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China, the world and the next decade: better growth, better climate

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Policy insight

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List of abbreviations

ADB	Asian Development Bank
AIIB	Asian Infrastructure Investment Bank
BRI	Belt and Road Initiative
BRT	Bus rapid transit [system]
COP	Conference of the Parties
CPEC	China–Pakistan Economic Corridor
EBRD	European Bank for Reconstruction and Development
EIB	European Investment Bank
ESCAP	[United Nations] Economic and Social Commission for Asia and the Pacific
GDP	Gross domestic product
GFSM	Government Financial Statistics Manual
IMF	International Monetary Fund
IPSAS	International Public Sector Accounting Standards
kWh	Kilowatt hour
MDB	Multilateral Development Bank
MW	Megawatt
NDB	New Development Bank
NPL	Non-performing loan
PBC	People's Bank of China
PFM	Public finance management
PIT	Personal income tax
PPP	Public–private partnership
SEZ	Special Economic Zone
SOE	State-owned enterprise
SAT	State Administration of Taxation
UDIC	Urban Development Investment Corporation
UNEP	United Nations Environment Programme
VAT	Value added tax

Executive summary

China has a key role in the global agenda of sustainable development as the urgency of addressing climate change the next decade becomes clear

For the first time since post-WWII reconstruction and the building of an open, international system, the world has a truly global agenda: fostering sustainable development and managing climate change. The investments of the next decade, the 2020s, particularly in infrastructure, will be key to not only avoiding dangerous climate change but also delivering strong, balanced, sustainable and inclusive growth. Openness, collaboration and internationalism are clearly crucial to the implementation of this global agenda. China has contributed strongly to forming the agenda of sustainable development and managing climate change – and China is crucial for the delivery of both elements.

To meet the objective set down in the Paris Agreement of maintaining global temperature increases 'well below' 2°C, global emissions have to peak in the next few years. In the next 15, the world's infrastructure will roughly double. If countries continue to invest in and build dirty infrastructure, they will lock the world into a pathway that would make the Paris targets unachievable at the same time as determining that cities will be unliveable and ecosystems harmed beyond repair. That would be to create a dangerous and destructive future, not one of sustainable development and growth.

The Belt and Road Initiative could help build a connected and sustainable world economy

Change and reform are urgent, at local, national and international levels. China is critical to this change and reform. As the world's largest emitter of greenhouse gases, although not on a per capita basis, China is already embarking on a more sustainable growth model. The Belt and Road Initiative (BRI) is a logical and strategic next step in China's development given the country's shift to services, higher-end manufacturing, increased innovation and a more skilled labour force. Building on a history of old trading links, BRI will increase connectivity and thus strengthen trade as well as financial links across Eurasia, the Middle East, Africa and the Americas.

However, the BRI can help reach global climate change goals only if the investment is managed with sound and consistent environmental criteria. In so doing, the BRI can help China along its internal shift towards a more stable, higher quality growth model. Further, the BRI can foster strong and sustainable growth in partner countries by encouraging sound macro, structural and environmental policies in these countries.

The BRI could be a crucial element in the future of the openness and internationalism that is vital to world prosperity, and could help the next stage in the development of China's economy by creating opportunities and growth in partner countries. With rising productivity and wages, China's structure of production is moving increasingly towards the service sector and higher technology. Simultaneously, external opportunities for low-cost manufacturing are slowing down. The focus thus turns to outward investments linked to major internal structural change.

China can maintain export momentum while fostering the change towards higher-end manufacturing by increasing the sophistication of its products, changing value chains and using its advantage in low-carbon technologies. The BRI can facilitate this shift. However, if China were to foster investment in heavily polluting energy or transport systems, it would make the management of climate change much more difficult and make itself vulnerable to policies in recipient countries that do not move away from fossil fuel investments, thus increasingly stranding outdated and

polluting assets. The global trend, including in China, is moving in the direction of cleaner technologies, decentralised power systems and more stringent climate change and energy policies. This is due to technological progress and cost competitiveness of renewables as much as the recognition that environmental, health and socioeconomic consequences of fossil fuel-powered growth can be very damaging and extremely costly to reverse. China's learning and experience will enrich the BRI.

Chinese outward investments, with the BRI at its core, have the capability to drive across the world the new growth model that China is pioneering domestically. Middle-income countries in particular will account for 70% of new investments in infrastructure. Ensuring these investments are sustainable will be critical not only for ensuring economic growth is inclusive for all in society, but also for the sustainability of the climate and the planet's ecosystems.

Investment in clean technology for BRI partner countries creates benefits

The potential benefits from clean technology for recipient countries include:

- First, better connectivity through trade hubs and transport networks will lead to integration with the changing Chinese value chains, and establish new global markets.
- Second, better infrastructure will also enhance domestic integration which can lead to more efficiency, specialisation and higher-end economic growth.
- Third, clean technology increases the possibilities for joint ventures to transfer skills from China outwards, potentially leading to 'upskilling' in recipient countries.
- Finally, more reliable, affordable access to clean electricity is still a vital, unmet demand in many countries along the BRI and a necessary condition for economic growth and poverty reduction.

China provides a source of finance for this infrastructure investment that has been difficult to mobilise from world capital markets. While strong infrastructure is a necessary condition for sustainable and inclusive growth, it is not sufficient. Improved public services, education and effective public administration are crucial for harnessing the full potential of new trade links and to ensure sustainable development paths. Investments in infrastructure should be accompanied by measures to increase skills and improve the investment climate in recipient countries. Recipient countries should implement sound policy and fiscal reforms to generate incentives for cleaner growth, maintain fiscal sustainability, and reduce corruption. A national and local tax reform agenda building on the Chinese example would make best use of new value chains, raising revenue and decreasing the costs of doing business.

China can help trading partners to improve overall governance, build institutional capacities and manage liabilities effectively. There needs to be a pricing mechanism for carbon, thus ensuring that externalities of dirty infrastructure are internalised and clean technologies encouraged. In sum, the BRI can enhance good public policy and build clean, inclusive and sustainable infrastructure.

China's continuing domestic reforms and rebalancing for sustainable growth provide lessons for partner countries

Chinese structural and fiscal reforms offer important and relevant examples for partner countries. Three thematic issues are important:

1. Sustained and clean investments, clear strategy and delivery for cities

China has to restructure rapidly to move to a more service-oriented and higher-technology economy, reduce its greenhouse gas emissions, and clean up the environment. This requires a shift

in what is produced, how and where. These efforts will provide significant benefits to China's population, which has suffered greatly from poor air quality and congestion. Chinese cities will become more productive and attractive to a high calibre workforce. The shift in economic structure, technological innovations and the move to cleaner investments will be key elements in driving forward China's growth.

2. Investment in growth, labour and upskilling
A more sustainable, clean growth model necessarily involves adjustment and dislocation of jobs as China phases out inefficient and polluting activities, a priority for the 13th Five-Year Plan (2016–2020). However, this transition needs to be managed carefully. With continued investments in education and retraining, some of the socioeconomic consequences of the transition can be turned into investment in people and livelihoods. The new growth model holds vast opportunities for employment, skilled jobs in renewable energy and for innovation.

3. Local service provision and taxation are driving sustainable growth
Local infrastructure and public services are needed to sustain new 'hubs' and for private-sector activities to facilitate a shift in production and employment to the country's interior or along international trade routes. Locally owned (own-source) tax handles are a key way to anchor spending, assure sustainable access to credit without build-up of liabilities and risk, and to mobilise private sector investments.

Conclusions

China's role in developing the global agenda for sustainable growth and managing climate change remains crucial. The purposeful and considered transition to a sustainable economy within China together with a well-planned Belt and Road Initiative delivering investments in sustainable infrastructure can form the foundation of the next Five-Year Plan (the 14th). Just as China was a leader in shaping the global agenda of sustainable development and managing climate change, it can be a leader in driving forward the new growth story of the 21st century.

Using its powerful voice in the international arena to champion internationalism and openness while directing its outward investment flows into sustainable infrastructure, China can play a key role in helping align global policy and investment with the urgent imperative to decarbonise the global economy. At the same time, China can push forward its internal reform agenda towards rebalancing for strong, clean and inclusive growth. It has many lessons to share with partner countries. The way China promotes sustainable investments, a sound policy framework and a strong investment climate will contribute greatly towards the sustainable development of China's partner countries, in particular along the Belt and Road.

This is the growth story that the world needs if we are to overcome poverty, confront climate change and address natural resource and environmental challenges, while harnessing new technologies and providing opportunities for shared prosperity. The urgency and the opportunity of new investment and innovation, particularly in sustainable infrastructure, is insufficiently understood. That must change. In this new story, China will surely lead.

1. China's role in the global agenda of sustainable development, and the urgency of the next decade

China is both demonstrating and driving the growth story of the future. By embarking on a domestic shift towards more efficient and cleaner technologies, dense cities and clean innovation, China is at the forefront of the vital structural transformation in the global economy that should gather pace significantly in the coming decade.

