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Financing China's sustainable urban transformation

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Policy insight

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Summary

For China to meet its climate goals under the Paris Agreement and its 2060 carbon neutrality target, it is estimated that the country needs to spend US$20 trillion over the next three decades across all sectors.[1] As cities are the primary source of China's carbon emissions, much of this investment is needed in the form of low-carbon and sustainable urban infrastructure. Decades of rapid infrastructure growth, initially funded through the sale of land use rights and off-budget investment vehicles, have left many municipalities in deep debt.

The debt situation has prompted concerns over the long-term ability of cities to sufficiently meet the financing needs of a sustainable transition. Meeting this financing challenge will require a multi-layered fiscal strategy that empowers municipalities with sufficient financial resources and incentivises low-carbon and sustainable urban investments over the long term.

An important step is to empower cities themselves with the fiscal stability they require. Several well-designed local taxes have been identified by experts that can provide municipalities with additional own-source revenues. Equally important is to incentivise the existing financial system to prioritise low-carbon and sustainable urban investments. Cities can also be enabled to make low-carbon and sustainable investments through more efficient data-sharing and coordination and by expanding issuing requirements to include minimum environmental thresholds for special-purpose bond use.

The majority of funding needed for the low-carbon and sustainable infrastructure to meet carbon neutrality goals needs to come from outside of government budgets. However, most banks and other financial institutions still lack the information and knowledge of climate risks they need to fully grasp the latent market potential of green finance. Putting in place ways to support environmental impact disclosure, the valuation of projects and adequate project time horizons would effectively increase the cost of financing for high-carbon projects and lower the relative costs for sustainable projects. Green bonds have expanded at an extraordinary pace since 2015 and have tremendous potential for continued growth as the market develops to mobilise private-sector resources. A clear green bond taxonomy would only strengthen and increase their use.

Recommendations

- Develop stable own-source revenue streams at the municipal and provincial levels.
- Prioritise the strengthening of systems for data collection and data sharing.
- Include minimum environmental thresholds for projects funded by special purpose bonds.
- Scale up environmental information disclosure.
- Develop a clear taxonomy system for green bonds.

[1] According to research by the Institute of Climate Change and Sustainable Development at Tsinghua University (Jiankun, 2020).

1. Introduction: China's urban fiscal challenges

The low-carbon transformation of China's urban areas is a crucial action towards meeting the Paris Agreement's goal of limiting global warming to well below 2°C, while making efforts to limit temperature rise to 1.5°C. To meet this challenge under the context of its 2060 carbon neutrality pledge, China will need to invest about US$20 trillion over the next three decades to remove carbon from its energy system, across all sectors (He, 2020). The 14th Five-Year Plan, for the period 2021 to 2025, emphasises the ongoing importance of the country's human-centric 'new urbanisation' strategy as its cities grow. The Five-Year Plan states that improving urban areas will support other key Plan themes such as high-quality growth, innovation, domestic consumption and environmental protection.

The right investments must be financed as part of this urban transformation and transition to high-quality growth; this report reviews the obstacles to and ways to support financing.

Why focus on urban China?

Low-carbon and sustainable infrastructure investments in cities are critical since cities are the primary source of China's carbon emissions. The country currently has more than 110 cities with a population of one million and above and these urban centres continue to grow steadily. It is estimated that almost half of the world's expected construction in this decade will occur in China (Zhang, 2020).

Specific measures in the energy, buildings and transport sectors, and in what has been described as 'new infrastructure' (digital, information and innovation infrastructure), can place cities on a low-carbon and sustainable development path. Cities that are built or retrofitted to be clean, compact and connected ('CCC cities') can increase the prosperity and wellbeing of residents by reducing pollution, congestion and inefficiencies (see Tillu, 2021).

The financing gap

There is currently a gap between the country's ambitious high-level objectives and the financing choices and priorities of municipal governments. The national goals described above can only be achieved with accompanying local policies that focus on implementation. These local implementation measures are very important as most decisions that establish the form of urban areas are determined at the municipal level (Wong, 2013). Meanwhile, Chinese cities are undergoing extensive fiscal reforms. Decades of rapid infrastructure growth, initially funded through the sale of land use rights and then through off-budget local government financing vehicles, have left many municipalities in deep debt. Subsequent restrictions have led to a decline in local government revenue, leaving even less capacity and incentive for investing in new forms of low-carbon infrastructure.

