is to develop "climate finance".
- Progress in International Climate Finance. Global climate finance almost doubled in the last decade, with a cumulative USD 4.8 trillion in climate finance committed between 2011-2020 or USD 480 billion annual average.
- Climate Investment and Finance Pilots in China. In June 2022, the first round of key climate investment and finance projects has collected 138 projects. At of the end of 2022, a total of over 1500 climate investment and financing projects have been stored in 23 pilots, covering nearly 2 trillion vuan.

What is Climate Investment and Finance?

The essence of climate investment and finance is to develop "climate finance". Climate investment and finance, or "Climate Finance", is to use financial tools and innovation to solve the financial difficulties when responding to climate change. Specifically, it is reflected in three aspects: capital gap, capital mechanism and capital risk. According to the UNFCCC, "climate investment and finance" can be defined as local, national, or multinational funding from public, private, or other sources which aims to supporting actions to mitigate and adapt to climate change.

In December 2021, China's Ministry of Ecology and Environment and nine other departments jointly issued the "Notice on Conducting Climate Investment and Finance Pilot Work" and the "Climate Investment and Finance Pilot Work Plan", which defined climate investment and financing as an important component of green finance, guiding and promoting more funds to invest and financing activities in the field of addressing climate change in order to achieve national independent contribution goals and low-carbon development goals, The scope of support includes two aspects: *mitigation* and *adaptation*.

Mitigation includes:

Adjust industrial structure;

Optimize energy consumption structure;

Develop CCUS;

Control GHG emissions from non-energy activities;

Increase carbon sinks;

Adaptation includes:

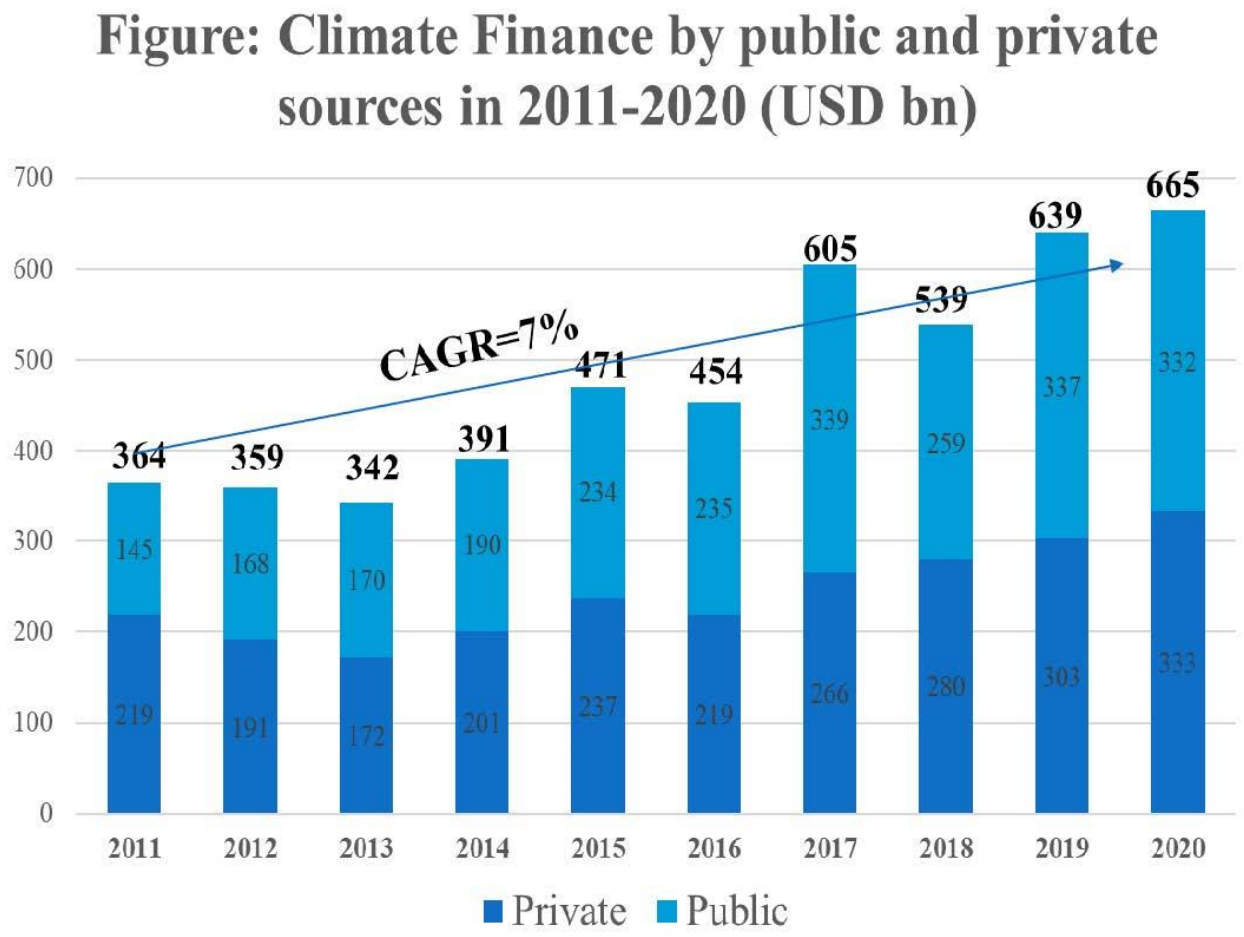
Improve adaptability in key areas;