In this paper we argue that China's internal reform agenda towards rebalancing for strong, clean and inclusive growth is firmly linked to its actions in its major trading partner countries, especially those associated with the Belt and Road Initiative (BRI). Its rebalancing agenda is enacting a shift from an economy based primarily on manufacturing to one based increasingly on services, more sophisticated technologies and more skilled labour (paid higher wages than before). This agenda both reinforces and depends on the creation of sustainable growth in its trading partner countries. With China's influence, both through its powerful international voice and its role as one of the world's biggest sources of finance, the country's trading partners are in a good position to embark on cleaner growth that will, in turn, facilitate China's own domestic rebalancing. The outward investments that China undertakes can be part of a strategic plan of growing the Chinese economy in parallel with that of its trading partners.

China's experiences can be a useful guide for structural change in BRI countries and beyond. This holds especially true for fiscal reforms that reduce the cost of doing business while raising finance for public investment; so too China's focus on clean cities. Investments in local public infrastructure and services can form important foundations for restructuring metropolitan areas and creating new inland hubs. For investments to be sustainable and create strong social and economic returns, policies that correct key market failures are required. These should be embedded in an institutional framework that makes these policies credible for the medium term: government-induced policy risks can be a key deterrent to investments. Key among these policies would be a price for carbon, either explicitly through markets and taxes, or through internal or shadow carbon prices (a shadow price is a hypothetical surcharge to take into account the cost of, usually environmental, externalities and is used to make (investment) decisions). Complementary regulations and standards will be necessary, too. Infrastructure and cities will require careful design and long-term strategies.

Later in the paper we examine some of the principal elements of a strategy for the BRI that benefits recipient countries and China, and that can also foster environmentally sustainable policies around the world. We review some of the practical aspects of investments in infrastructure in BRI countries. At the same time, we provide ideas on how China's own experience and learning can be incorporated into a BRI strategy that aims to foster green investments, as set out in the *Belt and Road Ecological and Environmental Cooperation Plan* (Belt and Road Portal, 2017).

Openness, collaboration and internationalism are clearly crucial to the implementation of the global agenda on sustainable development and climate change. China has contributed strongly to forming this global agenda; China is crucial for the delivery of both elements.

The first global agenda is developing

For the first time since post-WWII reconstruction and the building of an open, international system, the world has a truly global agenda: to foster sustainable development and manage climate change. Global agreements on several milestones have established this agenda:

- Addis Ababa Action Agenda on Financing for Development (July 2015)
- Sustainable Development Goals (September 2015)
- Paris Agreement on Climate Change (agreed December 2015, entered into force in November 2016; very rapid ratification)
- Kigali Amendment to the Montreal Protocol on hydrofluorocarbons (HFCs) (October 2016)
- New Urban Agenda (October 2016)
- Talanoa Dialogue to assess global commitments to meeting the Paris Agreement targets (from January 2018)

More than 190 countries have signed up to both the Sustainable Development Goals and the Paris Agreement.

China has played a crucial role in advancing key elements of the foundations for future development and the global agenda. President Xi Jinping's speech in Davos in January 2017 affirmed China's commitment to an open, integrated, rules-based economic system built around collaboration and internationalism. China had already taken major steps to advance international cooperation, especially on climate change. With United States–China joint statements in November 2014 and September 2015 indicating cooperation on climate change and the advancement of multilateral climate diplomacy (White House, 2015) China helped pave the way for the signing of the Paris Agreement. China and the US had also committed to work together on an ambitious and comprehensive amendment to the Montreal Protocol on hydrofluorocarbons along with increased financial support for implementation (American Presidency Project, 2016). Since then, and after the indication from President Trump of the intended withdrawal of the US from the Paris Agreement, China and the European Union have committed to work together to ensure the full implementation of international commitments under the Paris Agreement (European Commission, 2017).

At the 19th National Party Congress at the end of 2017, Xi Jinping explicitly recognised the importance of China's leadership in tackling climate change and the importance of sustainable development for ensuring equitable improvements in people's lives. For the first time in the history of major Chinese Communist Party conference speeches, he used words relating to 'climate change' and 'environment' more than those relating to 'the economy' and he stressed the importance of China's contribution to international efforts in tackling climate change (Bloomberg News, 2017).

The next decade is critical for establishing low-carbon growth

To meet the objective of maintaining the global temperature increase 'well below' 2°C as written into the Paris Agreement, global emissions have to peak in the next few years and by 2030 they should be significantly lower than projected emissions if all national energy- and climate-related policies, including nationally determined contributions pledged under the Paris Agreement, are implemented (United Nations Environment Programme [UNEP], 2017). Nevertheless, analysis by UNEP (ibid.) suggests that the gap can still be closed before 2030 by adopting already known and cost-effective technologies and best practices across different sectors. Ratcheting-up global climate change efforts is vital and urgent: as recognised in the Paris Agreement, there is a large gap between what is necessary for the 'well below' 2°C target and planned emissions set out in Paris at the COP21 summit. Agreement on new plans that could be consistent with the Paris target is necessary by COP26 in 2020.

To delay would be highly dangerous. In the next 15 years, the world's infrastructure will roughly double. If countries continue to build dirty infrastructure along current patterns, they will create a dangerous and destructive future rather than one of sustainable development, growth and poverty reduction. Such action would lock the world into a pathway that would make the Paris targets

unachievable (Baldwin et al., 2018; Pfeiffer et al., 2016), with severely polluted and congested cities and ecosystems harmed beyond repair. China has a crucial role to play in helping to decrease emissions.

China has a critical role to play in reducing global greenhouse gas emissions

China generates nearly 30% of global carbon dioxide emissions (Le Quéré et al., 2017). Nevertheless, China has made progress towards its 2020 climate change goals: according to its *Climate Change Update Report* (2017) (cited in Ross and Song, 2017), it has already achieved up to 97% of its carbon intensity reduction goal (reducing carbon dioxide emissions per unit of GDP by 40 to 45% below 2005 levels), and has significantly increased forest stock volumes. China is also making progress on its 2030 targets submitted as part of the Paris Agreement, showing more than 40% progress towards its emissions intensity, forest stock volume, and clean energy goals (ibid.), well ahead of schedule. In addition, China might peak carbon emissions a lot earlier than its plans intend: it is possible that their CO_2 emissions have 'plateaued' already (Qi et al., 2016; Spencer et al., 2016).

China has made this progress by decreasing its reliance on coal, increasing investments in clean energy, and shifting its economy away from heavy industry and towards services, among other actions (Ross and Song, 2017). In 2013 China banned construction of new coal plants in three industrial regions, and in 2014 the country set new targets to reduce or limit coal use in 12 provinces for the period 2014 to 2017 (ibid.). At the same time, China has become one of the world's largest investors in renewable energy sources (Frankfurt School-UNEP and Bloomberg New Energy Finance, 2017).

In its power sector five-year plan, released in November 2016, China set new renewable energy targets, a limit on capacity of coal-fired power plants of 1,100 GW by 2020, and a limit on the percentage of coal in primary energy at less than 58%, down from 64% in 2015 (Ross and Song, 2017). In 2016 China also announced that it was halting or delaying construction of coal plants in 28 provinces, in an effort to eliminate 500 million tonnes of surplus coal capacity from the market. This included shutting down hundreds of existing mines in 2016 (Chen and Stanway, 2016; Harvey, 2016). The path to meeting the renewables targets will not be smooth and inevitably it will involve some dislocation of jobs. As China moves towards a more service-oriented and more efficient, higher technology and cleaner economy, demand for products such as steel and cement will fall, and China is working to reduce overcapacity in such energy-intensive industries as it encourages investment in services (Qi et al., 2016; Ross and Song, 2017).

2. Sustainable and inclusive growth in Belt and Road Initiative partner countries

With rising productivity and wages, China's structure of production is moving strongly towards the service and high-tech sectors. Simultaneously, the opportunities from external markets for China's low-cost manufactured products are decreasing due to China's market share already being large, global economic growth slowing down, and increasing competition from other countries. The focus thus turns to outward investments linked to major internal structural change – and the Belt and Road Initiative (BRI) is a logical and strategic next step in China's development. The BRI can play a crucial role in China's strategic shift to services, higher-end manufacturing, increased innovation and a more skilled labour force. Building in part on a history of old trading links, it will increase connectivity and thus strengthen trade as well as financial links across Eurasia, the Middle East, Africa and the Americas.

The BRI plans aim to create 'seamless connectivity' through three main infrastructure sectors: energy, transport and information and communications technology (ESCAP, 2017). The BRI will cover more than 60 countries which collectively contribute one-third of global GDP and 40 per cent of global trade, and are home to more than 60 per cent of the world's population (Leong, 2017). With its prowess in infrastructure development, and the financial capacities it can leverage through its own financial system and development banks, along with the Asian Infrastructure Investment Bank, the New Development Bank and the Silk Road Fund, China has the construction skills and experience and the financial breadth and depth to able to deliver on this enormous undertaking.