China must now strike a balance between the mounting fiscal pressures to deliver with lower fiscal resources (Cheng, 2021) and the increasing need to finance low-carbon urban infrastructure.

2. Municipal finances

While the central government sets the general direction of China's economy, local governments play the dominant role in shaping the practical decisions that shape a city, including the development and financing of infrastructure projects. Currently, municipal governments are responsible for the majority of China's urban infrastructure development (Wong, 2013). Decentralisation has been a defining feature of China's fiscal system since the beginning of the Reform and Opening-Up era at the end of the 1970s, when control over the allocation of resources, planning and budgetary powers was transferred to cities (Wu and Gaubatz, 2020). This decentralised fiscal model has impressively met the demands created by rapid urban growth over the past four decades. However, it has also led to creative off-budget financing models and large amounts of debt.

Municipal debt build-up

China's transition to a market economy eventually put extraordinary pressure on municipal budgets, particularly as rural-to-urban migration dramatically increased. Formal local government budgets depend mostly on revenue-sharing and central government transfers. However, because these often have not equalled the amounts required to fulfil mandates for developing and funding urban infrastructure and services, cities have found other ways to cope.

Cities turned to revenues from land-use sales as a significant form of financing. Additionally, local governments generated debt through off-budget local government financing vehicles (LGFVs). The LGFVs were created as separate legal entities to carry out public goods functions and finance profit-making activities through bank loans, project bonds and creating public–private partnerships (Qi and Hove, 2020). Under this framework, the LGFVs are technically the debtors but in reality debt liabilities remain implicitly underwritten by municipal governments. These complex LGFVs became extensively used across the country because they facilitated the enormous amounts of capital needed to fund China's urban development (ibid.). In addition to funding infrastructure, LGFVs are often involved in other profitable sectors, mainly real estate and financial services (Wu and Gaubatz, 2020).

In 2015, in response to concerns over vast local government debt and other problems created by off-budget financing, China's central government moved to transfer more than CNY15 trillion (US$2.3 trillion) of local government debt, including from LGFVs, onto the official ledger through a debt swap programme, replacing implicit debts with government bonds (National People's Congress, 2016). The Ministry of Finance at this time also clarified that LGFV debts would no longer be treated like government debt, and hence would be allowed to fail, like any other debt. While 'closing the back door', the Ministry of Finance also 'opened the front door' by allowing for the issuance of new 'special purpose' bonds (described in more detail on p6). These bonds are project-based and can be repaid by revenues generated by the projects, allowing for new types of official debt to replace LGFVs as the main mechanism for financing infrastructure investments.

Although special purpose bonds are a close replacement for the kind of off-budget infrastructure funding local governments used before 2015, these reforms have led to greater supervision and smaller overall budgets. The result has been an ongoing reliance on LGFVs. Total off-budget debt held by LGFVs had grown to more than CNY10 trillion (US$1.5 trillion) as of July 2020 (National Institute for Finance and Development, 2020), back to levels similar before the debt swap programme. Thus, there are many unresolved questions over the long-term pattern of local government financing, financial risk and the viability of planned infrastructure projects and as a consequence many creditors are becoming increasingly wary of lending to local governments (Yu and Mitchell, 2019).

Stabilising municipal financing through own-source revenues

China's indirect urban financing model destabilises long-term decision-making and complicates efforts to promote sustainable infrastructure development. The interplay between investment corporations, banks and municipal governments often incentivises short-term profit-seeking behaviour. Land transfers as a means of fundraising often take the form of high-return real estate projects that are usually far from sustainable and often consist of an unnecessary expansion of urban sprawl (Zhan and de Jong, 2018).

One of the most destabilising factors for both municipal and provincial governments is the lack of own-source revenues. Having access to their own revenues would improve cities' accountability for service delivery, protect their budgets from the effects of national tax cuts, and also create the right incentives for intentional fiscal choices as it would enable sustainable access to private finance (Ahmad and Colenbrander, 2020). In addition to the challenges created by the gap in funding from government fiscal transfers, shared revenues often fluctuate in response to the changing priorities of the central government, making it difficult to anchor a system of local government bonds or the management of liabilities (Ahmad and Zhang, 2020). Own-source revenues allow cities to provide financial sustainability and create the appropriate incentive structures for infrastructure projects (Ahmad et al., 2020).

