

ONE BELT, ONE ROAD: THE FUTURE FOR INFRASTRUCTURE AND SUSTAINABLE FINANCING

DECEMBER 2015



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China Globalisation — driving the future?



THROUGHOUT MY career I have been fortunate enough to learn from real experiences, whether from the challenges of the financial crisis or being at the centre of the great phenomenon that is the rise of China and its currency.

I firmly believe that the process of China globalising and reforming its financial markets is one of the most significant events of the 21st Century. We have already seen the continued internationalisation of the RMB. The positive decision by the IMF to include RMB as part of the Special Drawing Rights (SDR) basket of reserve currencies has further emphasised the powerful impact that China and the RMB impose on the global financial system.

Understandably for many people, the China story has been a ‘currency’ focus, but it is more than that: ultimately it is China’s wider integration with the world.

The ongoing journey of China’s reform will have a transformational effect on global capital markets. We continue seeing the two capital flows as the key driver for the next phase of development and feel strong linkage with broader global themes such as infrastructure and the climate and sustainable financing agenda. This will impact all our lives and there are great opportunities as all these global themes come together.

We are now entering a new phase where this integration will accelerate and where the offshore and onshore markets will start to converge. For example, the RMB bond market used to be just an offshore play but we are already seeing great opportunities onshore, through the re-opening up of the domestic Panda bond market — with financing supporting infrastructure needs aligned with a broad ‘green’ overlay.

As this report examines, China is demonstrating its global understanding and is making extraordinary efforts to ensure that, as its markets develop, capital is mobilised to achieve what it needs most: better infrastructure; an improved environment; and continued, but sustainable, economic growth.

For China to maintain continued rapid growth it needs to ensure there is the necessary infrastructure to support this, not just domestically but throughout the regions. This is the premise behind President Xi’s flagship infrastructure led ‘One Belt One Road’ initiative.

Like many countries, China realises that governments themselves will not be able to finance

this much-needed infrastructure, which explains why it is establishing new institutions to support its ambitions, through the Asian Infrastructure Investment Bank (AIIB) and the New Silk Road Fund, and clearly to be successful these new players will need to mobilise private capital. As this report shows, One Belt One Road will have a profound effect on how the region trades and it will take China’s outbound journey to a new level. It will also have great relevance for the development of China’s domestic market, through value creation coming out of supply chains, the transfer of technology and knowledge and, crucially, through accelerating financial reform.

But with clear environmental concerns China urgently needs solutions and it realises it won’t be able to use public sector funds alone. So by hard-wiring sustainable outcomes into its market infrastructure it can utilise private capital to provide much-needed solutions.

As shown by the fantastic growth in the green bond market, this sector is already rapidly taking off, but China looks set to further accelerate this. It is showing global thought leadership when it comes to greening its own markets and now China is looking to use its G20 Presidency as a forum for growing green finance globally. This is a real commitment and shows how seriously China wants sustainable growth, but also to use green as a catalyst for wider reform and build further integration with global financial markets.

As you will see in this report it is in this context, of China globalising, that all of these initiatives come together. Whether it’s the currency, green finance, PPP or One Belt One Road, China is making an unprecedented effort to effectively mobilise the financial markets.

China’s globalisation is already having an impact, but it will inevitably play a much greater role over time. A role that will see financial markets become greener, a role that will see greater interconnectivity throughout the region and a role, I am sure, that will continue to re-shape the view from my window. There are great opportunities to be made and the true winners will work out how to bring all of these themes together, adding real value, leveraging solutions that drive next phase of economic development further.

Spencer Lake
Group General Manager
Global Head of Capital Financing, HSBC

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Incentives needed to develop the SRI investor base

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The potential of One Belt, One Road

One Belt, One Road – a simple name for a vastly ambitious and complex project that China hopes will create demand overseas for its excess capacity in areas such as steel, cement and aluminium, and aid the transformation of its economy away from the domestic investment-led model. *GlobalCapital* explores the potential of this transformational infrastructure investment.

THERE ARE several reasons why it has become increasingly inappropriate to view infrastructure development through the prism of domestic markets, financial systems or regulatory regimes.

First, many big ticket infrastructure initiatives are trade-related projects involving two or more countries, most obviously in the transportation sector.

Second, institutional capital looking for longer-dated assets is flowing across borders more fluidly than ever. Witness, for example, the growth in demand for exposure to real assets in general, and infrastructure in particular, among sovereign wealth funds over the last decade.

Third, even those infrastructure

developments that appear to be purely domestic projects will often have environmental reverberations well beyond national boundaries. After all, greenhouse gas emissions don't carry passports or require visas.

The Silk Road trading route

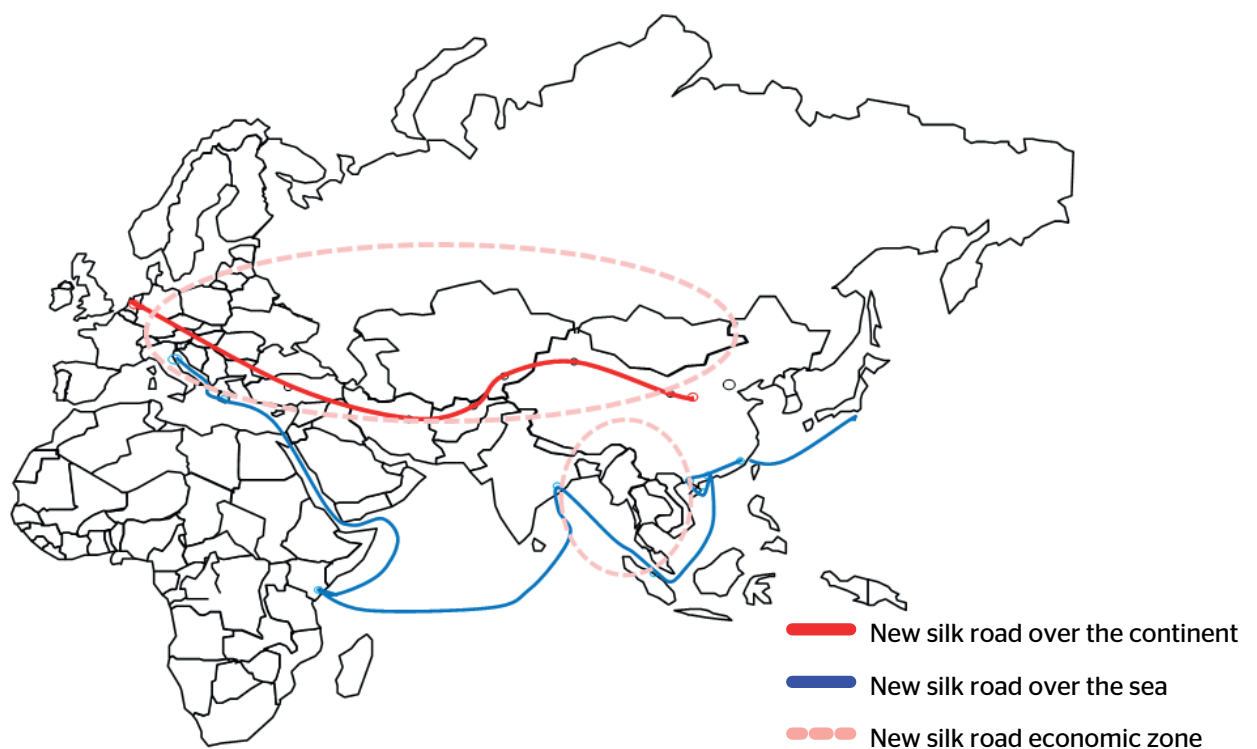
Today, the most striking example of the borderless nature of infrastructure development is China's One Belt, One Road initiative, which aims to foster economic growth and investment along the ancient Silk Road trading route between Europe and the East.

An extensive report on the project published recently by CLSA and CITIC Securities explains that "One Belt" refers to the Silk Road

Economic Belt where China plans to invest heavily in infrastructure to underpin its long-term presence in Eurasia. "One Road", meanwhile, is the 21st century maritime Silk Road which will call for the construction of ports and maritime facilities from the Pacific Ocean to the Baltic Sea.

As the CLSA/CITICS guide explains, the initiative serves two key economic objectives for China. First, it creates demand overseas for China's excess capacity in areas such as steel, cement and aluminium. "Difficulty in maintaining rapid investment growth due to heavy local government debt has meant excess capacity cannot be fully used through domestic investment," notes the CLSA/CITICS report.

The New Silk Road: an economic belt and maritime route



SOURCE: CEIC, HSBC

Second, by expanding and strengthening its trading links with a large block of countries in Asia, the Middle East, Africa and Europe, it supports the transformation of China's economy away from the domestic investment-led model that is no longer as robust as it once was.

Investors agree that this is a significant step in the readjustment of the Chinese economic model. "One Belt, One Road is a smart way for China to develop new markets and secure new investment opportunities, especially for infrastructure-related equipment manufacturers and service providers," says Karine Hirn, a partner at the emerging and frontier markets specialist, East Capital. "Another long-term implication is that as the RMB will be the main currency for One Belt, One Road-related projects, it will support the strategic objective of the Chinese government to internationalise its currency."

The Chinese government says that the principal focus of the One Belt, One Road project is connectivity in areas such as policy, transport, trade and currencies, which will create a number of other benefits across several sectors. As HSBC explains in a recent research note, "the build-up of physical links will have an immediate effect on trade and productivity growth. Other related industries, such as agriculture product processing, machinery engineering and tourism, will also develop as the result of better connectivity. Tourism in particular has huge potential given that China is rapidly turning into a nation of holidaymakers."