In line with its ambition to foster green investments, as set out in the *Belt and Road Ecological and Environmental Cooperation Plan* (Belt and Road Portal, 2017), the BRI has the potential to provide an opportunity to enhance and build on the restructuring of Chinese power utilities and generate new markets for Chinese exports for its renewable energy technologies, provided that BRI investments are made into sustainable energy infrastructure. At the same time as projects in BRI countries are becoming reality, the competitiveness of renewable energies continues to increase significantly and technologies for long-distance transmission and energy storage are advancing rapidly. This combination provides tremendous opportunities for low-carbon, clean and secure energy access in BRI countries. It is very important to look ahead to the technological future and avoid lock-in to the technologies of the past. Wise investment anticipates where future costs are going, and we note that renewable power facilities can be built more quickly than their fossil fuel or nuclear alternatives.

Enhanced interconnections will allow the integration of electricity and power markets more effectively and efficiently. Some Central and South Asian countries have excess hydroelectricity capacity in particular, and investments as part of the BRI could overcome bottlenecks in local transmission and connect this surplus electricity to the market (ESCAP, 2017). Such investments will also help align BRI countries' and China's energy strategies with the commitments they have made under the Paris Agreement.

The BRI provides a tremendous opportunity to drive strong, sustainable and inclusive growth in partner countries and the world as a whole. But this powerful potential can be realised only if the investment is managed using sound environmental and climate criteria. If not, the BRI itself could undermine the global agenda and create profound risks for the future of world development and poverty reduction. If China were to foster investments in heavily polluting energy or transport systems in partner countries, it would not only make the management of global climate change much more difficult but also make the investments vulnerable to policies in recipient countries that do follow the global agenda, thus increasing the risk of stranding outdated and polluting assets.

A simple thought experiment based on business-as-usual assumptions can illustrate the importance of managing the BRI sustainably.[1] The average GDP per capita in BRI countries (assuming that 65 countries make up the BRI including India but excluding China) was around half of China's at the end of 2016 (World Bank, 2018a). At the same time, the combined population in those countries is about two-and-a-half times bigger than China's population. If we were to assume that BRI countries' per-capita GDP would rise to China's current level in 20 years and the carbon intensity were to be similar to current levels in China, then emissions from BRI countries would amount to three times those of China's current emissions.[2]

[1] We are grateful to Ma Jun for guidance on these figures.

[2] Removing India and re-running the calculation (taking account of income levels, growth prospects and such) would give a factor of a little less than two instead of three.

China currently generates nearly 30% of global carbon dioxide (Jing, 2017). Locking in business-as-usual emissions trajectories within China's trading partners would have devastating consequences. China itself has taken pioneering, important and necessary steps to decrease its internal emissions. It can help its trading partners towards similar emission reduction strategies. A sustainable BRI could be a key element in building and deepening the rules based on responsible investment, openness and internationalism that China has championed so strongly. This is an opportunity to help its partners avoid some of the pollution that China now sees as a damaging part of its own growth patterns of the last two decades, while taking advantage of new technologies not available 20 years ago and which China has done much to advance. China has a long tradition of examining its own experience in order to learn for the future. That learning can now be shared with BRI countries and beyond.
It is important for BRI countries to recognise that while investments in connectivity are necessary, they are not sufficient to generate sustainable growth. Growth and employment are likely to embody clusters or hubs which should be designed and financed with care. This, in turn, will require a shift in focus towards clean cities, local public services, and tax as well as financing mechanisms. For this process to be fiscally sustainable, transparency in the public accounts has an important role to play, as China has learned from experience. This includes recognition and management of intertemporal liabilities (which accrue at a later stage in the project cycle) and generating balance sheets at all levels of government.

A key lesson from China is also the importance of tax reforms in sustaining and consolidating structural change. The 1993/4 reforms[3] in China laid key elements of the foundations for the sustained growth that followed for the subsequent two decades. The completion of the VAT reforms was designed to reduce the cost of doing business and remove taxation from exports. This has important lessons for countries, like Pakistan, seeking to integrate into Chinese value chains, or just to remain competitive.

Connectivity and new value chains

Improved connectivity is a key objective of the BRI – linking China to traditional markets in Europe, Africa and the Middle East, as well as in South and East Asia. Similarly, the Maritime Silk Road connects China with trading partners in the Americas, South East Asia, Europe and Africa. Many of the destination countries serviced by the BRI connectivity are not formally members of the BRI, such as Germany, China's main trading partner in Europe, and the UK.[4] Rapid train connections between Chinese and European cities provide tremendous value in terms of speed and cost per kilometre (see Ratogi and Arvis, 2014). For example, the train journey between Yiwu and London took 18 days on 3 January 2018, whereas travelling by sea would have taken 40 days. This is particularly useful for high value products such as electronics exported from China, and perishables (such as wine and cheese) and machinery headed in the opposite direction to China. And it is likely that current train times will be cut substantially.

Connectivity is both a necessary condition for greater trade integration and can also increase growth among trading partners. However, it is not sufficient to ensure inclusive development. Examples where stronger connectivity did not result in benefits for poorer regions are manifold: one is the European structural funds that supported the development of high-speed trains and motorways in Italy (see Ahmad et al., 2016) but had very limited effects on less advanced areas of

[3] Ahmad and Stern were involved in analysis and discussions of these reforms more than 25 years ago.

[4] Many of China's main trading partners in Latin America are not formally partners in the BRI but would clearly benefit from the maintenance of open trading links with China, even as tariffs and other barriers are being initiated within the region itself.

the country.[5] Investments in complementary infrastructure and local public services are important in order to mobilise growth and particularly investments from the private sector – which are essential for the sustainable creation of employment opportunities. The environment for business in general is key and so too is the available human capital. In other words, strong, sustainable and inclusive growth does not come from connectivity alone. This is especially relevant for BRI 'pass-through' countries, such as Kazakhstan and Pakistan. We shall use the example of Pakistan to illustrate.

As pointed out in Ahmad et al. (2013), China's structural reforms were consolidated by a major tax reform in 1993/4 that helped facilitate its very strong growth and phenomenal poverty reduction in the past 25 years. And the BRI itself will benefit from the integration in 2015 of the provincial and local business taxes into value added tax (VAT), to reduce the cost of doing business and to ensure that domestic taxes are rebated when goods are exported (Ahmad, 2017a). In Pakistan, for example, the tax system adds significantly to the cost of doing business without raising adequate revenues or meeting distributional objectives. There are important lessons here for other countries. Pakistani VAT operates like a production excise, as the breaks in the VAT chain through myriad exemptions and multiple rates lead to a cascading of costs that cannot be recouped on exports. The situation is made worse by a split in the VAT base between goods and services: the latter was devolved to the provinces in 2010, exacerbating a split VAT base. China sought to correct its split VAT base in 2015, and India is attempting to tackle the problem through a constitutional amendment. Pakistan's inefficient tax system, overbearing regulations and extensive infant industries that need protective barriers to survive, put Pakistani firms in a weak position to take advantage of relatively lower labour costs to plug into new Chinese value chains.

While 'creative destruction' of the 60-year old infant industries by even cheaper Chinese imports might, from one perspective, be considered a positive step, the loss of employment could be substantial and is not likely to be offset by new firms that are able to take advantage of the new value chains, given the tax and business climate. Resorting to the establishment of Special Economic Zones (SEZs) might be seen as an alternative that could attract Chinese firms to invest in Pakistan to take advantage of the new cost structures and markets. However, these will likely be ring-fenced for security reasons, and are unlikely to generate widespread domestic linkages or create significant new employment opportunities for domestic workers (Yusuf, 2018). Moreover, SEZs with extensive tax holidays are likely to lead to further deterioration of Pakistan's tax system with a commensurate increase in the potential to cheat (Ahmad, 2017b). SEZs do not tackle deep-seated problems in the economy as a whole.

A sound strategy for sustainable development depends on both fiscal sustainability and there being a choice of projects based on principles that reflect the strategy, including addressing externalities and environmental considerations. These are key elements of an investment climate that helps foster sound financial decisions. If a country's tax/GDP ratio falls to very low levels, for example in the 10–11% of GDP range, as was the case in China in the early 1990s and is in Pakistan at present,[6] the risks of not being able to provide basic public services are very high. This also severely restricts public investment, as there is a danger that the government will not be able to meet commitments over the medium term, and there is limited credibility of medium-term guarantees.

[5] A further example is provided by Chile: see Ahmad and Viscarra (2017).

[6] In the early 1990s the Pakistan tax/GDP ratio was higher than in China, and VAT was introduced in Pakistan three years before it was in China (see Ahmad and Mohammed, 2018).