Ahmad (2021) and Ahmad and Colenbrander (2020) have extensively explored several specific taxes, including a 'piggyback', or surcharge, on personal income tax; a local 'piggyback' on a potential future national carbon tax; and a beneficial property tax. Achieving the full long-term benefits and stable revenues from levying well-designed local taxes is incumbent upon implementation carried out in tandem with supportive policies and fiscal structures; how to apply these taxes within the right enabling conditions, including fiscal equalisation frameworks to avoid exacerbating spatial inequalities and other challenges, has been explored in detail by Ahmad (2021).

Pigouvian taxes[2] that aggressively tackle issues such as traffic congestion, air pollution, greenhouse gases, and other undesirable 'urban diseases' (as labelled by the Chinese government) are also favourable. One such tax is the Environmental Protection Tax, which was introduced in 2018 to penalise companies for exceeding permitted amounts of solid waste, air, noise and water pollution. This tax replaced local pollutant discharge fees, of which the central government took 10 per cent. Under the tax all fees from pollution that take place within a municipality go to the city government. However, while this tax sets an important framework, it has been recognised as having a limited effect and a more ambitious set of Pigouvian taxes are needed (Hu et al., 2019). If other Pigouvian taxes are imposed, collectively these revenues could be even more impactful if they are explicitly earmarked to further support sustainable investments.

Challenges and improvements to data-sharing

Another challenge for municipalities regarding financing is identifying the value of low-carbon and sustainable investments. Different government agencies within the same cities usually establish their own data systems for city information, often collecting and calculating the same type of data under different definitions and methodologies. This results in inconsistencies and fragmentation that make cross-sector joint decisions on infrastructure projects difficult and benchmarking problematic. Furthermore, there are few incentives to share data among different agencies, posing an institutional challenge to integrated planning, implementation, and monitoring and evaluation. For regional issues like air pollution, which necessitates a regionally

[2] Pigouvian taxes are taxes on market activities that create adverse effects for society, such as taxes on plastic bags, gas or cigarettes.

cohesive response, it poses a particularly acute problem. Incompatible datasets downstream can undermine financing for low-carbon projects upstream.

City-level project planning needs to be backed by good data and shared systems. Recognising their value, the central government has been encouraging various forms of data-sharing systems across the country for a number of years. An example of one such programme is a recent pilot project funded by the World Bank that aims to consolidate municipal-level information among a few cities.[3] The project helps develop a platform that connects data systems from key government agencies to be used to inform urban infrastructure and development projects. This platform has many limitations and is not intended to be comprehensive; it is an experimental scheme intended to support more consistent and unified definitions and methodologies to demonstrate that it can provide a common basis for integrated planning and decision-making among cities. This and other pilot platforms could eventually inform a bigger, more ambitious and inclusive system across government agencies that would enable the monitoring of performance and progress of low-carbon and sustainable investments. This could ultimately inform and attract financing.

Greening local government special purpose bonds

As mentioned above, special purpose bonds allocated by the central government are designed to transition away from local government financing vehicles as the primary investment tool for local governments. Their use has been further expanded in response to the COVID-19 pandemic. In 2020, CNY3.75 trillion (US$580bn) of these bonds were issued, up from CNY1.82 trillion (US$280bn) in 2019 (State Council, 2020). These special purpose bonds included support for 'new infrastructure' – in line with existing high-level economic objectives – such as data centres, 5G, artificial intelligence, and the Internet of Things. In the end, however, most of these bonds ended up in more traditional, energy-intensive sectors. This is a missed opportunity because investing in low-carbon infrastructure now pays back multiples in the future (Tillu, 2021).

In 2021, the central government plans to issue CNY3.65 trillion (US$560bn) of special purpose bonds (National People's Congress, 2021). At present, intended projects have to meet a number of criteria in order for municipalities to receive and use the bonds. An immediate high-impact recommendation would be to include minimum environmental thresholds for a certain percentage of projects. Such requirements, strengthened over time, would be a powerful signal that a major transformation is needed, incentivising investment into low-carbon and sustainable urban infrastructure.