The HSBC research report puts the geographical scope of the One Belt, One Road project into perspective. This notes that the countries along the land and sea routes on the Silk Road account for 63% of the world's population and 29% of global GDP.

In 2014, trade between these countries and China reached \$1tr, which is 26% of China's total trade value, and President Xi Jinping is banking on annual trade between China and its One Belt, One Road partners surpassing \$2.5tr within the next decade.

The same report notes that according to estimates by the China Development Bank (CDB), the number of cross-border co-operation

Project pipeline within China (starting or under construction)

Province	Projects planned for 2015	Sector
Xinjiang	Three pathways across northern, central and southern Xinjiang	Transportation
	Construction of the Khorgas port as the receiving end of oil pipelines from central Asia	Energy
	Establish new bonded area and trade cooperation centre: Urumqi, Kashgar	Trade
Qinghai	Establish new bonded area: Caojiapu	Trade
	Follow up construction and more air routes for Xining Caojiabao Airport	Transportation
Gansu	Establish satellite city for Lanzhou New Area	Infrastructure
	Tourism development for Dunhuang	Tourism
Shanxi	Co-operation with central Asia and Australia in mining and processing	Trade, energy
	Build national aviation experimental zone	Transportation
	Establish financing centre for energy product transactions	Trade, energy, finance
Ningxia	Subways and other transport links in Xi'an new city	Transportation
	Yinchuan Airport	Transportation
	"Pathway breakthrough plan": a series	Transportation
Inner Mongolia	Railways to Mongolia	Transportation
Mongolia	New trade zones: Manzhouli, Erianhote	Trade
Yunnan	Establish new financial centre in Jinbian	Finance
Guangxi	Build Beibuwan as the next free trade zone	Transportation, trade
Jiangsu	Build Lianyungang as the key harbour of the maritime Silk road	Transportation, trade
Fujian	International air transport centre in Xiamen	Transportation
	Further construction projects of Xiamen airport	Transportation
	Six major railways and three highways	Transportation
Guangdong	Construction of harbours: Guangzhou, Shenzhen, Zhuhai, Zhanjiang and Shantou	Transportation
	Actively involved in Hong Kong-Macau-Guangdong free trade zone	Trade
	Participating in the building of new harbours in ASEAN countries	Transportation, trade
Heilongjiang	Upgrade 1,600 km provincial highways, construct 3,000km roads in rural areas	Transportation
	Build Sanjiang Airport	Transportation
	New subways in Harbin	Transportation
Liaoning	Railways, roads and bridges around China-Russia borders	Transportation
	Three pathways that links Liaoning and Europe: Liaoning-Manzhouli-Europe;	Transportation
	Liaoning-Mongolia-Europe pathway; Northeast China-North Pole maritime road	

Source: NDRC, local government websites, HSBC

projects envisaged by the Silk Road plan already exceeds 900 and involves 64 different countries. The total investment value of these projects — most of which are concentrated in the infrastructure sector — is estimated at \$890bn.

The role of the financial services sector

Bankers are optimistic about the opportunities for trade, investment and job creation that the project will generate. If the initiative is to deliver on its ambitious objectives, however, it will need the full backing of the financial services sector at two levels.

First, China will need to develop and expand its local financial services industry to provide enhanced support in some of the less-developed areas of the country that are pivotal to the project's longer term success. Second, it will need to provide support for the new supranational agencies that will play anchor roles in financing much of the cross-border projects underpinning the

project.

As HSBC comments in its research on the Silk Road, "the way the New Silk Road is financed could be the most important factor in terms of the sustainability of the entire initiative." This is why China is channelling investment into a number of projects designed to develop local financial markets along the Silk Road — including financial centres in Jinbian and Xi'an to serve inland regions and focus on energy transactions.

David Gardner, head of project and export finance at HSBC in Hong Kong, says he is encouraged by the financial firepower and expertise that has already been assembled in support of One Belt, One Road.

"In assessing how it can help investors and developers explore opportunities outside China, the government has used the model of other countries that have been successful internationally," says Gardner. "Japan, for example, set very high standards because companies such as Marubeni and Mitsui are among

the best developers in the world. But they did not achieve their global success on their own. They needed the support of liquid and competitive commercial bank debt, and the icing on the cake was provided by JBIC [Japan Bank for International Co-operation] and NEXI [Nippon Export and Insurance Company].”

Some of the firepower supporting the One Belt, One Road initiative will be provided by seasoned entities such as China’s Export-Import Bank and the China Export and Credit Insurance Corp (Sinasure) which have been supporting China’s trade for many years. This will be complemented by the newly created BRICS Development Bank, which has a broad mandate to fund infrastructure and sustainable development projects, and by two new organisations established specifically to help finance One Belt, One Road-related projects.

The Silk Road Fund

The first of these is the \$40bn Silk Road Fund, which was established in Beijing in December 2014, and is mandated to “seek investment opportunities and provide monetary services throughout the Belt

and Road initiatives,” according to the People’s Bank of China (PBOC). Aside from the government, the Silk Road Fund’s backers are China Investment Corp (CIC), the Export-Import Bank of China and the China Development Bank.

“The Silk Road Fund is a very versatile source of funding, which can provide senior and mezzanine debt as well as equity,” says HSBC’s Gardner. Details about the fund’s investment strategy have so far been sketchy, although the governor of PBOC, Zhou Xiaochuan, has been quoted as saying it will operate like a private equity investor, but with a longer time horizon. It has been reported that the Silk Road Fund, which is adamant that it is a profit-making entity rather than an aid agency, will aim to exit from its investments through a combination of stock market listings and government transfers.

To date, the Silk Road Fund has made three very different investments. The first of these was the Karot hydropower plant in Pakistan, which is a strategically important staging-post on the Silk Road. Another arose from an agreement announced in September with

Russia’s state development bank, Vnesheconombank, to co-invest in infrastructure and other projects, especially in the electricity and energy sectors. At the same time, the Silk Road Fund signed an agreement with Russia’s second largest natural gas producer, Novatek, for the acquisition of a 9.9% stake in a Yamal liquefied natural gas (LNG) project at Sabetta on the Yamal Peninsula in the north of Russia.

Sandwiched between these projects was the announcement of an equity investment in the Italian tyre maker, Pirelli, which at first sight seems to be only very loosely connected with the One Belt, One Road plan.

The role of the Asian Infrastructure Investment Bank

The second newly-established entity designed to support the One Belt, One Road initiative is the Asian Infrastructure Investment Bank (AIIB), which has capital of \$100bn and is co-owned by 57 countries, with China holding approximately 30%.

“As well as providing finance, AIIB will add another layer of credibility and bankability which will be important for Chinese developers as they

AIIB member countries and their theoretical voting shares based on GDP weights

Country	GDP (USD bn)	AIIB vote share (GDP weighted)	IMF voting rights	Country	GDP (USD bn)	AIIB vote share (GDP weighted)	IMF voting rights
China	9,240.3	37.47	3.81	Maldives	2.3	0.01	0.03
Mongolia	11.5	0.05	0.05	Sri Lanka	6.2	0.27	0.19
Korea, Rep.	1,304.6	5.29	1.37	United Kingdom	2,678.5	3.29	4.29
Indonesia	868.3	3.52	0.85	France	2,806.4	3.45	4.29
Malaysia	313.2	1.27	0.73	Germany	3,730.3	4.59	5.81
Singapore	297.9	1.21	0.59	Italy	2,149.5	2.64	3.16
Thailand	387.3	1.57	0.60	Switzerland	685.4	0.84	0.05
Vietnam	171.4	0.69	0.21	Netherlands	853.5	1.05	2.08
Brunei	16.1	0.07	0.11	Austria	428.3	0.53	0.87
Philippines	272.1	1.10	0.43	Denmark	335.9	0.41	0.78
Myanmar	0.0	0.00	0.13	Finland	267.3	0.33	0.53
Cambodia	15.2	0.06	0.06	Sweden	579.7	0.71	0.98
Lao PDR	11.2	0.05	0.05	Iceland	15.3	0.02	0.08
Saudi Arabia	748.4	0.92	2.80	Portugal	227.3	0.28	0.44
Kuwait	175.8	0.22	0.58	Luxembourg	60.1	0.07	0.20
Jordan	33.7	0.04	0.10	Russia	2,096.8	8.50	2.39
Oman	79.7	0.10	0.12	Turkey	822.1	3.33	0.61
Qatar	203.2	0.25	0.15	Georgia	16.1	0.07	0.09
Australia	1,560.4	1.92	1.31	Kazakhstan	231.9	0.94	0.17
New Zealand	185.8	0.23	0.38	Uzbekistan	56.8	0.23	0.14
India	1,876.8	7.61	2.34	Tajikistan	8.5	0.03	0.06
Pakistan	232.3	0.94	0.44	Kyrgyz Republic	7.2	0.03	0.06
Bangladesh	150.0	0.61	0.24	Brazil	2,245.7	2.76	1.72
Nepal	19.3	0.08	0.06	Egypt, Arab Rep.	272.0	0.33	0.40

Source: World Bank, IMF, HSBC



President Xi Jinping (C, front) poses with delegates attending the signing of the Articles of Agreement of the Asian Infrastructure Investment Bank in Beijing

increase their outbound investment,” says Gardner. “This will be very valuable in some of the less developed markets on the Silk Road which many of the commercial banks still regard as too risky.”

The creation of the AIIB has been controversial from a political as well as an ecological perspective, with some concerns having been expressed that as China is such a large shareholder in the bank, it will effectively enjoy a veto over major issues.