The China–Pakistan economic corridor (CPEC)

With planned investments of over US$ 55 billion, the China–Pakistan Economic Corridor (CPEC) is one of the most ambitious infrastructure projects within the BRI. Its aim is to connect the Xinjiang region in China with the port of Gwadar in southwest Pakistan through upgraded rail links and highways. Investments in energy generation to meet Pakistan's chronic energy shortages also form part of the economic corridor. Roughly half of the total US$ 59 billion of CPEC funding has been allocated to finance power generation. Most of this investment is currently allocated for coal-fired power plants – including development of lignite deposits in the Pakistani province of Sindh's Thar Desert, as well as plants that will be fuelled by imported coal (Rana, 2018). Neither the direct negative costs nor the indirect externalities of highly polluting, low-grade lignite appear to have been fully factored into the decision to proceed by the Pakistan government.

Cheema and Yusuf (2018) point to the immediate negative impact on the 12 Thar villages, including Gorano, situated next to the coalfield, from the temporary storage of mine effluent, which is putting homes and health at risk. Protests by the villagers have been very effective in galvanising public opinion. Moreover, a 500 MW coal plant requires 1,300 million litres of fresh water per day – the equivalent of 3 litres per person of fresh water for every inhabitant of Sindh. However, fresh water is scarce in arid Sindh, a province subject to severe droughts. It is unclear if the cost of fresh water for the coal power plant has been taken into account when making the investment decision and therefore if the real economic and social costs have been reflected when assessing the viability of the planned projects.

Yet the Thar Desert benefits from abundant sunshine and does not need to rely on coal for its electricity generation. Cheema and Yusuf (2018) estimate that a solar power plant in the region would be able to generate more than 1,500 MW of electricity. If we assume electricity generation costs similar to a solar powered plant in Bhawalpur (north of Thar), a 100 MW park agreed with Zorlu Enerji will have a tariff of 6c/KWh for 25 years. Although 6c/KWh is actually at the high end of current costs of electricity generation from solar, it remains below the tariff for the planned coal power plants in Thar (which are currently set at 7-8c/KWh (Kiani, 2017). The vast area of the Thar desert would also generate economies of scale for solar power, with lower prices or higher profits or both compared to the coal plants.

It is clear that the BRI, as implemented in the China–Pakistan Economic Corridor, will result in an acceleration of carbon emissions due to the focus on coal. This is particularly worrying for Pakistan, a country labelled by the Asian Development Bank (ADB, 2017) as one of most affected by climate change in the world. Given that Pakistan is a signatory to the Paris Agreement, like China, project selection should reflect these commitments. They are commitments that go hand in hand with, and indeed mutually reinforce, strong, sustainable and inclusive growth. One way to foster sound investments would be to use economy-wide shadow prices. Indeed, one of the earliest attempts to estimate such prices was done for Pakistan (Ahmad et al., 1988),[7] along with linkages to a complementary tax reform agenda to help keep the systems in place (Ahmad and Stern, 1990). These investment criteria, appropriate public supply/pricing decisions and the budget framework, particularly liabilities in a medium-term context, are tightly bound together.

It is also a mistake to argue, as is the case for some of the CPEC road projects, that since these are managed under public–private partnership (PPP) contracts, and are profitable at the contract prices, it is acceptable to keep associated liabilities off-budget. As the asset comes back to the state at the end of the contract period, the standard international practice is to reflect the liabilities in the balance sheets of the relevant government (both the International Monetary Fund's

[7]For a recent application of the methodology, see Ahmad and Viscarra (2016).

GFSM 2014 standards and the International Public Sector Accounting Standards 32 require this; see Ahmad et al., 2018). Failure to do so can exacerbate economic crises. The Mexican road building programme of the 1990s, without central guarantees, and the infrastructure developments in Spain circa 2008, also without public guarantees, were transformed rapidly into central government debt through rising non-performing loans (NPLs) of the banking system. The circular debt in the Pakistan energy sector in 2013 which needed to be cleared by a large budgetary allocation also illustrates the risks.

With the CPEC road programme, tighter Chinese prudential regulations on lending agencies may change the calculus, and it would be helpful to have the liabilities reflected in Pakistan's corresponding balance sheets from the start. The importance of local government balance sheets in the context of managing risks has been clearly illustrated in China (see Ahmad and Zhang, 2018). These experiences remind us that BRI operations overseas will carry repayment risks for China.

A significant part of the benefit of CPEC for China is the facilitation of trade with the natural-resource-rich countries of the Middle East and Africa, where there is also great demand for increasingly sophisticated Chinese goods spanning a full range of product groups. In comparison, trade with Pakistan itself is relatively small, although there is a potential market of 200 million people. Nevertheless, the investment in infrastructure could also enhance Pakistan's linkages with the Middle East and Africa, spur domestic integration and link into new Chinese value chains building on cheap labour. There are real opportunities here, but they can be realised only by sound choices for BRI investments and significant structural reform in Pakistan.

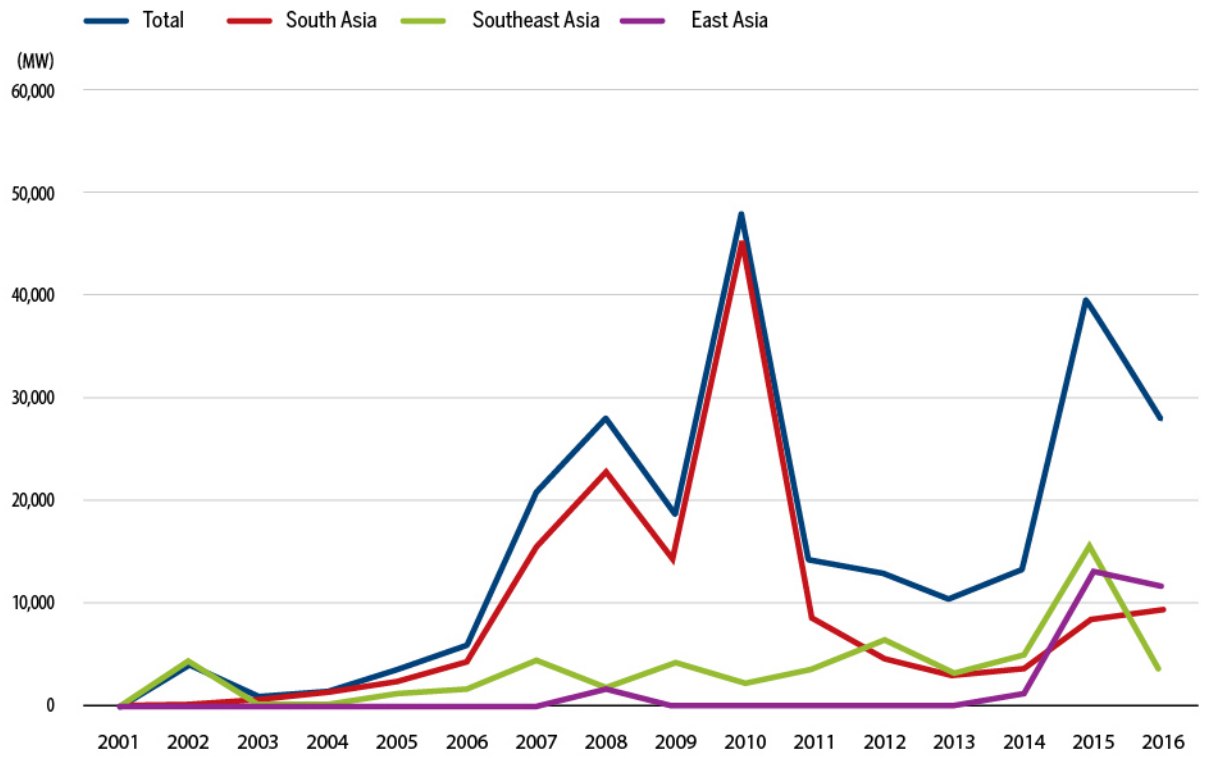
We have examined the example of Pakistan at length because it is a large and important country at the heart of the BRI story. It is a country with which we the authors (particularly Ahmad) are familiar and it provides powerful illustrations of the challenges of combining a well-structured BRI set of investments with good development strategy. There are worrying signs that failures in Pakistan could undermine the gains that the BRI could bring.

Greening the BRI

China is undertaking major changes in its economic policy to meet its commitments under the Paris Agreement, but also to honour the aspirations of the Chinese people, who desire a cleaner environment and improved living conditions. As discussed above, and as noted in January 2018 by the Head of the Chinese Delegation at the World Economic Forum in Davos, Liu He, China's energy intensity has been reduced by 24% in the past five years, and coal capacity cut by 500m tonnes since 2016 (Liu, 201). It is important to ask if China's efforts in the domestic arena could be negated by the investments of the BRI if they were to pay insufficient attention to the principles of sustainability and the Paris Agreement.