3. The cities of Chongqing, Chengdu, Ningbo and the Chongqing-Chengdu cluster.

3. Green finance

Existing government budgets will cover less than an estimated 15 per cent of the total funding for the low-carbon infrastructure needed to meet carbon neutrality goals (Shao et al., 2020). As a result, an estimated 85 per cent of China's sustainable infrastructure will have to be financed through non-public sources (ibid.).

Progress on green finance to date

The Chinese government has been ambitiously promoting green finance. In 2016 China became the first country in the world to develop a green finance policy framework. But much had been done before. In 2012 the People's Bank of China issued green credit guidelines, and in 2015 green finance was included in the State Council's ecological civilisation directive. Most recently, in October 2020, the government further released guidelines to steer investment towards mitigating climate change by encouraging financial institutions to develop climate-friendly green financial products and financing for low-carbon projects. By the end of 2020 China's outstanding green project loans had reached around US$1.9 trillion, the largest amount globally (State Council, 2021).

The 14th Five-Year Plan published in March 2021 stated that China will "greatly develop" its green finance capabilities, thus associated guidelines and policies are expected to be developed within this period (2021–25). For example, in April 2021 China announced that it will require financial institutions to transition towards green finance as early as possible by giving specific incentives to financial institutions and unveiled new tools to boost financing for carbon emission cuts. It will also increase its support for green finance through ratings of commercial banks, deposit insurance rates and macroprudential assessments.

Challenges to progress – data, disclosure and investment cycles

Despite momentum, progress could be accelerated. The vast majority of banks and other financial institutions still lack the information and knowledge of climate risks needed to be able to grasp fully the latent market potential of green finance. In the current system, many types of sustainable urban infrastructure do not yet have clearly established investment returns that are familiar to creditors. This makes it challenging to channel investment to more innovative low-carbon projects. For example, investors might be familiar with the infrastructure associated with solar power – an investment path that has been well worn – but be less familiar with other interventions such as nature-based solutions.

A powerful step would be to require greater disclosure of the environmental impact of the projects and assets in which financial institutions invest. Currently, many financial institutions are not incentivised to share environmental information. A survey conducted in December 2020 of Shenzhen-based financial institutions showed that only a quarter had transparent guidelines for their environment-related investment activities (Syntao, 2020). A lack of compulsory requirements as well as a lack of unified standards were cited as impediments to environmental information disclosure. The Shenzhen local government required financial institutions to disclose their environmental impact from March 2021 onwards – the first time a local government in China has called for such a mandate. The Shenzhen rules could set the basis for a national rule, paving the way for the roll-out of transparent environmental information.

Another challenge is that sustainable infrastructure projects tend to require longer preparation and investment cycles than more traditional, often 'off-the-shelf' projects. The investment cycle of projects at the municipal-level is typically three to five years, significantly shorter than in many

other parts of the world.[4] Innovative low-carbon projects, due to their novelty, often require extra time to design and coordinate between developers and government departments. Longer cycles can deter both investors and local government officials in China, who often have their key performance indicators tied to growth. Changes made in the valuation of projects and the project time horizons would effectively increase the cost of financing high-carbon projects as well as reduce the relative costs of sustainable projects.

Green bonds

The development of green bonds has been central to China's green finance framework. In 2015 the government issued *Guidelines on Green Bonds Issuance*, which specified issuance procedures as well as definitions for green assets and sustainable projects and other relevant regulatory measures (Qi and Hove, 2020). Since then, their relatively simple structure and transparency requirements have contributed to the rapid growth of the market for green bonds. China is leading the world in green bond issuance this year. In Q1 of 2021 alone, China accounted for 13.4 per cent of all green bonds issued globally, raising $26.1 billion (Toole, 2021). The country was also the world's leading issuer in 2019, with a continuing upward trend despite a decline in 2020 due to the COVID-19 pandemic.

Many Chinese provincial and local governments have contributed to this momentum by issuing their own guidance documents on green finance. Currently, there are at least five pilot green finance zones, where banks and other investors can access a variety of incentives for low-carbon projects. By the end of 2018, Chinese local government entities had issued green bonds worth nearly US$6 billion. In April 2021 China announced that it will continue to increase the allocation of green bonds in its foreign exchange reserve investments and control investments in high-polluting areas.