Strengthen the construction of adaptive infrastructure;

Progress in International Climate Finance

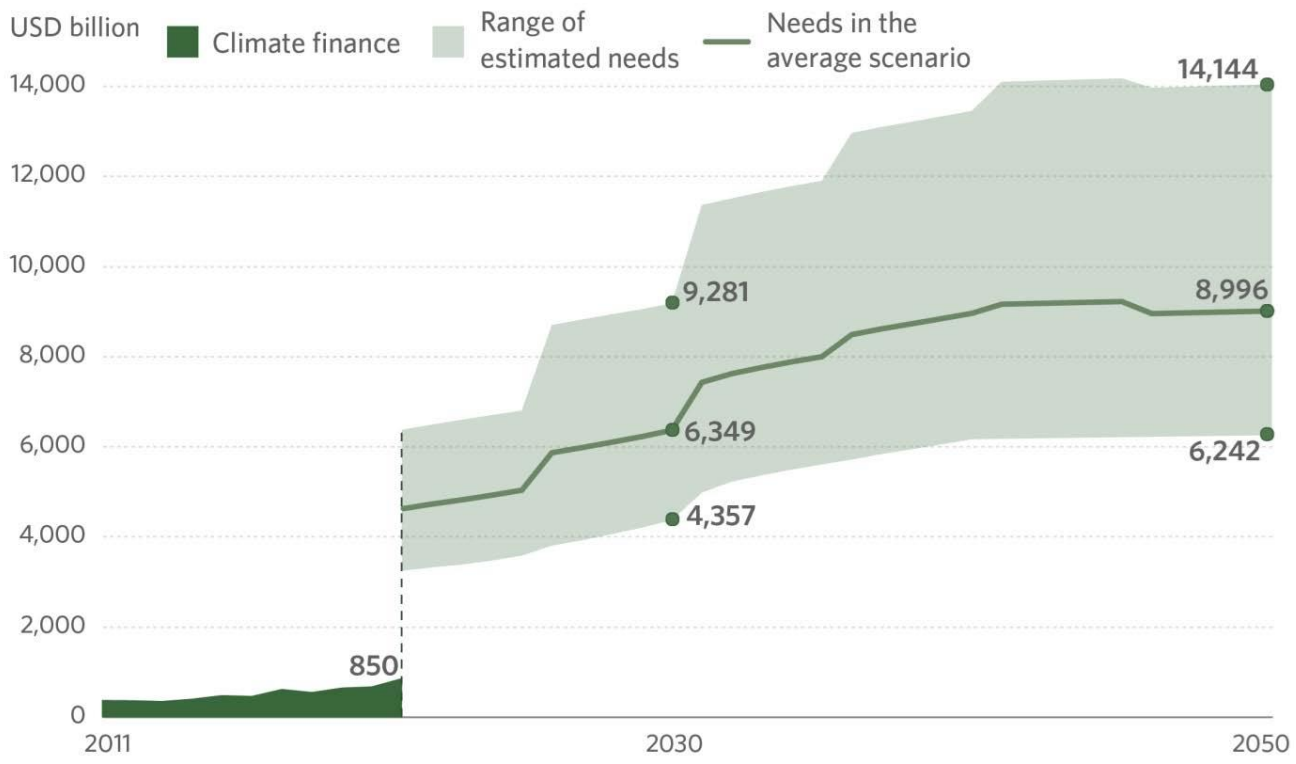
Global climate investment and finance support.