Since the launch of its 'go global' strategy in 2000, China has sharply increased its outward investments. As shown in Figure 1 below, this has been accompanied by significant involvement in coal-fired electricity generation abroad, mainly in Southeast Asia and South Asia (Peng et al., 2017). From 2010 to 2013, this slowed down significantly. Since China put forward its Belt and Road Initiative in 2013, its involvement in coal projects has increased again, although may now be slowing down.

Figure 1. Chinese involvement in creating additional coal-fired power generation along the Belt and Road, megawatts (MW), by year and region



Note: This graph represents the generation capacity of new projects in a given year. A project is considered new if signed off or if its construction began in that year.
Source: Peng et al. (2017)

At the end of 2016, China was involved in 240 coal-powered projects in 25 BRI countries, according to Peng et al. (2017). A little under half of those projects were still in the pipeline or under construction at that point, making up 30% of global coal plants under development (ibid.). China therefore plays a significant part in developing coal power plants internationally. Of course, it is not the only investor in overseas coal capacity, but the China Development Bank and the Export-Import Bank of China have provided more than US$ 43 billion in overseas coal financing since 2000 (Gallagher, 2017), and 11 of the world's biggest 20 coal plant developers are Chinese (Global Coal Plant Tracker cited in Tabuchi, 2017).

Increasing global recognition that investment in new fossil fuel power capacity has to be phased out rapidly implies that there are real risks for China and recipient countries of these assets being stranded. Once capital is invested in fossil fuel power plants it has no value unless used in production (Baldwin et al., 2018), so if China continues its investments in coal power plants, in BRI countries and beyond, it makes itself increasingly vulnerable, via these investments, to policy actions and investment decisions aligned with the Paris Agreement. Using a simplified model of 'dirty' and 'clean' sectors, Baldwin et al. (2018) find that to avoid capital being stranded, global investment into dirty plants should stop in 2020. Similarly, Shearer et al. (2017) show that in order to meet the Paris Agreement targets, the pace of retiring current coal power plants needs to be doubled immediately. Several other studies underline the urgency of a rapid phase-out and halting of new investments into fossil fuel infrastructure (e.g. Pfeiffer et al., 2016).

The policies of recipient countries are strong determinants of the nature and scale of Chinese outward investments. An increasing number of BRI countries are turning away from coal and other

fossil fuel energy sources. India committed to decreasing its carbon intensity by 20% by 2020 and by up to 35% by 2030 compared with 2005 levels in its nationally determined contribution to meeting the Paris Agreement (Government of India, 2015). It is also considering halting all developments of new coal power capacity until 2027. It is likely that there will be little or no new initiative for coal in India beyond those already in play, and some of those may not come to fruition. Indonesia plans to expand access to electricity by investing in new geothermal and hydropower as well as small-scale power projects (Peng et al., 2017). Mongolia also aims to increase the share of renewable energy in its power generation, by 30% by 2030 (European Bank for Reconstruction and Development [EBRD], 2016). China, through its collaborations, has a real opportunity to help foster these very promising movements towards a more sustainable world.

At the same time, multilateral development banks (MDBs) are undertaking strong actions to halt their investments in fossil fuel generations. The World Bank has been financing coal-fired power plants in 'rare circumstance' only since 2013 and will stop offering financial support for oil and gas exploration after 2019 (World Bank, 2017). The World Bank also committed to applying a shadow carbon price for all projects in key high-emitting sectors. The European Investment Bank (EIB) has been using a shadow carbon price since the 1990s, and the Asian Development Bank (ADB) and the European Bank for Reconstruction and Development (EBRD) also apply shadow carbon pricing to their projects (Hawkins and Wright, 2018). The High-Level Commission on Carbon Prices recommended carbon prices of US$ 40–80 per tonne of CO_2 by 2020 and $50–100 per tonne by 2030, which if combined with other policies, could keep global warming below 2°C (High-Level Commission on Carbon Prices, 2017). The World Bank's recently announced shadow carbon price is aligned with this and the EIB already applies the highest internal carbon pricing among the MDBs (Hawkins and Wright, 2018).

In addition, in 2013 the EIB put in place minimum emissions performance standards set at 550 gCO_2/kWh for lending to energy projects (these rule out any further lending to regular coal and lignite power plants) (EIB, 2013). The EBRD's energy strategy states the bank will not finance coal except in rare and exceptional circumstances where there are no feasible alternative energy sources (EBRD, n.d.).[8] The financing mechanisms China uses for building infrastructure along the BRI, such as its own development banks and its US$ 40 billion Silk Road Infrastructure Fund, could and should apply the same standards as those of other development banks. The Asian Infrastructure Investment Bank (AIIB) and the New Development Bank (NDB) are indeed applying high standards of sustainability. The AIIB's strategy has 'sustainable infrastructure' at the forefront of its strategy and the NDB's first loans were all for renewable energy.

In addition to the financial risks, investments in polluting energy infrastructure come with an array of significant harmful effects. The CPEC investments illustrate these effects. They also show the potential that still lies within countries along the BRI to embark on a path of significant emissions reduction, as China is now embracing, and of sustainable and inclusive growth. The prize from avoided air pollution and well-designed urbanisation would be cities within China and along the BRI in which people can move, breathe and be productive; ecosystems that are healthy and robust; and economies that provide equitable, clean access to economic opportunities.

[8] There was a recent EBRD decision to use internal shadow pricing which would likely rule out further coal.

3. The next stage of structural reform in China: domestic rebalancing for strong, sustainable and inclusive growth – within and beyond China

China is entering a new stage in its structural reforms, as signalled in the 19th Party Congress. In the words of Liu He, one of China's four vice-premiers, this involves transitioning from:

> '...a phase of rapid growth to one of high-quality development. It is in this context that China formulates its macroeconomic, structural, reform and social policies for the coming years. The three critical battles which China is determined to fight include: 1) preventing and resolving the major risks (in the financial sector and at subnational levels), 2) conducting targeted poverty reduction, and 3) controlling pollution.' (Liu, 2018)

In a change from past practices,[9] the China Economic Work Conference in December 2017 formulated a medium-term structural reform programme to 2020, to translate these priorities into practical measures for action. The 'three critical battles' all relate to making cities, and local governments more generally, fiscally sustainable, inclusive and clean.

We examine three broad action areas for China that could deliver real progress on these fronts as well as strengthening growth and accelerating the reduction in greenhouse gas emissions:

i. Innovation and investment in people; creation and management of jobs in an equitable manner.
ii. Structural reforms in cities, including in larger metropolitan areas, and new, innovative and clean cities, fostering the building of a high-tech and service economy.
iii. Strengthening local public finances, including taxation and governance measures, to reduce risk while making cities and local governments more responsible for better service delivery and investments for improved quality of life.

Structural and fiscal reforms and innovation are key elements in building the next stage of China's development strategy. These reforms could both be complementary with those in partner countries and offer those countries important and relevant examples, particularly in the context of the Belt and Road Initiative.

Investment in growth, labour and upskilling

A more sustainable, clean growth model of the kind China is seeking will include phasing out inefficient and polluting activities. As we indicated above, the very resolute actions to phase out coal mining and the use of coal for power plants and household use, and to introduce renewable sources of energy, have put China at the forefront of the global climate change agenda. China generally delivers on its planning targets; for example, commitments for 2020 targets for renewable energy were met in 2017.

This new growth model will involve different skills and industries and thus holds vast opportunities for employment, in highly skilled jobs associated with investments in services, high-tech,

[9] Previously, the Annual Economic Work Conference would announce annual priorities to put into action the priorities established in China's Five-Year Plans. The three-year work plan to 2020 sets medium-term priorities for structural change and for guiding the budget process.

innovation, and renewable energy. The digital economy and artificial intelligence are likely to be central to much of this change, requiring strong and continuing investments in education and training. Indeed, the tech hubs that have grown around Hangzhou-Shanghai and Guangzhou-Shenzhen are linked to cutting-edge research universities and world-class infrastructure.

The plans to create the world's largest silicon valley metropolitan concentration in the 'Bay Area' of Guangzhou-Shenzhen-Zhuhai will focus on high-tech and financial services, and include over 70 million people. This is clearly feasible given the existing infrastructure and availability of skills, and will also lead to a cleaner, high-income conglomeration. However, as pointed out by Ahmad et al. (2018), Guangdong province, in which this conurbation is situated, already has very high inequality levels, and a rebalancing will entail the creation of new more compact urban hubs to accommodate the manufacturing and lower-skill activities that will be moved from the Bay Area. Good design of cities can simultaneously bring a reduction in inequality and poverty and strong, efficient and sustainable growth. For example, poorer people suffer more than richer from pollution and weak transport systems.