Small wonder, against this backdrop, that the Chinese authorities have emphasised there is no question of the Silk Road initiative being used as an instrument of Chinese regional economic hegemony. When Wang Yang, vice premier of the State Council, spoke about the Silk Road project at the opening ceremony of the China-Eurasia Expo in Ürümqi in September, he told the audience that it was all about “openness and inclusiveness, [and] joint development based on consultation and mutual benefit”.

He added that the Silk Road is, “first and foremost, a trade route” and that China would be scrupulous in ensuring that this would create equal opportunities for all trading partners along it. “China is ready to

import more competitive products from other countries along the economic belt, especially non-resource products, so as to promote balanced and sustainable development of trade,” he said. On a similar note, he promised that China would provide “favourable conditions” for companies in the economic belt to “explore the Chinese market”.

Equally significantly, Wang pledged that China would remain committed to a “reasonable division of labour” in Silk Road projects. That may have been a nod to the complaints that have been expressed in some developing countries that Chinese companies often import their own workers for big-ticket infrastructure projects, doing little or nothing to create local jobs.

Ecologically, meanwhile, there have been some suggestions that China may be less meticulous about observing high environmental standards in its overseas investments than it has become within its domestic borders. Some recent press coverage, for example, has reported concerns that the AIIB may take a light touch on some of the environmental and social safeguards that can sometimes slow down projects backed by other multilateral development banks.

Sean Kidney, chief executive of

the Climate Bond Initiative (CBI), is prepared to give the AIIB the benefit of the doubt on this score. “We’ve been encouraged by the statements that have been issued by the AIIB,” he says. “The incoming CEO has promised that green finance will be at its core, and we have also heard that AIIB plans to issue green bonds to raise capital, which is fantastic news.”

China’s green credit guidelines

Kidney says he is also comfortable that the Chinese banks themselves will be as committed to green criteria in their overseas lending activities as they have been in the domestic market, in conformity with the Green Credit Guidelines issued by the China Banking Regulatory Commission (CBRC) in February 2012. According to the IFC, these specified “how to integrate sustainability practices into the lending cycle and [directed] banks to apply them to both domestic and overseas financing”.

The WWF, the global conservation organisation, meanwhile, has also acknowledged the significance of the CBRC guidelines for Chinese banks’ international activities. It described the publication of the recommendations as “a significant milestone

in transforming China's economic development and China's growing overseas investments".

The recommendations published by the PBOC's task force on establishing a green financial system should also be reassuring to those who are concerned about environmental best practice in China's international investment and in AIIB's lending policy. The PBOC's report insists that the lending mechanisms supporting OBOR "cannot become channels for Chinese companies to offload outdated and polluting capacities to other Asian developing countries".

In order to safeguard against this risk, the report calls for the AIIB and Silk Road Fund to adopt a "highly transparent environmental disclosure mechanism". Lenders to One Belt, One Road projects, says the PBOC's report, should "not only require the disclosure of environmental and social risks of projects and risk mitigation measures by loan applicants, but also prescribe a minimum value for the percentage of loans to environmental projects and disclose such information in their annual reports."

Strong and well co-ordinated support for One Belt, One Road from the AIIB and the Silk Road Fund will be as critical to its success as the €315bn Juncker Plan is for Europe.

"For years, Europe muddled along with no coherent, joined-up strategy to address its infrastructure deficit," says Scott Dickens, global co-head of infrastructure finance at HSBC. "The Juncker Plan creates a co-ordinated strategy for infrastructure investment, and I'd expect One Belt, One Road to do the same for China."

International investors and joint venture partners will also have an important contribution to make to projects developed by Chinese companies along the Silk Road. As HSBC's research explains, this is because the track record of China's overseas investments to date has been unflattering. This points out that between 2005-2014, the value of troubled Chinese investments overseas reached just shy of \$200bn, or about 33% of their total international investments over the same period.

"Losing money in developing countries is nothing new for China, international investors or private sector investors in recent history," cautions HSBC. All the more reason why Chinese investors venturing down the Silk Road would be well advised to use as much support as multinational banks and joint venture partners can provide.

Developing the China-Pakistan Economic Corridor

Pivotal to the Silk Road initiative

is the development of the western region of China, which has benefited less from the economic boom of the last decade than the heavily-populated eastern seaboard. "The One Belt, One Road initiative is an important strategic move for China, which has recognised that although the eastern part of China has been an economic success story, there is a lack of development, employment and social infrastructure in the west," says HSBC's Gardner.

The basic numbers speak for themselves. According to research published recently by HSBC, the central and western provinces cover a third of China's territory and are home to about a fifth of its population. But its railway density is just 6km per 1,000km sq, well below the national average of 10km — which is why these less-developed regions account for most of China's planned Rmb800bn (\$125.22bn) investment in its railway system in 2015.

Infrastructure development in this region will create substantial opportunities for overseas as well as local companies. This explains why, on his recent visit to China, Chancellor of the Exchequer George Osborne became the first British minister to visit the northwestern province of Xinjiang, which has extensive resources of minerals, oil, gas and

Investment projects inside China

Project name	Location	Type	MW	Cost (\$m)	Funding and ownership	Expected
Sinohydro Resource Limited & Al Mirqab Capital	Port Qasim, Karachi	Coal	1,320	1,980	Powerchina Resources Ltd (51%); Al Mirqab Capital Qatar (49%)	Undetermined
Sahiwal 2x660MW Coal-fired Power Plant	Sahiwal	Coal	1,320	1,600	ICBC, Huaneng Shandong Electricity Ltd, Shandong Ruyi Group (100%)	post-2018
Engrothar 2x330MW Coal-fired	Islamkot	Coal	660	1,000	Sindh Gov (40%); Engro Powergen (60%)	2018
Surface mine in Block II of Thar Coal field, 3.8m tons/year	Islamkot	Coal		860	Sindh Gov (40%); Engro Powergen (60%)	2018
Gwadar Coal Power Project	Gwadar	Coal	300	360	NA	
Muzaffargarh Coal Power Project	Muzaffargarh, Punjab	Coal	1,320	1,600	China Machinery Engineering Corp (CMEC)	
Rahimyar Khan Coal Power Project	Rahim Yar Khan	Coal	1,320	1,600	China Machinery Engineering Corp (CMEC)	
SSRL Thar Coal Block 6.5mpta & CPIH Mine Mouth Power	Islamkot	Coal	1,320	1,300	Sino Sindh Resources (Pvt) Ltd (SSRL)	end of 2016
Quaid-e-Azam 1000MW Solar Park	Bahawalpur	Solar	1,000	1,350	Owned by Gov of Punjab/Bank of Punjab; operated by TBEA	
Dawood 50MW wind Farm	Gharo	Wind	50	125	HydroChina Dawood Power Ltd (HDPPL)	
UEP 100MW wind Farm	Jhampir	Wind	100	250	United Energy Pakistan (UEP), a subsidiary of United Energy Group Ltd, Hong Kong	
Sachal 50MW Wind Farm	Jhampir	Wind	50	134	Sachal Energy Development (Pvt.) Ltd (SEDL) owned by Arif Habib Corp Limited;	mid-2016
Sunec 50MW wind Farm	Jhampir	Wind	50	125	China Sunec Energy (Private) Ltd	
SukiKinari Hydropower Station	Kaghan, Khyber Pakhtunkhwa	Hydro	870	1,802	S.K Hydro Pvt Ltd (Lahore)	2018
Karot Hydropower Station	Hollar	Hydro	720	1,420	IFC/World Bank (93%); Associated Technologies (Private) Ltd, Pakistan (7%)	2020

Source: Planning commission - Government of Pakistan

coal. “I want Britain to be connected to every part of this vast nation,” said the chancellor in a speech in Shanghai the day before he headed west to Ürümqi, capital of Xinjiang.

The development of Xinjiang means the province will play a central role in the ambitious \$45bn, 3,000km China-Pakistan Economic Corridor (CPEC) project, which aims to connect Kashgar in Xinjiang with the warm-water port of Gwadar. Located 130km from the Iranian border and 380km north-east of Oman, Gwadar is strategically positioned close to the Strait of Hormuz, giving it easy access to a key shipping route in and out of the Persian Gulf.

Built in 2007 with technical and financial assistance from China, Gwadar’s deep-water port is regarded by China as a strategic link to the Middle East, Africa and Europe. A signal of that commitment was the agreement signed by China Overseas Port Holding Company (COPHC) in 2013 to manage the port at Gwadar for the next 40 years.

China’s commitment to the development of Gwadar is bold, given its location in Baluchistan — Pakistan’s poorest and least-developed region, where 46% of the population reportedly living below the poverty line. It is also one of its most restive, and has been vulnerable to sporadic terrorist attacks.

As part of its commitment to the China-Pakistan Corridor, the Chinese government is reported to have agreed to build 18 new power plants, half of which will be coal-powered. China will also support the construction of five wind farms, three hydroelectric projects and one solar plant, all of which will be crucial to Pakistan’s economic development. According to CLSA’s research, Pakistan’s peak power demand is 18,000MW, but the country’s total power generation capacity is just 12,000MW. “The power shortage of 6,000MW implies a lot of opportunities for China to co-operate with Pakistan in this field,” CLSA advises. Pakistan’s government has calculated that the country’s energy shortfall results in a loss to GDP of between 4%-7%.

In order to start addressing the formidable challenge of power shortages, in 2008 Pakistan’s Water and Power Development



Gwadar’s deep-water port in Pakistan is regarded by China as a strategic link to the Middle East, Africa and Europe

Authority (WAPDA) launched a national water resource and hydro-power programme, which is part of Pakistan’s broader development agenda known as Vision 2025, aimed at making Pakistan “the next Asian Tiger”.

In the energy sector, Vision 2025 calls for a doubling of the country’s power generation, to provide “uninterrupted and affordable electricity”, and to increase electricity access from 67% to more than 90% of Pakistan’s population.