Global climate finance almost doubled in the last decade, with a cumulative USD 4.8 trillion in climate finance committed between 2011-2020 or USD 480 billion annual average. The growth rate of private climate finance was slower (4.8%) than that of the public sector (9.1%) and must increase rapidly at scale.



Data Source: CPI "Global Landscape of Climate Finance: A Decade of Data"

While climate finance increased at a cumulative average annual growth rate (CAGR)2 of 7%, the current levels of increase are not on track to meet a 1.5 °Cglobal warming scenario. We need at least USD 4.3 trillion in annual finance flows by 2030 (CAGR 21%) to avoid the worst impacts of climate change.



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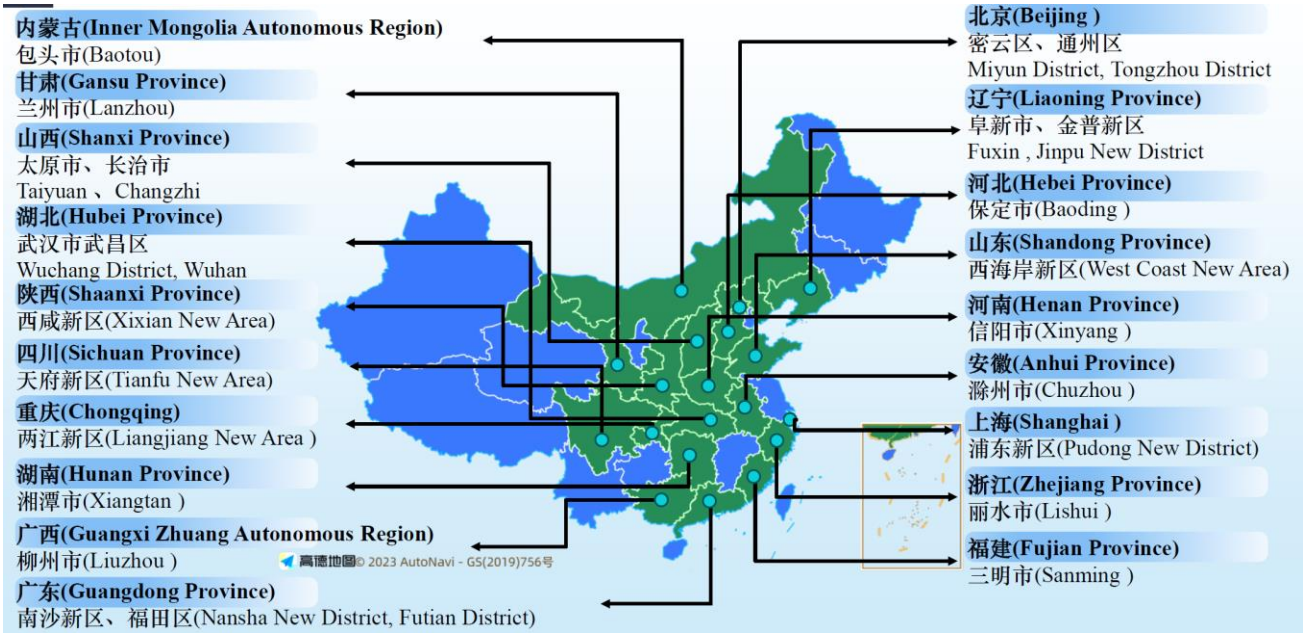
At 2009 Copenhagen Conference, it was recommended that developed countries provide 100 billion euros in aid to developing countries every year and proposed an initiative to provide 15 billion euros per year. In 2020, The European Commission requires that 30% of the combined seven-year budget plan and the "Next Generation EU" budget plan be invested in combating climate change. In 2023, the European Council voted to adopt the Carbon Border Adjustment Mechanism (CBAM) legislation.