In other overcrowded metropolitan areas such as Beijing, there is a programme to move non-essential civil service departments to less crowded areas in neighbouring provinces. This would make use of enhancements in IT and communication capabilities without loss of efficiency – while resulting in less crowding and congestion and a reduction in associated pollution. This move parallels the efforts of the UK government to relocate 'non-essential' civil servants from London to 'cheaper' locations. However, while there is real housing pressure in London, it is different from cities in emerging market countries including China in that it does not have to handle the challenges of 'informal' migrants, typically from rural areas seeking a better living and (non-skilled) employment opportunities that lead to the creation of illegal settlements in many metropolitan areas. It is not easy to make the case for demolishing illegal buildings, even if they are creating health and public safety hazards, as the inhabitants need to be resettled and jobs created for them elsewhere.

Ensuring a 'just transition'

The major structural transition embodied in the next phase of China's development will involve substantial dislocation, including in the rust-belt towns of northeastern China, and in the main metropolitan areas. It is important to invest in and manage such a transition carefully; this was clearly recognised and was made a priority in the 13th Five-Year Plan (2016–2020). Having achieved a major reduction in the number of people living in poverty (by 700 million between 1993/4 and 2013 and by almost 70 million from 2013–18 (World Bank, 2018b)), eliminating the existing pockets of poverty by 2020 is high on the agenda of the medium-term plan, as is preventing, through education, training and job-creation, new entrants into poverty. This will involve both reform in existing cities and the development of new cities that also provide an inclusive, clean environment.

In a very rapidly growing economy, the proportions employed in different activities and sectors can be adjusted without having to significantly reduce jobs in some sectors. However, now that growth has slowed in China and the shift to the service sector is accelerating, substantial reductions in jobs in some sectors and locations are inevitable. Policies for ensuring a 'just transition' which would reduce the economic vulnerabilities of the affected communities are a high priority. It is not enough simply to say that more jobs are being created in new activities than are being lost in the old, even though this is likely to be true. Those who were in old jobs need new opportunities.

Developing cities: sustainable investment for dynamic innovation

China is restructuring rapidly to move to a more service-oriented and higher-tech economy. Investment and reforms in the organisation and in the infrastructure of cities form a vital part of that process, and will reduce its greenhouse gas emissions, and to clean the environment. These investments and reforms will enable China's cities to become much more productive, to retain and attract a high calibre workforce, and to act as dynamic centres for the innovation that will drive China forward. As Liu He (2018) has stated:

> "As we open up wider to the outside world, this transition to a new model of development will create huge opportunities for many new industries. This may well include manufacturing and service industries related to higher-quality consumption, as well as energy-efficient buildings, smart transportation, new energy and many other green and low-carbon industries in new cities." (Liu, 2018)

How are the new cities to be created? China has had a major investment in connectivity infrastructure, including motorways, high speed trains and airports, over the past two decades. However, as described above using the example of Italy, connecting less well developed regions does not mean that private investment will flow automatically to these regions, or that sustainable employment will be created. In the Chinese context, the Western Region Development strategy of the past two decades did not achieve its anticipated results, largely because exporters had to ship goods to the coastal cities in the East, as well as to the main domestic markets in the metropolitan areas, which are also situated in the eastern coastal provinces. This created additional costs for the western firms. As part of the strategy, some new housing was built in new interior cities, but there were few takers as people were not willing to move given the limited number of jobs and weak public services there.

The situation in Spain, for example, illustrates some of the difficulties of recognising and managing intertemporal liabilities that accrue at a later stage in the project cycle. Local governments in Spain engaged in a great deal of off-budget construction activity through private firms with no public guarantees, in public–private partnerships (PPPs) that were not recorded on local government balance sheets. It was not until the financial crisis of 2008–10 when these liabilities appeared as non-performing loans from the banking sector that the extent of the problem was revealed (Ahmad et al., 2016). Thus, rebalancing can generate financial and fiscal risks if not properly managed, as we discuss further in the next sub-section.

Yet the prospects for new interior cities in China have changed drastically for the better in the recent past for two main reasons. The first is the Belt and Road Initiative, as it will enable firms in the interior and western region to export directly to markets in Europe, South Asia, the Middle East and Africa without having to route through China's eastern coastal hubs. This removes the cost differentials that prevented firms from taking advantage of the Western Development Strategy in the past. An example of this phenomenon is the development of the dry port Khorgos, on the China–Kazakhstan border, which has largely been financed by firms in the eastern province of Jiangsu.

The second reason is the huge advances in information and communication technologies that make it possible for consumers to interact with suppliers, and firms with each other, in a very rapid and efficient way. This opens exciting possibilities to locate warehousing and supply chains closer to where demand and population centres exist. These developments will likely change the dynamics of sustainable cities. At the heart of the new transformation is what Liu (2018) describes as "energy-efficient buildings, smart transportation, new energy and many other green and low-carbon industries in new cities".

However, managing the process without generating risks to the stability of the financial system requires a focus on multi-level finances. In addition to the cross-border as well as national connectivity that is generally facilitated by the central government, local governments should provide ancillary investments in infrastructure and public services that make it possible to create the conditions for clean cities. The main mechanisms for financing this local investment over the past 25 years have been land sales, and off-budget borrowing by Urban Development Investment Corporations (UDICs). And given the nascent fiscal instruments that were available to the Chinese government in the 1990s, Special Economic Zones (SEZs) were created to ringfence private investors; these played a major role in kick-starting growth, for example in Shenzhen and Pudong. Although this combination of instruments clearly had an impact in the development of the major metropolitan areas, conditions are now very different from the mid-1990s, both in terms of the enabling environment and the cumulative risks inherent in the strategy.

Liu and Li (2018) highlight the interactions between fiscal and financial risk and the potential impact on public service delivery and the possibility for social unrest. As pointed out in Ahmad (2017a), potentially valuable instrument measures such as local government bonds can actually increase risk in all the dimensions highlighted in Liu and Li (2018) if they are introduced without the necessary preconditions of effective local own-source revenues and monitoring of liabilities. Further, the previous ringfencing of SEZs is becoming redundant with the completion of the national tax reforms (particularly the integration of VAT on services and goods) and can create barriers to the needed development of local and regional linkages. It is not surprising that the barriers around Shenzhen are now being removed in preparation for the Greater Bay Area initiative, which requires rapid transportation between Zhuhai, Guangzhou, Shenzhen as well as Hong Kong.

Multilevel finance – financing local services and managing risk

In this section we focus on some options for the financing of clean cities (including both restructured metropolitan areas and smaller inland hubs that can raise revenue), and to address distributional consequences, and manage and reduce risk. Many of these issues could be taken up in further work.

1. Recent developments and preconditions for sustainable growth

Before the 1990s, China relied on local government to collect revenues, with upward-sharing, and to carry out most of the spending. It lacked the fiscal institutions that most countries in the Organisation for Economic Co-operation and Development (OECD) take for granted. Key institutions including the central State Administration of Taxation (SAT) and a modern Treasury were established in the early and late 1990s respectively (see Ahmad, 2018). Without these institutions, it would be impossible to implement instruments such as VAT, track spending through a Treasury Single Account or even monitor liabilities through balance sheets at different levels of government using the IMF's 2001/14 framework. But although first-rate organisations and institutions have been created, the policy framework has evolved slowly, largely in response to the structural reforms undertaken over the past couple of decades.

The focus in 1993/4 was on generating revenues, and the main instrument used was an 'investment-type' VAT that did not provide credit for the taxation associated with capital goods, and that left services to be taxed by local governments under business tax. The second phase, from around 2005, focused on efficiency, and a VAT of the 'consumption type' was adopted, with credits for taxation on capital purchases, as well as integration with corporate income tax and rationalisation of the rate structure at 25%. To further reduce the cost of doing business, enhance competitiveness and remove taxation from exports, the business tax was brought into VAT in 2015 (Ahmad, 2017b). This was expected to lose revenues, but overall collections actually increased because the completion of

the information chain with a full VAT base makes it harder for firms to hide transactions; this phenomenon was also seen with the Mexican reforms to VAT in 2013 (Ahmad, 2017b).

While local governments in aggregate were compensated by an adjustment in the revenue-sharing arrangements, there has been a differential impact on the lowest levels, as spending is pushed downwards and revenue shares tend to be retained at the higher levels. A response would require an overhaul of the subnational tax and financing mechanisms to reduce risks, including hidden liabilities at the subnational level. A sustainable and clean cities agenda, as proposed by Liu He (2018) and the Central Economic Conference Decision (2017), will require coordinated actions on both the public financial management functions and the tax agenda. There are several reasons for this, as we explain below.

First, shared revenues do not constitute own-source revenues in the sense that the local jurisdictions have control over the rates or bases at the margin. Thus, shared revenues, while useful in closing vertical gaps, are like transfers from higher levels of government, and are not appropriate instruments by themselves to enable access to credit and other forms of local debt. Hard budget constraints are needed for local governments to take responsible decisions on investments and liabilities, but are not credible without the local ability to raise additional revenues in case of need, for example to pay local debt (Ambrosanio and Bordignon, 2016). Central transfers and shared revenues do not do this. The responsibility for risks in these cases remains with the higher-level government, and the incentives at the local level are to indulge in inappropriate spending. These are heightened if there is incomplete information on what is spent, and how the largely off-budget liabilities are incurred (more on this below).