The Karot hydropower blueprint

One of the first projects to benefit from the Silk Road Fund is the 720MW, \$1.4bn Karot hydropower plant on the Jhelum River in the northeast of Pakistan, which will be jointly developed by China Three Gorges South Asia Investment Ltd (CSAIL) and Pakistan’s Private Power and Infrastructure Committee. The plant, which is due to be built by 2020 and transferred to the government after 30 years of operation, is expected to create about 3,500 local jobs and generate enough power to provide electricity for some seven million homes.

The Silk Road Fund’s co-investors in Three Gorges Investment are PBOC and the IFC, with loans provided by China Exim Bank and CDB.

According to the environmental and social impact assessment of the Karot project, there will be negative ecological and social side-effects, with a number of families needing to be rehoused and the habitat of the endangered golden mahseer fish disrupted, but the net impact

on emissions will be beneficial, producing some 1.6m tonnes of CO₂ fewer than a fossil-fuelled plant.

More broadly, projects in CEPC’s pipeline will be highly supportive of continued economic expansion in Pakistan, which posted GDP growth of more than 4% in fiscal 2014-15. According to the IMF, the lion’s share of the total investment envisaged under the CEPC will be accounted for by energy, which calls for \$33.8bn, with transportation projects requiring the remaining \$10.6bn. The transportation infrastructure developments are due for completion by 2017-18, while priority projects in the energy sector are scheduled to add 10,000MW of new capacity by 2017-18 (by 2020 for hydro projects). A further set of promoted projects is planned to add another 6,500MW of capacity “in due course”, according to the IMF.

The IMF adds that the methods of financing transportation and energy projects differ. Transport infrastructure developments will be exclusively financed by long-term government-to-government loans on concessional terms. Energy-related projects, meanwhile, will be FDI-based, financed by commercial loans from Chinese financial institutions to Chinese investors, which will undertake construction of all projects in collaboration with local Pakistani partners. Energy sales by independent power producers (IPPs) will be guaranteed by the government of Pakistan through power purchase agreements (PPAs) at tariffs pre-determined by the National

Electric Power Regulatory Authority (NEPRA).

Given that Pakistan is to be one of the earliest beneficiaries of One Belt, One Road, economists will keep a close eye on the broader economic impact of the infrastructure investment and stronger trade links created by the Silk Road initiative.

The IMF is encouraged by what it has seen so far, commenting that CPEC has the potential to raise productivity and growth as long as the projects are well managed and the risks are efficiently mitigated. Imports, says the IMF, will probably rise as Chinese contractors bring in a large share of the required machinery and raw materials. “However,” adds the IMF, “supply-side effects facilitated by higher power generation capacity (including through FDI) and better infrastructure, will be beneficial for economic growth in the medium term.”

Analysts also appear to be encouraged by the economic impact that One Belt, One Road will have on the less-developed countries located on the Silk Road. Moody’s says that it regards the initiative as credit positive for emerging market sovereigns.

The agency commented in a report published in July that the main beneficiaries will be “smaller sovereigns with relatively low per-capita incomes, financing constraints on their current account positions, and low investment rates”.

Supporting development in Bangladesh and Myanmar

Aside from Pakistan, the most notable beneficiaries of the One Belt, One Road initiative may be the countries located on the other economic corridors that the project is looking to develop. Foremost among these is the 2,800km Bangladesh-China-India-Myanmar (BCIM) Economic Corridor.

The East Asian Forum calls this a “win-win arrangement” for the countries involved, which between them account for 9% of the global land mass, but 40% of the world’s population. According to the East Asia Forum, intra-regional trade accounted for just 5% of the total in BCIM countries in 2012, compared with 35% in the ASEAN region in southeast Asia.

The development of a more

Cross-border projects under the New Silk Road initiative in the coming years

Pilot projects	Investment destination
Gwadar Port development	Pakistan
Hambantota Port construction	Sri Lanka
Capacity co-operation plan (investment value: US \$23.6bn)	Kazakhstan
Sihanoukville port construction	Cambodia
Indonesia port construction	Indonesia
China-Laos-Thailand railway	Laos and Thailand
China-Myanmar railway	Myanmar
China-Tajikistan railway	Tajikistan
China-Pakistan railway	Pakistan
China-central Asia natural gas pipelines line C and line D	Central Asia
China-Russia natural gas pipelines, west line and east line	Russia

Source: Xinhua, HSBC

efficient transportation infrastructure connecting BCIM countries is expected to increase this share, especially if China delivers on its plan to construct a high-speed rail link between Kunming and Kolkata in Bengal. It has been reported that this high-speed line, which would pass through Mandalay in Myanmar as well as the strategic port of Chittagong in Bangladesh, is a candidate for funding from the AIIB and the Silk Road Fund. “To date,” comments the East Asian Forum, “South Asia has not come close to enjoying the same economic success that East Asia has reaped. BCIM might well be the game changer that South Asia needs.”

Bangladesh’s infrastructure could certainly use the sort of game-changer that Chinese capital could bring via the One Belt, One Road scheme. The scale of this capital is not to be sniffed at, with Bangladesh reported to be in negotiations with China over a \$13bn loan to finance the production of 24,000MW of electricity by 2021.

It is not just Bangladesh’s energy sector that is in desperate need of investment. According to CLSA’s research — which describes the country’s traffic as “appalling” — paved road coverage in Bangladesh is just 9.5%, flooding is common and maintenance costs are high. As CLSA remarks, it takes 24 hours to drive from the capital, Dhaka, to the port of Chittagong, even though the distance between the two cities is only 240km. The result is a woeful under-development of Bangladesh’s export potential: “The manufacturing export industry in Asia depends on processing imported

parts and transport conditions mean that Bangladesh cannot participate well in this production change,” says CLSA.

Closer trade links generated by the BCIM will also be especially appealing for Myanmar, which has set out on a path of reform in 2014 after decades of economic isolation.

A recent analysis by McKinsey describes Myanmar as a “highly unusual, but promising prospect for businesses and investors — an underdeveloped economy with many advantages in the heart of the world’s fastest growing region.”

The World Bank recently scaled back its estimate of economic growth in Myanmar in 2016, from 8.2% to 6.5%, but as McKinsey says, if the country can accelerate its labour productivity growth, Myanmar has the potential to grow at 8% a year.

Beyond South Asia, the other economic corridors which are part of the huge One Belt, One Road plan will have important repercussions for economic growth and infrastructure investment in countries ranging from Mongolia and Russia to the five Central Asian republics of Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan and Turkmenistan, as well as in the Middle East and parts of Europe. The new Eurasia Land Bridge, for example, proposes to link Lianyungang in China’s Jiangsu province with key ports in Europe, while the China-Central Asia-West Asia Economic Corridor, which extends from China in the East to Iran and Turkey in the West, will unlock opportunities throughout the resource-rich countries of Central Asia.

A transformational impact

Moody's notes that "the new silk roads could have a transformational impact for smaller, infrastructure-impooverished countries in South and Southeast Asia, by spurring investment and boosting economic growth potential". This suggests that the project could kickstart a virtuous circle for infrastructure finance across the region by strengthening credit ratings, supporting the evolution of local capital markets and making projects more bankable.

Although much of the One Belt, One Road project has not yet progressed beyond the drawing board, China's leading banks have already started to mobilise capital in support of the initiative. In June 2015, for example, Bank of China (BoC) became the first of the banks to issue a bond explicitly for Silk Road purposes.

The \$3.55bn (equivalent) transaction was a four-currency issue, raising US dollars, euros, Singapore dollars and renminbi, on which Barclays, Citi, DBS and HSBC joined BoC as global co-ordinators across all four tranches.

A number of heavyweight Chinese investors have also already made a significant commitment to the One Belt, One Road initiative. Citic, for example, has announced plans to invest over CNY400bn in more than 200 Silk Road projects. It has also set up a CNY20bn One Belt, One Road fund.

Bankers say they are also encouraged by the response of the Chinese corporate sector to the opportunities being opened up to them by the One Belt, One Road scheme. "We've had a number of discussions with many of the Chinese infrastructure developers, and a common theme among them is that 90% or 95% of their revenue still comes from the domestic market," says HSBC's Gardner. "They recognise that they need to grow their overseas business, but they are also very cognizant of the constraints to international growth."

Already, there is evidence that in the renewables sector, Chinese companies are benefiting from the One Belt, One Road initiative. Goldwind is explicit about this in its 2014 annual report, commenting that "China's 'New Silk Road' strategy supported Goldwind's success in the overseas

market". Goldwind completed its first project in Pakistan in late 2014, which the company says will "help to relieve a shortage of power, improve the energy structure and promote economic and social sustainable development in Pakistan".

Elsewhere along the Silk Road, Goldwind has also won orders in countries ranging from Thailand to Serbia and Romania. Further afield, in April 2014 it won its largest overseas order in the form of a 215MW mandate from Panama — which can hardly be said to be on China's Silk Road. Another of China's largest wind farm companies, Sinovel, has sold wind turbines to Turkey and Sweden.

Exporting China's infrastructural know-how

Global infrastructure investment opportunities for a number of other Chinese companies also extend well beyond those directly created by the One Belt, One Road project.

According to research published recently by HSBC, in 2014 China's outward direct investment (ODI) exceeded the foreign direct investment (FDI) it attracted for the first time.

As this process accelerates, it is probable that Chinese companies will increasingly look to export their know-how in sustainable infrastructure development.

"You only need to visit China and use the high-speed rail system to see that it is starting to lead the world in terms of infrastructure development," says HSBC's Dickens. "China is now focused on starting to export some of that technological and construction experience. Be it in high speed rail, nuclear or renewables, China has a lot of knowledge as well as capital to put to work across the world."