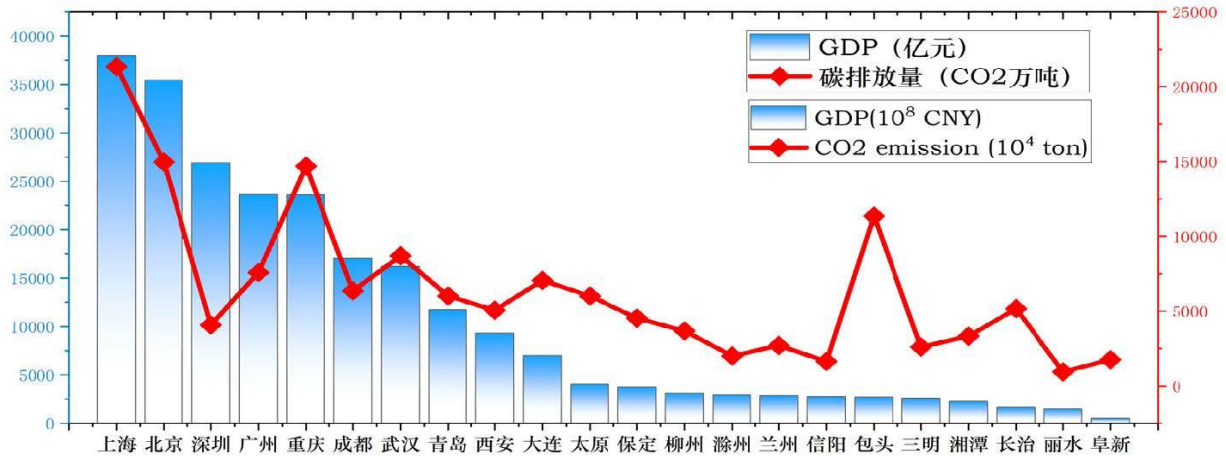
In August 2022, U.S. President Biden signed the Inflation Reduction Act of 2022(IRA), planning to invest US $369 billion in climate change and energy security. In December 2022, U.S. President Biden signed P.L.117-328, the Consolidated Appropriations Act, 2023. Funds appropriated by Congress for climate finance in FY 2023 totaled not less than $1 billion. In August 2023, Canada officially implemented "Canada's National Adaptation Strategy: Building Resilient Communities and a Strong Economy". In 2021, Japan will provide climate finance, both public and private, totaling JPY 6.5 trillion over the next 5 years, from 2021 to 2025, as announced by Japanese PM Suga at the G7 Cornwall Summit in June. New Jersey invested its Regional Greenhouse Gas Initiative (RGGI) auction proceeds in projects helping to meet the State's climate, clean energy, and environmental justice goals. In 2021, Toronto formulated the "Net Zero Transformation Strategy", executed specific policies in key areas of climate change, and combined fiscal and financial instruments to support climate finance development. Climate Change Levy(CCL) was levied in 2001, and further Carbon Price Floor(CPF) was launched in 2013. In 2020, Germany and Luxembourg, in conjunction with financial institutions like the World Bank, European Investment Bank, established City Climate Finance Gap Fund, which is dedicated to investing in urban low-carbon, climate resilience and livability projects in developing

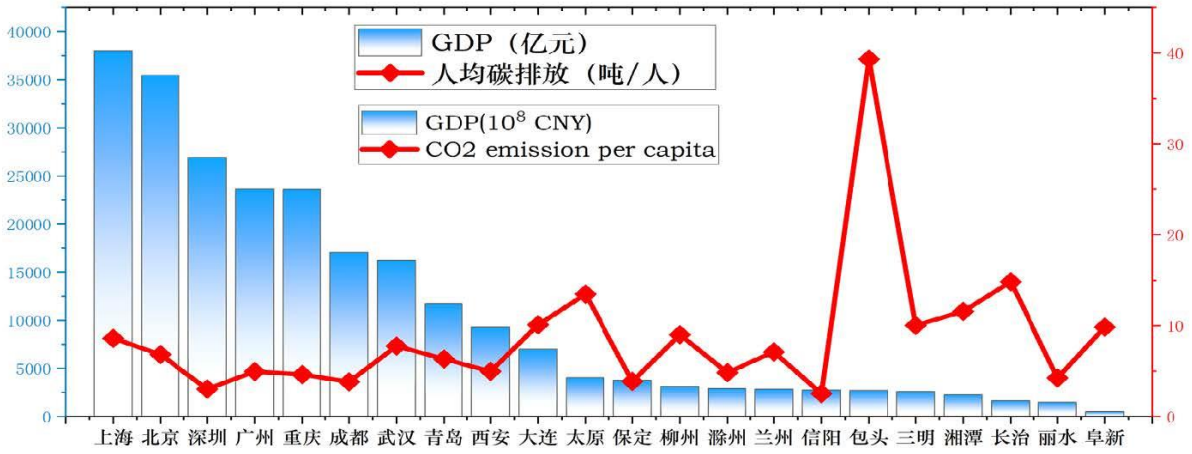
countries and emerging economies.