A second consideration that becomes even more pressing as local tax bases weaken or disappear is that revenue shares and transfers tend to stick at higher levels, particularly in provincial capitals and metropolitan areas,[10] with corresponding pressure on deficits as well as local public services. This is well documented for Guangdong by Xiao (2018).

Third, in the absence of adequate city-level taxation instruments and the existence of extensive state assets, land sales have historically played a major role in the development of metropolitan areas. This includes in the SEZs: indeed Shenzhen is often taken as a model for elsewhere.[11] However, land sales have largely run their course. Further, they have resulted in inefficient urban sprawl particularly in Tier 1 cities and metropolitan areas along the east coast. Also, they have resulted in a major loss of prime agricultural land. They have generated risks of property bubbles and possibilities of social unrest (see Wang et al., 2018). Land sales were off-budget operations, and led to possible rent-seeking and corruption as well as hidden liabilities as they are often used in conjunction with PPPs; this could also pose significant problems in the future. Cheap land allocation and subsidies contributed to the financing of Binhai Financial District, established near Tianjin port in 2009. It was also connected by high-speed trains to Beijing and was given numerous tax preferences. However, Tianjin is one of the most heavily indebted metropolitan areas in China (local state-owned enterprise [SOE] debt is more than 700% of local revenues). And, despite the proximity of Tianjin port and connectivity to Beijing, empty office buildings currently mean the city resembles something of a ghost town rather than a thriving new hub.

Fourth, as pointed out by Liu He (2018), risks from hidden liabilities, including with SOEs and local government, are a matter of increasing concern and are high on the agenda for reform. As with its tax reforms, China has been modernising its public financial management (PFM) architecture since the late 1990s. Two significant reforms were the adoption of the IMF's Government Financial

[10] Note that China has five tiers of government.

[11] For a history of land ownership by the state, and the changing pattern of conveyance of land-use rights, see Yeh and Wu (1996).

Statistics Manual (GFSM) 2001 methodology (updated in 2014 to match refinements in the System of National Accounts); and the establishment of a Treasury Single Account to manage the state's cash and to monitor cash flows and transactions. Although GFSM 2001/14 requires accruals and balance sheets at all levels of government, initially only cash accounting was introduced, local governments were not permitted to borrow directly, and all local borrowing was through UDICs (investment companies owned by local governments) and was off-budget. The distinction between UDIC borrowing and local governments' transactions was not transparent, and the full extent of public liabilities was not known (despite periodic Audit Office reports). Many of the measures to implement the PFM reforms at the lower levels are at an early stage – for instance, the local government balance sheets are incomplete even in the more advanced provinces and counties, especially for public utilities, SOEs and possible accounts payable (Ahmad and Zhang, 2018, based on a People's Bank of China survey).

2. Local accountability and feedback mechanisms

Off-budget transactions with hidden liabilities reduce accountability and add to risks. The requirement that local governments should complete full balance sheets, including liabilities for PPPs (as required both under the GFSM 2014 and IPSAS 32 standards) is clearly sensible. However, given the difficulties in implementation even in the more advanced Chinese counties, as Ahmad and Zhang (2018) point out, the process is going to be drawn out, while the liabilities and risks may be more short-term. Furthermore, the Audit Bureau's evaluations are time-consuming and are not likely to pick up short-term changes in liabilities that may generate national financial risk, or even prospects of local service delivery interruptions with attendant social risks.

As Ahmad and Zhang (2018) point out, the most timely and accurate data on financing is provided by the People's Bank of China (PBC) monetary survey. This could be organised to produce monthly data on financing of government and SOEs at the county level. Although the method does not capture arrears, changes in credit to different municipalities or counties could signal problems that could be investigated quickly by the Ministry of Finance or the Treasury (for example, in conjunction with local TSAs), and the Audit Bureau. Again, it is important to stress that this is a shortcut to generate information as part of an early warning system of risk management. In the longer term, the balance sheet data, as well as GFSM 2014-compatible charts of accounts across different levels of government, would provide direct 'above the line' information and monitoring.

The budget law was changed in 2015 to permit local governments to issue bonds, with the expectation that subnational debt would become more transparent and easier to manage. However, without the development of local own-source revenues and tighter information on the extent and time profile of liabilities, the intended hard budget constraints are not credible. While clearly needed for the medium term, the existence of local government bonds could give the erroneous impression that local risks have been controlled. However, without own-source revenues for metropolitan areas and smaller cities, the risks are effectively passed through to higher-level governments (see next sub-section).

In some respects, however, social audits being conducted by local finance bureaus provide effective feedback. As Yuan (2018), from Guangzhou municipality's Performance Auditing Division, explains, a social audit of the high-profile Guangzhou bus rapid transport (BRT) system, led to the cancellation of plans to extend the BRT. This was due to responses by users, ancillary congestion, and evaluation of alternative social costs and benefits. The social audit mechanism has considerable potential for Chinese-style administrative governance models and could be generalised quickly to supplement the financial information that may take longer to generate accurately.

3. Central and local tax instruments: own-source revenues for incentives and accountability

In many respects, the completion of the national tax reforms was needed before the new subnational tax agenda could be formulated. Both VAT, which covers all stages of the value chain, and the rationalised corporate income tax structure, improve the business climate, reduce costs, and remove taxation from exports. Also, full VAT provides information that is useful to prevent 'cheating', and as in Mexico has benefitted overall revenue collections. As described in Ahmad (2017), an option for China would be to establish a first-rate tax administration and a consolidated revenue base, which would make it relatively simple to impose a 'piggy-back' or surcharge on a national tax base. The most important and underutilised base is for the personal income tax (PIT), where a provincial/metropolitan 'piggy-back', within a band set by the National People's Congress, could:

- Generate significant revenues for local governments and form the basis for access to credit markets, such as local government bonds (note that the shared revenues are *not* own-source, and since the local government is not involved in the share, there is no incentive or ability to increase collections)
- Increase the incentive for local government to provide information on the assets, lifestyles and spending of rich residents, thereby more effectively increasing the base of the PIT beyond wage incomes

The additional information would go a long way towards expanding the base of the PIT and meeting the government's social policy goals.

While a PIT is an important instrument for addressing inter-personal inequality, a provincial piggy-back on the tax could, ironically, increase spatial inequalities, since the very rich live in metropolitan areas. Consequently, the current Chinese equalisation system would need to be reformulated, taking into account differential own-revenue bases in estimating disability factors.

The piggy-back could also be used with a national carbon tax (see Ahmad and Stern, 2012, for India) working with the State Administration of Taxation to ensure that there is no race to the bottom with respect to a carbon tax, while providing the possibility that the more congested and polluted metropolitan areas are able to impose a higher tax than might be needed for clean new cities. Indeed, the carbon tax can play a major role, both for revenue and efficiency/sustainability, now that China's emissions trading system has been severely scaled back and limited to carbon efficiency in the power sector.

At the city level, the typical financing mechanism for local infrastructure is user charges. Given the interface with environmental and distributional objectives, the pricing mechanism will typically include a tax/subsidy element depending on the weight given to, for example, environmental externalities (technically speaking the shadow pricing assumptions) and the government's distributional preferences. Thus, there is an interface of public sector prices and user charges with the intertemporal budget constraints, given the nature of the contracting arrangements involved (e.g. PPPs) and public guarantees, as well as the need to record the build-up of liabilities, as described above.

The main local tax base is typically generated by property. Attempts to experiment in China, in Shanghai and Chongqing, were designed on the ownership and valuation basis that operates moderately well in the United States. However, this model relies on accurate records of ownership and baseline valuation, with periodic changes that are reflected in the property tax. Neither the baseline cadastre nor the valuation system work effectively in many emerging market countries. New approaches with respect to taxing housing in emerging market countries focus on occupancy,

number of inhabitants, location and property size, as a way of moving ahead with a simple system that can be applied fairly and rapidly (Ahmad et al., 2017).

The valuation-based property tax was abandoned in the UK in the 1990s; instead local councils put in place a system that links flat taxation bands to the average cost of public services provided by the local councils. Since the tax is linked to a set of services delivered at the city/local level, it is possible to begin to establish a link between the tax as a payment for services and the quality of the services provided. Alfred Marshall argued over a 100 years ago that this could make for a 'beneficial tax', with minimal political economy repercussions.[12] At the same time, however, it would be important to build in progressivity for both equity and revenue reasons.

A valuation-based system continues to operate in the UK for businesses, with adjustments and betterment levies on the business property tax as one of the means of financing new transport infrastructure. Business property taxation of this kind is crucial for the issuance of local bonds, and the ability to incur debt on behalf of PPPs. This could be explored in the Chinese context, along with some additional city-level experimentation (as was attempted in Chongqing and Shanghai with modifications of the US-type models).