This process is already gathering traction. Look, for example, at the recent creation by China Railway Corp of China Railway International, which is co-ordinating the company's overseas investments and has been chalking up new mandates across the globe. In September, for example, it was announced that the joint venture between China Rail International USA and XpressWest had won a mandate to develop, finance, build and operate the

high-speed Southwest Rail Network between Los Angeles and Las Vegas.

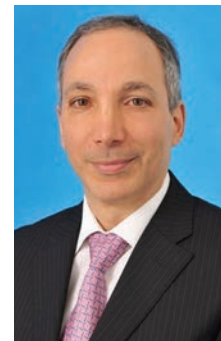
China Rail International reports that it is now "executing and implementing" projects in countries ranging from Venezuela and South Africa to Indonesia, Malaysia and Nigeria.

Co-operation between China and Europe

While demand for environmentally-sound technology is one area that some Chinese companies are looking to explore as a source of international diversification, others may arise from Europe's huge infrastructure investment requirement. China has already indicated that it stands ready to support the Juncker Plan, with some reports suggesting it is prepared to invest as much as €10bn in Europe's new infrastructure fund.

Speaking at the 10th EU-China Business Summit this summer, EC President Jean-Claude Juncker said that Europe is as eager to play a role in One Belt, One Road as China is to invest in the blueprint for reinvigorating Europe's infrastructure that bears his name. "We see the project as an open hand, an invitation to connect China and Europe better than ever before," he said. "China and the European Union should now bring together know-how, resources and other strengths to make sure we succeed. The ambition of our response should be equal to the scope of the project itself."

"[China's developers] recognise that they need to grow their overseas business, but they are also very cognizant of the constraints to international growth"



David Gardner, HSBC

For both sides, Chinese support for the Juncker Plan is seen as cementing economic and trading relations which have strengthened significantly in recent years and are expected to grow in importance over the coming decade. In his keynote address to the recent EU-China Summit, the Premier of China's State Council, Li Keqiang, said that

he hoped trade between China and Europe would reach at least \$1,000bn by 2020, which compares with a little over €500bn in 2014.

China's enthusiasm for the Juncker Plan, say a number of market participants, contrasts with the lukewarm approach to sustainable infrastructure investment of many European politicians. "Governments like China's and India's have been far more aggressive in formulating green infrastructure investment plans than Europe's," says CBI CEO Kidney. "In Europe, governments are saying they can't invest in infrastructure because they're in an austerity phase. But infrastructure investment is precisely how you climb out of recession and create jobs."

This argument appears to be borne out by recent research from Standard

& Poor's (S&P) on infrastructure investment's economic impact. "In Europe," this advises, "investment in infrastructure is lower than a decade ago and we believe this low investment has been a major cause [of] the slow recovery in the EU economy — moreover, chronically weak capital spending endangers future growth."

The numbers are eye-catching. S&P estimates that for each additional €1 allocated to public sector investment in 2015, €1.4 would be added to real GDP between 2015-2017. "At the same time," says S&P, "such an increase would add around 627,000 jobs in the Eurozone and more than a million in the EU." With the EU's unemployment rate at 9.3% in September 2015, governments should take note.

Implications for the green capital market

Kidney argues that as well as stoking growth and creating employment, the financing of the Juncker Plan should have a decisive role to play in underpinning the expansion of the green capital market. "The ECB's charter says that it is meant to meet the social and political goals of the union," he says. "What better way to do that than to include green bonds in the ECB's asset-purchase programme? If this were to happen it would ignite a rush of green bond issuance.

"I'm a great fan of the Juncker Plan, but policymakers' support for it has been extraordinarily light. By failing to wash it through a green filter, we are missing an unbelievable opportunity." ▲

Looking for investment opportunities on the Silk Road

Meet the man who says he has the best job in the world. As portfolio manager of the London-based Alquity Asian ESG Fund, Mike Sell's job is to trawl emerging markets hunting for companies that combine the best ESG standards with the brightest growth prospects. The two, says Sell, are symbiotic. "If you're reducing your energy usage it's not just good for the planet because you're reducing your greenhouse gas emissions," he says. "It's also good for your bottom line because you're reducing your costs."

About 40% of the assets in the \$20m equity fund managed by Sell are in the frontier markets located along China's Silk Road, with approximately 15% in Vietnam, 5% in Pakistan, 5% in Bangladesh and 4% in Myanmar. These are four of the frontier markets dubbed Asia's 'super seven' by Alquity, with Sri Lanka, the Philippines and India making the others in the septet.

"The exposure of most investors in Asia is concentrated around China, Korea, Taiwan and Malaysia," says Sell. "While I'm sure there are plenty of good investment stories in those markets, we think the most exciting growth opportunities are to be found in the region's frontier markets."

Sell says it is too early to judge how the super seven — let alone individual stocks within these markets — have been impacted by China's One Belt, One Road initiative. But he says the longer term spill-over from Chinese investment into infrastructure along the Silk Road will be considerable. He points to Pakistan, which is set to receive close to \$50bn in Chinese investment over

the next few years, as one of the most compelling examples.

"For Pakistan, this is a mind-numbingly large amount which will have incredibly powerful implications for growth and development," he says.

The size of the planned Chinese investment in Pakistan is put into graphic perspective in a recent HSBC research bulletin. This notes that the \$46bn of investment identified under the Silk Road project compares with a historical annual average total of inbound investment over the last five years of just \$2bn. Small wonder that it is not just frontier specialists like Alquity that are weighing up opportunities for equity investment in Pakistan. Having been ejected from the MSCI emerging markets index in 2008, in response to the temporary closure of the Karachi Stock Exchange, Pakistan is expected to be reinstated in 2016, which should kick start a virtuous circle for investors.

"We're not benchmarked, so the inclusion of Pakistan in the index won't affect our fund directly," says Sell. "But it will mean that the market attracts plenty of passive money. That will bolster liquidity, which will make me and my investors very happy."

Curiously, given that it has uncovered compelling opportunities in markets like Myanmar and Laos, the country where Sell's fund has struggled to find companies that meet Alquity's ESG requirements is China. "Whilst Chinese construction companies are winning a lot of orders as a result of

"If you're reducing your energy usage it's not just good for the planet because you're reducing your greenhouse gas emissions, it's also good for your bottom line because you're reducing your costs"



Mike Sell, Alquity Asian ESG Fund

the One Belt programme, very few meet our governance criteria," he says. "They may be perfectly good companies but they are not sufficiently transparent for us." He says that the only notable exception, China State Construction — which is in the Alquity portfolio — is a domestic-oriented group which has not been a beneficiary of the One Belt, One Road initiative.

Karine Hirn, partner at the emerging and frontier market specialist, East Capital, agrees that Chinese companies have the most to gain from One Belt, One Road in the short to medium term.

"The main beneficiaries will be Chinese train manufacturers, nuclear power companies, telecoms equipment manufacturers and banks, because they will be the preferred contractors and financiers for the projects," she says. For stock pickers, however, she says that the challenge will probably be to sift the genuine winners from companies hyped by the broking community. ▲

Avoiding the tragedy of the horizon

As much as \$60tr will need to be spent between now and 2030 just to plug the global infrastructure gap. The challenge of meeting this vast requirement will be all the more formidable given that solutions for doing so will be utterly pointless if they fail to incorporate sustainability safeguards to prevent further irreversible damage caused by climate change.

IMAGINE canoeing down Fifth Avenue. Or participating in a regatta on the site of Schiphol airport. Neither may be as improbable as they sound, if the gloomiest climate change experts are right. Some are forecasting that if the world sits and watches as the climate and sea levels rise, central Manhattan could find itself under water by 2050. So could much of the Netherlands.

The threat is one that New York is taking seriously enough. Having seen the sea level on its coast rise by at least a foot since 1900, the city is committed to helping the planet by reducing its emissions by 80% between now and 2050.

Science fiction-style images of people snorkelling in the central thoroughfares of Manhattan may well be alarmist. Besides, New York's own analysis of its vulnerability to rising sea levels are less apocalyptic than those of some scientists. But make no mistake about it. Climate change is bad news, whatever mavericks like the French meteorologist, Philippe Verdier,

may say. He was recently fired by a television station for arguing that because it supports tourism and viticulture, climate change is no bad thing.

Those with rather more direct experience of the havoc that climate change is already causing have presented a very different interpretation to Verdier's. H ela Cheikhrouhou, executive director of the \$10bn Green Climate Fund, which was set up in 2010 by 194 governments to help developing countries implement greenhouse gas mitigation measures and is accountable to the United Nations, has been at the forefront of the battle against climate change.

As she said at a conference in New York in June, "I have met with the leaders of small Pacific islands that have their very existence threatened by rising sea levels. I have seen the aftermath of catastrophic weather events such as Typhoon Haiyan in the Philippines that are wreaking devastation upon Asian countries; I have seen evidence of

how deforestation in Latin America is on the rise. And my own country, Tunisia, and other African states, are facing desertification, water shortages, and a mounting energy crisis."

Encouragingly, for individuals such as Cheikhrouhou, the message about the irreversible long term damage that is being created by greenhouse gas emissions is reaching an increasingly broad audience. It is also being delivered by institutions that have traditionally distanced themselves from the environmental debate. Addressing an audience outside the White House in September, for example, Pope Francis said that climate change was a problem that can "no longer be left to a future generation."

Equally encouragingly, the battle against environmental degradation is being joined, almost on a daily basis, by deep-pocketed institutional investors with the resources to help counter the damage. At the September 2014 UN Climate Summit, institutions with assets under management of \$43tr indicated that they see climate change as the dominant threat to the planet. They also declared that they stand ready to channel investment into supporting efforts to decelerate or reverse the process.