To realise the full potential of green bonds, a range of bottlenecks need to be addressed. One of the core barriers to green bonds is limited awareness and difficulty for investors in identifying sustainable assets and projects, meaning that investment-ready sustainable projects are not always apparent (Shao et al., 2020). The underlying issue stems from the fact that many of these assets have not yet been standardised or categorised, so that even if investors are keen, they are often unable to locate them.

In the long term, a unified and robust taxonomy system would help China's green finance objectives. Currently, there are two types of green bond and credit standards: green financial bonds are guided by one set of standards, while corporate bonds are guided by another. The development of a clear and overarching taxonomy system would reduce uncertainty about what is considered low-carbon, sustainable or green, thereby lowering transaction costs to enter the market.

China recently emphasised the importance of close engagement with global partners on green bonds in order to support a carbon emissions peak before 2030 and carbon neutrality by 2060. To this end, the People's Bank of China announced in March 2021 that it is working with the European Union to adopt a common green taxonomy across the two markets. This Common Classification Standard for Green Finance is expected to be unveiled later this year, enabling foreign investors to enter China's green finance market more easily. Furthermore, identifying what makes a project low-carbon is one major task, but equally important is defining its shadow, or 'brown' project parameters, also described as articulating clear thresholds for exclusion (Choi and Heller, 2021). Green bonds are currently exclusively focused on low-carbon sectors; it would

[4] The average length of many related types of loans from Chinese banks is about two to five years. Thus, if funding is needed for a 10-year project, for example, it would require raising funds five times, significantly increasing investment risks. Many sustainable projects in subways, railways water treatment, solid waste etc. have lengthy investments periods which might take 10 or even 20 years before investments generate a return, far beyond the current loan periods of most Chinese banks.

be beneficial to create a viable, credible pathway that would enable the greening of existing 'brown' projects in other sectors, like cement, steel and plastics.

China recently made changes to its Green Bond Endorsed Project Catalogue (April 2021 edition), which lists the conditions for a security to be considered sustainable or green. This acts as a consolidated resource for domestic guidelines, removing the need to consult different documents depending on the type of bond. Notably it has removed 'clean coal', secondary oil and gas extraction projects from being considered as sustainable and added new areas such as green agriculture, green construction and green equipment manufacturing. This is a significant step in moving China in the direction of aligning with global standards of green guidelines and criteria. Furthermore, for regulators, issuers and investors, this can considerably simplify the process of identifying green assets, opening the door to greater international participation (Shao et al., 2020).

4. Recommendations

1. Develop stable own-source revenue streams at the municipal and provincial levels

Own-source revenues enable cities to have financial sustainability and create the appropriate incentive structures for low-carbon and sustainable infrastructure projects, in contrast to shared revenues, which often fluctuate in response to changing national priorities. Several well-designed local taxes that could be effective have been explored in depth by various experts and include a 'piggyback', or surcharge, on personal income tax; a local 'piggyback' on a potential future national carbon tax; and a beneficial property tax. More aggressive Pigouvian taxes are also favoured.

2. Prioritise the strengthening of systems for data collection and data sharing

Increased consistency and unified definitions and methodologies can provide a common basis for integrated planning and decision-making. This would also enable the monitoring of performance and progress of low-carbon and sustainable investments, which could inform and attract financing.

3. Include minimum environmental thresholds for projects funded by special purpose bonds

Connecting special purpose bonds with goals for sustainable urban development can be introduced and phased in incrementally. Such requirements, strengthened over time, would be a powerful signal to incentivise investment in low-carbon urban infrastructure.

4. Scale up environmental information disclosure

Environmental information is a crucial step in further growing the development of green finance. In particular, it will help financial institutions assess and take stock of environmental risk liabilities and create greater transparency in their investments. It can also set the foundation for a more market-based approach to low-carbon finance.

5. Develop a clear taxonomy system for green bonds

China's green bonds are currently regulated by many different groups. Formalising domestic green bond standards is key. The Common Classification Standard for Green Finance due later this year as a collaboration between the People's Bank of China and the EU is an important step that will support alignment of domestic and international green definitions and could entice global investors, reduce transaction costs and regulatory barriers to market entry. As all green bonds are currently exclusively focused on sustainable sectors, it would be beneficial to create a viable, credible pathway that enables the greening of 'brown' projects in other sectors, such as cement, steel and plastics.

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