Local infrastructure and public services are needed to strengthen, stabilise and reform China's expanding towns and cities. They are also needed to sustain new 'hubs' and for private-sector activities to facilitate a shift in production and employment to the interior, or along international trade corridors. The performance of such infrastructure and services will require local management and creativity. Own-source tax handles are a key element to anchor the spending, provide revenue streams, assure sustainable access to credit, without build-up of liabilities and risk, and to provide signals to the private sector. Without strong focus on the reform of local public finance and services, there could be persistent risks from the fragility of local financial systems. Without the ability to finance investment and clear incentive structures to radically reduce congestion, pollution and greenhouse gas emissions, many cities could remain or become unproductive, unhealthy and unattractive places in which to live and work. They could not provide the strong, sustainable and inclusive growth that China is seeking.

4. Conclusions

We conclude that continuing domestic reforms and rebalancing can foster strong, sustainable and inclusive growth, within and beyond China.

China's role in developing the global agenda for sustainable growth and managing climate change has been, and remains, crucial. This involves sustained efforts at both domestic reform and towards achieving a more integrated world economy in which the Belt and Road Initiative plays a major role. As we have argued in this paper, the BRI should draw on the example of China, especially with respect to establishing and enabling the environment for investment and trade, and the promotion of sustainable development, including taking the opportunities of the transition to the low-carbon economy. In turn, the BRI is facilitating the next stages of reform and rebalancing within China, including: a stronger role for higher-technology and service activities, enhanced opportunities for the interior and western regions, and new value chains linked to trade with BRI countries and

[12] However, an early attempt in the UK, the Community Charge (commonly known as the 'poll tax'), was designed and implemented in a politically troublesome way and was quickly abandoned in the early 1990s. The replacement – Council Tax – rightly has been criticised for its lack of progressivity, as the result of bands which are linked to occupancy, location and cost of local services, rather than the market prices of the respective properties.

beyond. China can be a leader in the coming decade in driving forward the new growth story of the 21st century.

The domestic agenda in China, as articulated in the medium-term work programme of the government (Liu, 2018), is clearly driven by the objective of improving living standards in a sustainable and inclusive way. Clean and attractive metropolitan areas and new high-tech cities that provide sustained employment and help reduce poverty are vital parts of the strategy. However, it is important that careful attention is given to the risks associated with the high level of leveraging and often hidden sub-national debt; financial and fiscal sustainability are important, too.

The global agenda and the Belt and Road Initiative

Benefits for countries involved in the BRI include investments in connectivity and energy infrastructure that hold the possibility of better linkages with China and its economy as well as with other countries with which China trades. It could also create opportunities for better domestic linkages and the potential for sustainable and inclusive growth in each of the countries concerned.

For the BRI to realise its potential for sustainable and inclusive growth, and to be consistent with the global climate change agenda, as envisaged under the BRI *Ecological and Environmental Cooperation Plan* (2017), it is important that project selection criteria reflect the guidelines to be used within China. These in turn embody the principles of the medium-term government work plan and commitments under the global climate change agenda.

We have argued in this paper that:

- A business-as-usual approach in BRI countries carries the risk of significantly increasing greenhouse gas emissions. That may offset the advances made by China itself and pose grave climate risks for the world, including China and the BRI countries.
- Such investments would increase the risk of stranded assets, risks that would be borne by Chinese lending agencies as well as the recipient countries.
- There is a major risk that the project mix may be significantly tilted in favour of coal and polluting investments that could make matters even worse than business-as-usual. If applied throughout BRI, this would not only increase dependence on fossil fuels and the financial and economic fragility this entails but would also be deeply damaging to the world as a whole. It is the poorest countries that are hit earliest and hardest by climate change, but China itself is very vulnerable, too.

An additional set of risks are that:

- Badly designed public policy within BRI countries may pose serious obstacles to taking the opportunities generated by new Chinese value chains and the improved infrastructure.
- Consequently, inefficient (infant) industries may face stiff competition from products made by cheaper regional sources, including Chinese, leading to a loss in domestic employment. This carries obvious political risks. Reliance on SEZs may make it difficult to carry out domestic tax reforms, and may limit linkages with the rest of the economy and potential employment generation.
- Perceived new sources of capital inflow may limit willingness to tackle key challenges in domestic resource mobilisation and thus may make the countries concerned unable to finance crucial investments in human and physical capital and put them at increased overall risk of default.

Appropriate investment choices have pricing and medium-term fiscal consequences. Learning from the Chinese taxation and domestic resource mobilisation reforms between 1993/4 and 2015 should be high on the agenda of BRI countries that hope to benefit from better integration with Chinese markets and investment opportunities in a sustainable manner. Investment choices supported by the BRI and international agencies such as the AIIB should adopt the investment criteria and policy perspectives that are now being adopted in China if they are to generate growth benefits that are sustainable – environmentally, financially and fiscally.

The Chinese domestic reform agenda

The domestic reform agenda to 2020 in China involves improving living standards in clean new cities and restructuring metropolitan areas to foster poverty reduction and the growth of inclusive employment opportunities. Financial and fiscal risks are to be managed through a combination of tax reforms and better information on the generation of liabilities by local governments and firms, including local utilities and SOEs. Tax reforms at the subnational level are needed to generate the appropriate incentives, and to finance investments and anchor sustainable access to credit.

The structural reform agenda has at its core the innovation and adoption of new technology in both existing metropolitan areas and new cities in China's interior. Highly skilled workers in the metropolitan areas will facilitate the adoption of cutting-edge technology. Key locations will be science parks and the Greater Bay Area, and in the potential development of a new 'silicon valley' mega hub. There is also a strong focus on the development of financial services as a core element of a modern service economy and one that is vital for innovation. Clean manufacturing can expand in the new interior cities, along with the new value-chains of the BRI's overland connecting infrastructure, with markets in South Asia and the Middle East, Central Asia, Europe and Africa. Increasing trade with countries in the Western Hemisphere, particularly in Latin America, and with SE Asia, will likely continue to be promoted via the existing and enhanced coastal hubs and sea-based connections. This trade is likely to increase significantly, enhanced by China's stand on open markets and trade. At the same time, in a country the size of China, reforms and innovation to foster strong, sustainable and inclusive growth will depend on policies and reforms for the nation as a whole and not just in hubs and new cities.

The national tax agenda, including in relation to the cost of doing business, has advanced strongly following the 2016 VAT for business tax reform, and the rationalisation of the corporate income tax (CIT) structure and rates. Two main remaining national reforms include: (1) expanding the base of the personal income tax to more effectively include non-wage income; and (2) a national carbon tax to raise revenue, promote efficiency, reduce pollution and further the climate change agenda (this could supplement the more limited emissions trading system). Pursuing this national agenda, together with the modern tax administration methods now in use in the State Administration of Taxation (SAT), could deliver a friendly business climate, create buoyant tax revenues (which are particularly necessary given China's ageing population), and promote high environmental and other standards. The SAT can then easily administer a 'piggy back' or 'surcharge' that could be imposed easily and quickly by provinces and metropolitan areas, or even cities for the carbon tax. Given that China is a unitary state, the legislation of bands by the National People's Congress would be important, and cities that are more polluted and congested could apply rates towards the upper end of relevant ranges.

The 'piggy back' or surcharge for provinces and metropolitan areas also changes the current revenue-sharing arrangements into an own-source revenue that can be used to anchor access to the credit markets and make the local bond system work more effectively. This is an essential element in managing the potentially very serious risks arising from sub-national operations.

At the city level, land sales are no longer a viable source of financing local investment. US-style property taxes based on ownership and accurate valuation have not proved easy to implement in China or in any other emerging market economies. A simpler tax linked to size of property, location and local service delivery and including occupancy, could be an option to be developed. The experience of the UK, negative as well as positive, is a potential example to be explored, although it is important to build in progressivity for both equity and revenue reasons. This will be a critical element in the financing of new clean cities and minimising the risk of default.

Finally, the local governance agenda is fundamental. Cities should be accountable for the liabilities generated. Clear and comprehensive information on liabilities, including from private–public partnerships, should be incorporated in local government balance sheets. While this effort is already underway, it will take time to be implemented at more junior levels of government. In the short run, collaboration between the People's Bank of China and the Ministry of Finance on the (monthly) changes in credit to local governments would provide an early-warning system for potential risks and problems that would form the basis for a deeper audit programme.

In short, the reforms in China to further the government's medium-term work plan to 2020 can and, we argue, should also inform the principles and techniques for development and risk management that apply to the BRI over the medium term. In this way, there would be, potentially, a very effective coherence and mutual reinforcement between sustainable and inclusive growth in the BRI countries and in China. That could bring very powerful and valuable benefits in the form of 'better growth, better climate' for China and the world.

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