This represents quite a breakthrough for an industry that is notorious — rightly or wrongly — for its short-termism. But as the Bank of England's governor, Mark Carney, said in a recent speech, it is essential that economic policymakers as well as the financial services industry break new ground by adopting long-range strategies to tackle climate change, which he described as "the tragedy of the horizon".

"We don't need an army of actuaries to tell us that the catastrophic impacts of climate



Pope Francis: Climate change is a problem that can "no longer be left to a future generation"



Mark Carney: “Once climate change becomes a defining issue for financial stability, it may already be too late”

change will be felt beyond the traditional horizons of most actors — imposing a cost on future generations that the current generation has no direct incentive to fix,” said Governor Carney. “The horizon for monetary policy extends out to two to three years. For financial stability, it is a bit longer, but typically only to the outer boundaries of the credit cycle — about a decade.

“In other words, once climate change becomes a defining issue for financial stability, it may already be too late.”

The economics of climate change

This grim warning is an echo of the comprehensive Stern Review, an independently commissioned, 700-page report originally published in the UK in 2006 “as a contribution to assessing the evidence and building understanding of the economics of climate change”.

“Even if the annual flow of emissions did not increase beyond today’s rate, the stock of greenhouse gases in the atmosphere would reach double pre-industrial levels by 2050... and would continue growing thereafter,” the Stern Review warned. “But the annual flow of emissions is accelerating, as fast-growing economies invest in high carbon

infrastructure and as demand for energy and transport increases around the world. The level of 550ppm CO₂e [parts per million of carbon dioxide] could be reached as early as 2035. At this level there is at least a 77% chance — and perhaps up to a 99% chance, depending on the climate model used — of a global average temperature rise exceeding 2°C.” To put this hazardous ppm number into alarming perspective, 350ppm is generally recognised as the maximum level that the planet can sustain.

It is precisely because time may be running out that this month’s COP21 gathering in Paris is regarded as being a decisive moment for the future of the planet. COP21 is the rather more digestible acronym for the 21st Session of the Conference of the Parties to the UN Framework Convention on Climate Change (UNFCCC). It is hoped that when they meet in France, representatives from 196 governments will achieve rather more than they did at their last assembly, in Lima in 2014. This ended in what Greenpeace described

at the time as a “messy compromise that set no common time frame for future pollution cuts”.

Since the Lima meeting, progress has been made towards an agreement. China, which is the world’s largest emitter of carbon, has pledged to cut its greenhouse emissions per unit of GDP by 60%-65% from 2005’s levels, and to increase the share of non-fossil fuels in its primary energy consumption to 20% by 2030. That has raised hopes that the COP21 talks will lead to an agreement on the measures that political and business leaders need to take if global warming is to be kept below 2°C, compared with the 5°C rise that may be the unavoidable by-product of a business-as-usual scenario.

If heads can be banged together decisively, a legally binding and universal agreement on climate change will be reached for the first time in more than 20 years of UN negotiations. If they can’t, the consequences will be dire, with France’s president, François Hollande, having spoken of an impending “disaster” if COP21 is as indecisive as previous COP sessions.

Failure at Paris risks being a disaster that will have an increasingly quantifiable long term impact on the global economy. According to the Stern Review, “with 5°C-6°C warming — which is a real possibility for the next century — existing models that include the risk of abrupt and large-scale climate change estimate an average 5%-10% loss in global GDP, with poor countries suffering costs in excess of 10% of GDP.”

It is not all bad news. A number of respected environmentalists have argued that the money that needs to be channelled into protecting the planet from climate change should be regarded as an “investment” rather than a “cost”. The Stern

Review adds that for those prepared to embrace the changes necessary to tackle this threat, there will be significant new opportunities across a wide range of industries and services. Markets for low-carbon energy

Scenarios for global infrastructure investment needs versus public sector funding sources to 2030

	Base case	Downside	Upside
Total need through 2030	\$57tr	\$57tr	\$57tr
Government spending	3% of GDP	2% of GDP	3.5% of GDP
Total gap	\$8.4tr	\$24.6tr	Zero
Annual gap	\$500bn	\$1.5tr	Zero

Source: OECD, McKinsey, Global Insight

products, says the review, are likely to be worth at least \$500bn per year by 2050, and perhaps much more. “Individual companies and countries should position themselves to take advantage of these opportunities,” the Stern Review adds.

Plugging the global infrastructure gap

Many of these opportunities will be a function of the substantial investment that will need to be channelled over the next 20 or 30 years into plugging the world’s so-called infrastructure gap.

Estimates of the size of the global infrastructure gap vary, but all point to a vast investment requirement. In a two-volume report published in 2006 and 2007, the OECD put the total at \$50tr between then and 2030. A more recent McKinsey analysis reached a similar conclusion, projecting a requirement of \$57tr between 2013 and 2030.

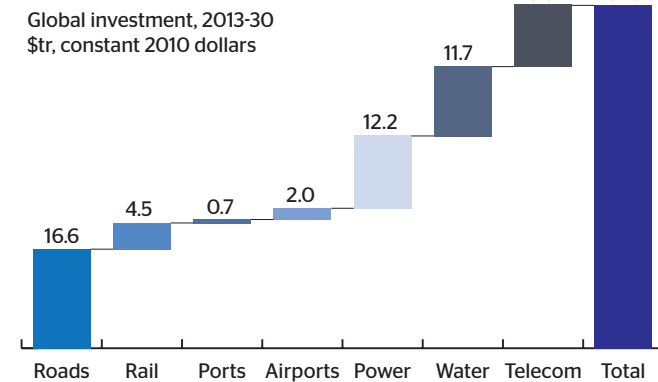
The challenge of tackling this deficit will be all the more formidable given that solutions for doing so will be counterproductive if they fail to incorporate sustainability safeguards to prevent further irreversible damage caused by climate change.

The International Energy Agency has estimated that adapting to and mitigating the effects of climate change will call for an annual investment of some \$1tr to 2050. Ceres, a non-profit advocate for sustainability leadership, puts the figure slightly above this, saying in 2014 that the world will need to invest \$44tr over the next 36 years if global warming is to be limited to 2°C. Greenpeace, meanwhile, says that \$64.6tr — or \$1.6tr a year — needs to be invested by 2050.

The infrastructure gap in emerging markets

As with the estimates for the global infrastructure deficit, projections of how much emerging market regions will need to spend on upgrading its infrastructure over the next few years differ markedly.

More than \$50tr needed for infrastructure through 2030



Source: Standard & Poor’s, McKinsey

According to the World Bank, Latin America’s infrastructure spending is expected to reach \$557bn a year by 2025, with Brazil, Chile and Colombia likely to be accounting for a large share of regional spending. Africa’s annual infrastructure investment requirement has been put at close to \$100bn over the next decade.

In Asia, meanwhile, the Manila-based Asian Development Bank (ADB) has calculated that between 2010 and 2020, the region will need to invest just over \$8.2tr in infrastructure, which equates to about \$730bn a year. A little over two-thirds of this total is for building new facilities in areas ranging from energy to transportation, with the balance earmarked for maintenance and replacement. The ADB puts these numbers into perspective when it explains that investment in infrastructure across the region will need to average “in the order of 5%-6% of GDP” to underpin growth, competitiveness, productivity and job creation.

The lion’s share of the Asian infrastructure investment requirement is accounted for by the three most heavily populated countries in the region — China, India and Indonesia. According to McKinsey’s estimates, China will need to invest some \$16tr in its infrastructure between 2013 and 2030, or 28% of the global total. A large share of this requirement will arise from an acceleration in urbanisation (see page 6), which will create substantial demand for

investment in water and air pollution treatment. As HSBC notes in a recent report, Chinese government officials have suggested that total planned investments on water and air pollution treatment and prevention will reach Rmb4.6tr (\$720bn) and Rmb1.7tr (\$270bn) respectively between 2016 and 2020.

India, meanwhile, will need Rp65tr (\$1.1tr) of infrastructure funding over its 12th five year plan (2012-

2017), according to ADB projections. Much of this will also be driven by an unprecedented phase of urbanisation, which will see 40% of India’s population concentrated in urban areas by 2030, compared with 30% today. This migration, according to the government, will “exponentially increase the demand for urban amenities like housing, energy, transport, water [and] waste disposal.” The stark consequence, adds the same government report, is that “it is estimated that more than half of India of 2030 is yet to be built”. Against that background, the government’s projection that Indian electricity demand will grow by more than 300%, from 776TWh in 2012 to 2,499TWh in 2030, looks like an underestimate.

In Indonesia, meanwhile, the daunting challenge is to provide a larger share of the country’s 256m people with access to basic services. It is estimated that almost 20% of Indonesian households are still not equipped with modern electricity, while just over 30% have no access to clean water. This, twinned with a hopelessly inadequate transportation system, means that Indonesia will need to invest over \$360bn in social infrastructure between 2015 and 2019, according to estimates from the planning ministry.

Funding infrastructure: the institutional role

Regardless of the size of the bill that will be presented to the world for upgrading its infrastructure

over the next 20 or 30 years, it is a certainty that the public sector's pocket won't be deep enough to pay it in full. By McKinsey's reckoning, if governments spend 3% of GDP a year on infrastructure, this will still leave a funding gap between now and 2030 of \$8.4tr. That equates to a nice round number for the infrastructure investment deficit of \$500bn a year.