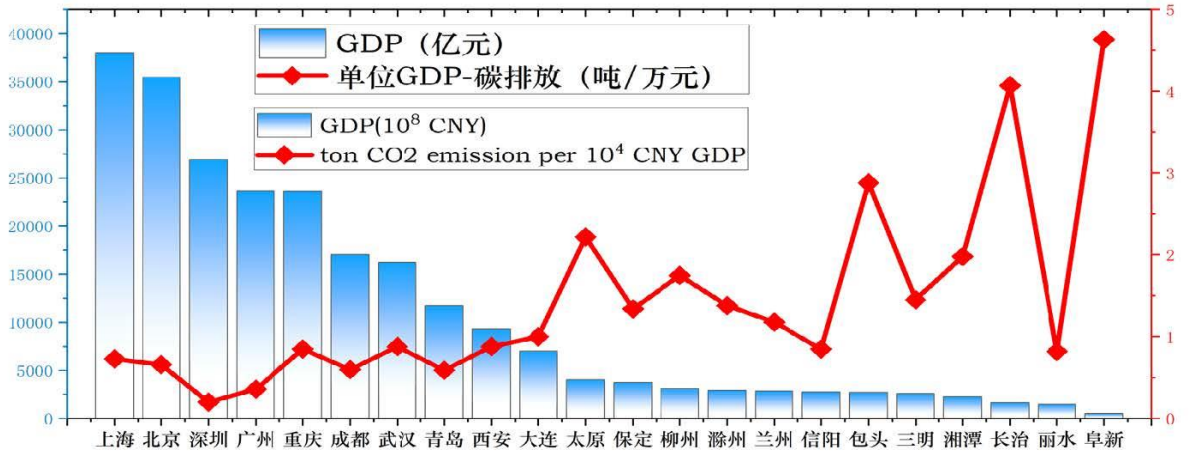
Climate Investment and Finance Pilots in China

Climate Investment and Finance Pilots









12 pilots have implemented carbon account.

19 pilots have innovated in carbon finance.

In June 2022, the first round of key climate investment and finance projects has collected 138 projects.

At of the end of 2022, a total of over 1500 climate investment and financing projects have been stored in 23 pilots, covering nearly 2 trillion yuan.

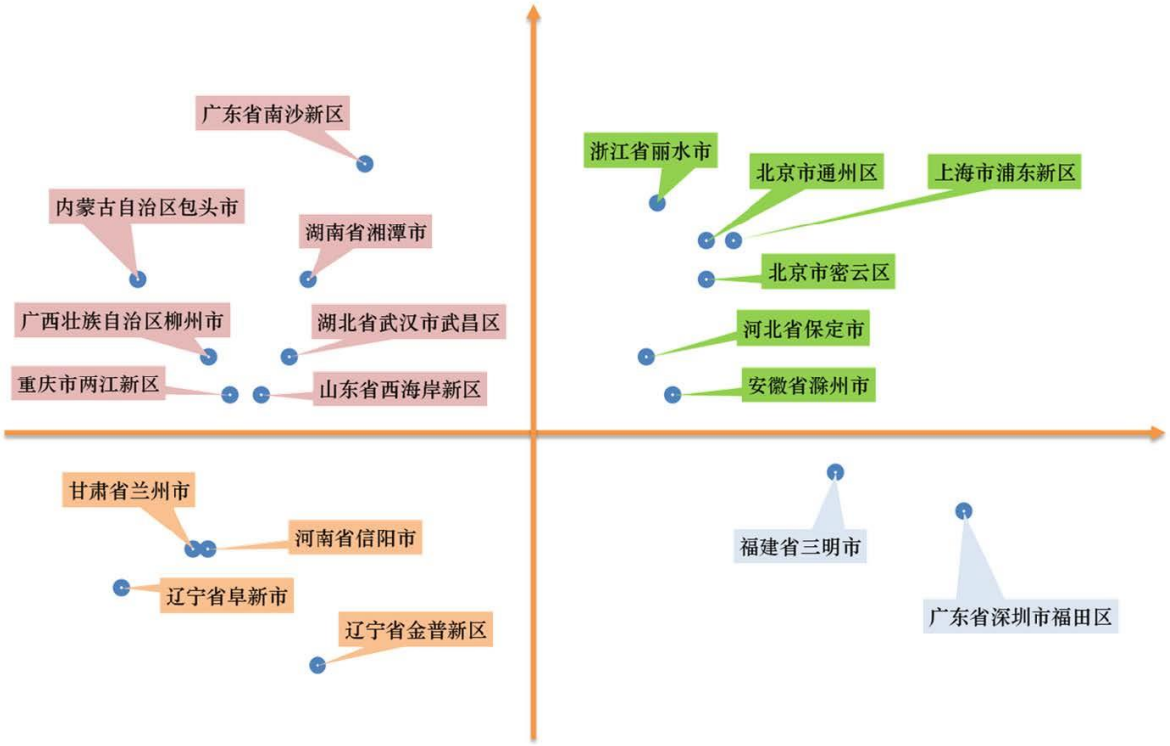
Evaluation of Climate Finance and Investment Pilots in China

The method for calculating efficiency is the Super-SBM model that considers unexpected outputs. This model can handle unexpected outputs while avoiding deviations and impacts caused by differences in radial and angular choices (Tone, 2002), while increasing the comparability between effective decision-making units (Gong Yuanyuan, 2018). The composition of China's climate investment and finance pilots' policy evaluation system includes primary indicators, secondary indicators, and tertiary indicators. The first level

indicators include policy support, policy guarantee, and policy implementation.

The pilots in the first quadrant include Pudong New Area, Lishui, Tongzhou District, Miyun District, Baoding, and Chuzhou. These pilot areas have shown good performance in terms of policy and climate investment and finance efficiency, with the overall characteristics of being a mega city in Beijing and Shanghai, and cities with outstanding advantages in ecological environment protection, such as Lishui and Chuzhou.

The pilots in the second quadrant are Nansha New Area, Baotou, Liuzhou, Liangjiang New Area, Xiangtan, Wuchang District, and West Coast New Area. These pilots have shown outstanding performance in climate investment and financing policies, and further optimization is needed in climate investment and financing efficiency. The distribution of cities in this quadrant is relatively wide, and the overall characteristic is that there is already significant support for climate investment and financing policies, promoting the continuous deepening of climate investment and financing pilot work.



The pilots in the third quadrant are Lanzhou, Xinyang, Fuxin, and Jinpu New Area. These pilots still have significant potentials for improvement in climate investment and finance policies and efficiency, with overall characteristics being located in the China's central and western regions and facing significant industrial transformation pressure.

The pilots in the fourth quadrant are Futian District, Shenzhen, and Sanming. These two pilot areas have outstanding performance in climate investment and finance efficiency, but have some shortcomings in climate investment and finance policies.

For pilots in the first quadrant, such as Beijing, Shanghai, Lishui, and Chuzhou, it is recommended to further explore and innovate on the existing good foundation, combine their own development advantages, and fully leverage their own advantages in the climate

investment and finance pilot process.

For pilots in the second quadrant, such as Liangjiang New Area and Wuchang District, it is recommended to fully leverage policy advantages, guide funds to actively flow into the field of climate change response, and focus on improving the efficiency of climate investment and finance.

For pilots in the third quadrant, such as Lanzhou and Fuxin, it is recommended to further deepen policy guidance, give full play to policy guidance, and actively implement carbon emission dual control management.

For pilots in the fourth quadrant, such as Shenzhen and Sanming, it is recommended to further leverage policy service functions, seize the opportunity of high efficiency in climate investment and finance, and further expand efficiency advantages.

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