While the capacity of governments in developed markets to fund infrastructure will be stretched by their commitment to fiscal consolidation, in emerging markets the challenge will be to maintain levels of spending that in some cases are already much higher than the global average. According to S&P, India has been allocating roughly 4.7% of GDP to infrastructure spending, while the Chinese government, which has been earmarking 8.5%, is the world's largest single infrastructure investor. "This pace of government support will likely decline over the longer term relative to historical high levels," says S&P.

It is not just governments that are much less able to foot the bill for essential infrastructure than they were a decade or so ago. As the OECD points out in a recent report, the financial crisis has also moved the goalposts for infrastructure finance by flushing monoline insurers out of the system and forcing banks to keep a nervous eye on their capital levels and risk weightings.

Development banks are doing their best to step up to the plate to provide funding for the infrastructure development that is needed to combat the damaging impact of climate change. The ADB, for example, announced in September that by 2020 it will have doubled its annual climate financing from \$3bn to \$6bn. Two-thirds of this will be earmarked for climate change mitigation through support for renewable energy, energy efficiency, sustainable transport and building smart cities. The balance will be invested in adaptation through more resilient infrastructure, climate-smart agriculture, and better preparation for climate-related disasters. ADB added that its spending on tackling climate change will rise to around 30% of its overall financing by the end of this decade.



Héléna Cheikhrouhou, Green Climate Fund: "My own country, Tunisia, and other African states, are facing desertification, water shortages, and a mounting energy crisis"

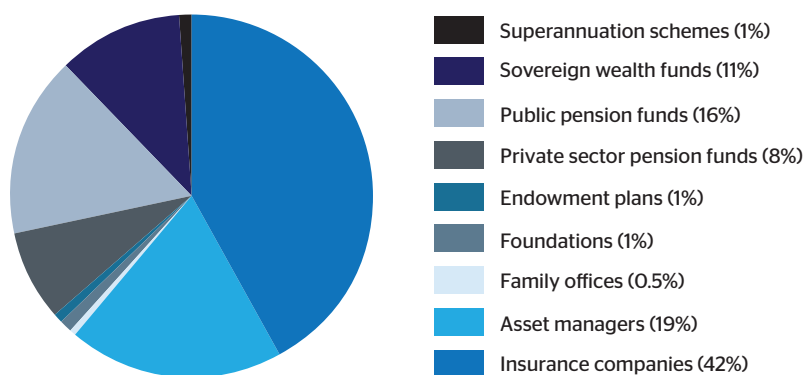
The Inter-American Development Bank has also upped its commitment to sustainable financing, announcing recently that it aims to double the volume of its climate-related financing by 2020 to between 25% and 30% of the total.

With governments and multilateral development banks unable to fund more than a small part of the world's infrastructure investment requirement, much of the burden will fall on the shoulders of institutional investors. It is a burden that in today's low yield environment many are only too happy to bear, given the properties of infrastructure as an asset class. These include typical yields of 4% or 5%, a track record of high recoveries, long maturities which are suitable

from an asset-liability management perspective and low correlation with mainstream asset classes.

In its report on the global infrastructure gap, S&P says that institutional investors have the firepower as well as the appetite to fill a good chunk of the global infrastructure deficit, estimating that they could allocate \$200bn a year to the asset class, or \$3.2tr by 2030. Whether they will be able to deploy funds of this magnitude is open to question. This is because as bankers say, for the time being, there is still an imbalance between supply of viable project investment opportunities and institutional demand, with regulation, project complexity and illiquidity all acting as a drag on supply. ▲

Breakdown of institutional investors active in infrastructure by type and aggregate



Source: Standard & Poor's

China: a laboratory for green finance

Although Asia as a whole has been slow to embrace green financing standards relative to some parts of Europe, China stands out as having taken big strides towards greening its financial system. Green bonds are at the heart of this move with China's market having the potential to be the largest in the world.

THERE IS an important distinction to be drawn between climate finance and green finance. "They seem to be very similar, but they're not," says Nick Robins, co-director of the United Nations Environment Programme's inquiry into the design of a sustainable financial system. "In a global context, climate finance is generally interpreted as the public commitment that developed nations have made to investing in developing countries to help them make a transition to a low carbon economy," he says. "For some, this is viewed as compensation that industrialised economies need to make for the emissions they have made in the past."

Governments of a number of less developed economies certainly feel they are due some compensation for the environmental damage caused by more industrialised nations. Take, as an example, the tone of resentment in India's recent Intended Nationally Determined Contributions (INDC) statement to the United Nations Framework Convention on Climate Change, which describes as "tepid and inadequate" the response of developed countries to the challenge of climate change. It adds that in 2010, per capita emissions in India were just over 1.5 metric tonnes, compared with between seven and 15 in developed countries.

Several other developing countries are being forced to shoulder an even more disproportionate share of the costs of environmental damage, relative to their scarce internal resources. According to UNEP, Bangladesh, for example, spends \$1bn a year, or between 6% and 7% of its annual budget, on climate change adaptation. "The average European citizen emits as much carbon in 11 days as the average Bangladeshi in an entire year," says UNEP. "Yet it is the government and the people of Bangladesh who are expected to pay for the escalating costs."

Investors in the debt of some developing economies should take note of this disheartening dynamic. Standard & Poor's believes that these costs, alongside those caused by demographics, will put downward pressure on sovereign ratings over the long term. In Asia, S&P identifies the ratings of Cambodia, Vietnam and Bangladesh as being most vulnerable to the impact of environmental degradation.

Internationally, China has indicated that it is prepared to take a leadership position on climate finance by promising to invest \$3.1bn in helping less-developed countries to deal with the impact of climate change. But as Robins explains, 'green' finance is quite different from climate finance in that it addresses how individual countries can harness their capital markets to make them an effective and competitive source of funding for long-term, sustainable development projects.

Asia embraces green finance

Although Asia may have been slow to embrace green financing standards relative to some parts of Europe, the progress that has been made over the last two years has been impressive. "While the initial impetus for sustainable finance came primarily from Europe, the authorities in several Asian countries — most notably China and India — have recently embraced the sustainable finance agenda," says Alexi Chan, HSBC's Hong Kong-based global co-head of debt capital markets.

Others agree that China, in particular, has taken giant strides towards



Pan Gongsheng, PBOC deputy governor

greening its financial system. Speaking at a conference on Chinese green bonds hosted by the London Stock Exchange in October, Sean Kidney, CEO of the Climate Bonds Initiative (CBI), described China as a "laboratory" for green finance.

It is a laboratory which many say is already leading the world in terms of research and development into financial solutions to tackling the threat of climate change. "China is clearly committed to transforming its financial system," says Klas Eklund, senior economist at SEB and a member of the Task Force on Green Finance Reform and Green Transformation set up by the China Council of International Co-operation and Environmental Development. "The fact that China has established a task force on this topic shows how seriously the government is taking this challenge — with good reason."

That China means business about ensuring that its financial system adheres to the strictest environmental standards was also evident from the publication in April 2015 of the Green Finance Task Force's publication of a report entitled "Establishing China's Green Financial System".

One of the forewords to this report,

written by Pan Gongsheng, deputy governor of the People's Bank of China (PBOC), put the evolution of the financial system's management of its environmental strategy into its historical perspective. This freely acknowledged that "for a long period after the reform and opening-up in 1978, economic development was the chief concern of the Chinese government. Environmental factors, on the other hand, were not an important variable in the decision-making of financial institutions." That, added Gongsheng,

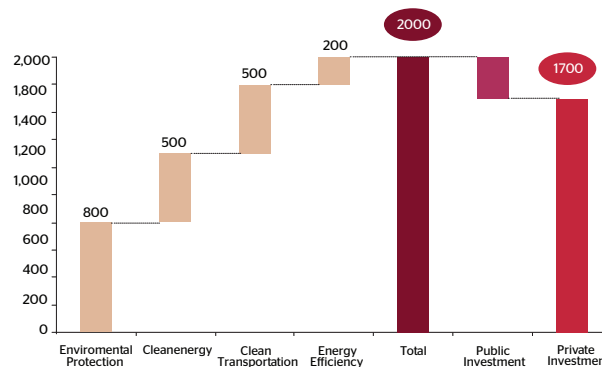
began to change in the mid-1990s, when the phasing-out of small and inefficient coal mines and coal-fired power plants alerted banks in China to environmental risk in their credit portfolios, perhaps for the first time. "Some commercial banks and rural credit co-operatives had to unwillingly assume some of the costs of this economic restructuring process, which prompted them to begin watching out for the impacts of environmental problems on their business performance."

China's green credit policy

The process of building a more environmentally conscious financial system gathered momentum in 2007, when the China Banking Regulatory Commission (CBRC), alongside the Ministry of Environmental Protection and China's central bank, drew up its green credit policy. This encouraged banks to lend "more to energy and climate-friendly projects and less to highly polluting and energy-consuming" ones, according to an IFC briefing. How rigorously this policy was observed across the banking sector as a whole is open to question, with the Chinadialogue website reporting in March 2013 that the banks' stated green lending policies seldom influenced credit ratings or lending decisions. The website cited a report published in 2012 by the Ministry of Environmental Protection's Policy Research Centre which found that only 12% of China's 50 largest banks by market capitalisation fully implemented a green lending policy.

The Green Credit policy initiative was strengthened in February 2012

China's green investment need



Source: Green Finance Task Force

when the CBRC issued its green credit guidelines, which were regarded as having more teeth than the 2007 policy, much to the satisfaction of environmental campaigners. WWF, which is seldom a cheerleader for the banking industry anywhere and has frequently been at loggerheads with China, called the new guidelines "a transformational development for China". It added enthusiastically that the recommendations acknowledged "the essential role of the banking sector in promoting a green and sustainable economy, as well as the risks presented by activities that are detrimental to the environment and local communities."

Well before the publication of the CBRC guidelines, however, Industrial Bank was setting new standards for ecological responsibility in China. In 2008, it became the first Chinese bank to sign up to the Equator Principles drawn up by the IFC in 2003 for assessing and managing environmental and social risks associated with project lending. Speaking at a recent conference in London, Industrial Bank's division chief of environmental finance, Chen Yaqin, said that her bank's dedicated sustainability unit was originally set up in 2006. She added that her unit, which has since been renamed, now employs 200 people working exclusively on environmental financing solutions.

According to Industrial Bank's 2014 annual report, last year the bank provided Rmb556bn of green loans to 1,000 companies. The bank estimates that the projects financed by these loans saved the energy equivalent of 23.5m tonnes of standard coal, leading to a substantial reduction in carbon

dioxide emissions and water savings of 262m tonnes.

The Green Task Force — raising the bar

Although Industrial Bank is to date the only Chinese bank to have signed up to the Equator Principles, market observers say they are delighted with the broader progress that China has made in greening its financial system. "Every so often I have stood up and punched the air because of the amazing wins that China has been achieving," says Kidney. He prob-

ably delivered his biggest air-punch in April of this year, when the Green Task Force released its report on establishing China's green financial system. Led by Dr Ma Jun, the highly regarded chief economist at the PBOC, the task force's report makes 14 recommendations for building China's green finance system. "The report by the PBOC's task force recommended everything we could have asked for in terms of green finance," says Kidney.

Specifically, the report recommends that China builds a green banking system, promotes the development of green funds, improves the "environmental and social responsibility" of its overseas investments and strengthens discounts for green loans. In the capital market, meanwhile, it calls for the promotion of green bonds, the creation of a green IPO channel, the development of carbon and pollution trading markets, the establishment of a green rating system and the launch of a green stock index.

Other suggestions on the task force's comprehensive wish-list are the establishment of a public-interest environmental cost analysis, the creation of green investor networks, the development of a compulsory insurance system for environmental pollution liabilities and the clarification of banks' environmental legal liabilities. Finally, it calls for "environmental disclosures by listed companies and bond issuers".

As a blueprint for a clean financial system, this takes some beating. Fundamental to the proposed greening of the financial system is the conviction that development of an efficient financial services industry and a commitment to responsible environmen-

tal stewardship go hand-in-hand. “The challenges presented by local pollution control, global climate change and the development of the domestic bond market are all coming into play as China builds its green financial system,” says Robert Barker, head of CSR and sustainable investment solutions at BNP Paribas in Hong Kong.

Green bonds with Chinese characteristics

In the context of the capital market, China’s most visible success in building this long-term model is in the market for green or sustainable bonds, where it is arguably already a global leader. According to the CBI, it accounts for a third of the global market for climate-aligned bonds, comfortably ahead of the US, which has a 12% share, and the UK and France, which account for 9% each. China owes its leadership in this market largely to the prolific issuance by China Railway Corp, which according to the CBI’s latest analysis has issued over 1,000 bonds worth \$171.5bn, out of a total of \$418.1bn of climate-aligned bonds from the transportation sector worldwide. “The China Railway bonds are very transparent in terms of use of proceeds, so we believe there are already \$170bn or so of Chinese bonds that could legitimately be labelled as green,” says Kidney.

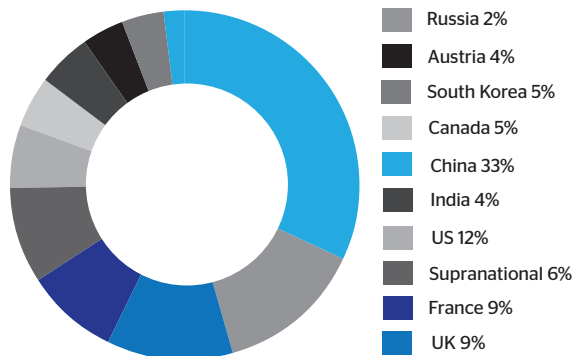
“I am very confident that green bonds will play an increasingly prominent role in the Chinese capital market”

Ayumi Konishi,
Asian Development Bank



Bankers believe, however, that China also has the potential to lead the way in the development of the labelled green bond market, for several reasons. Most obviously, it has a huge climate change financing requirement. But Ayumi Konishi, director general for East Asia at the Asian Development Bank in Manila,

Top 10 countries for climate-aligned bonds



Source: Climatebonds.net

says there are other clear indications of China’s desire to build a large and liquid green capital market. He says that the commitment of the government to what it describes as “ecological civilisation” in its 13th five year plan (2016-2020) as well as its stated ambition of further internationalisation of the RMB both point to rapid development of the green capital market. He adds that with China’s aspirant middle class increasingly concerned about environmental degradation, there is growing support for the growth of an ecologically sustainable financial system and for green investment opportunities at a grassroots level. “So I am very confident that green bonds will play an increasingly prominent role in the Chinese capital market,” says Konishi.

A striking indication of what may lie ahead for China’s green bond market was provided in July 2015 by the wind turbine company, Xinjiang Goldwind Science & Technology. Goldwind’s \$300m three year transaction, led by Bank of China, Deutsche and Société Générale, generated orders of \$1.4bn, which was seen as an important demonstration of the reservoir of demand for exposure to the Chinese renewables story. Investors were apparently relaxed that the proceeds were earmarked not for a specific green project, which is the usual practice in the green bond market, but for “general working capital and refinancing purposes”. The CBI said it was surprised at the use of proceeds, but it was comfortable with the structure of the bond, given that Goldwind is a so-called “pure play” sustainable company, defined as one that generates at

least 95% of its revenues from climate-aligned assets.

Although the Goldwind bond has been the only green bond to date from a Chinese company directly involved in the environmental protection sector, the jaw-dropping potential of the green bond market in China was summarised at October’s London conference by Yang Zhiyong, head of Asian capital markets at ICBC Standard. He commented that officials from the Chinese Ministry of Environmental Protection recently calculated that over the next five

years the country will need to spend RMB17tr (\$2.7tr) to safeguard the environment, with the government unable to foot the entire bill. If 20% of this money can be raised from the capital market, he added, China have a market worth at least \$200bn, which will make it the largest green bond market in the world.

These projections are slightly above some of the others that have been made about China’s required environmental investments. But all point to a gigantic financing requirement.

A report commissioned in 2013 by NDRC found that if China is to meet its 2020 emissions intensity targets, it will need to raise as much as \$223bn of additional funds per year over the next five years.

The PBOC’s report on building a green financial system, meanwhile, says that in order to meet the environmental goals outlined in the 13th five year plan, China will require annual investments of “at least” RMB2tr (\$320bn), or more than 3% of GDP. As a share of GDP, this is likely to grow over the course of the five year plan. “Given that the growth rates of government expenditure and fiscal revenue have both declined in recent years, the government can only be expected to contribute around 10%-15% of all green investment, while private capital will need to contribute the remaining 85%-90%,” the PBOC advises.

This strengthens the credibility of the upbeat estimates that bankers and analysts have made about the prospects of the Chinese green bond market. Projections made by the CBI, for example, suggest that global annual issuance of green bonds will reach

\$300bn by 2018 and — with the right support, \$1tr by 2020 — with China being the largest contributor to this total.

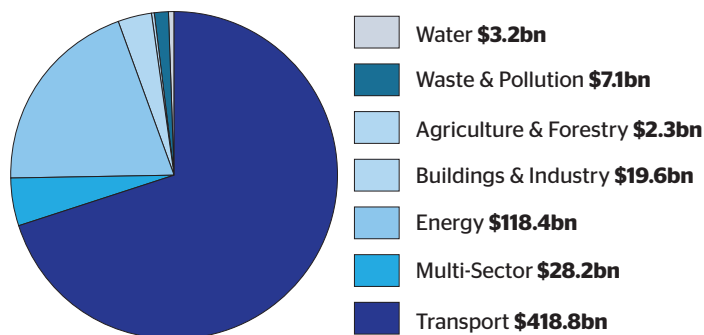
Beyond the sheer volume that China will need to raise to address the challenge of climate change, there are other persuasive reasons why the prospects for its green bond market are promising. Market participants say that the Chinese capital market is uniquely

positioned to lead the global green bond market, precisely because it is still in the development phase. In other words, there is a symbiotic relationship between the development of the capital market and the promotion of green or sustainable financing. “In a sense, the immaturity of the Chinese capital market is an advantage for green bonds because it means there is no rule book to follow,” says SEB’s Eklund. “This means they have the opportunity to write the rules from the outset to encourage transparency and sustainability. However, it also means that if they opt for fuzzy, less transparent rules it would harm the entire global market for green finance. So, the choice of strategy is of momentous importance, but I remain optimistic.”

Incentivising growth in China’s green capital market

One way in which China can shape its rule book to ensure that the capital market is climate-friendly would be to offer a range of preferential incentives for investors in the green bond market, such as tax rebates or concessions on risk weightings. In its wish-list for a green financial system, the PBOC’s task force is explicit about the need for incentives. Specifically, the report proposes that commercial banks should be allowed to exclude loans backed by green bonds from their loan-deposit ratios — “as long as they show they keep accurate account of risks, have sufficient capital, and run a successful green financing business”. It also calls for financial institutions to be given a 75% preferential risk weighting and preferential capital regulation requirement for loans backed by green bonds — “as long as they meet required capi-

Transport – the dominant theme in the \$597.7bn climate aligned universe



Source: climatebonds.net

tal to risk asset ratio and provide sufficient capital”.

The task force also suggests that for banks investing in green bonds, regulation should “permit the application of a 50% multiplier for the portion of risk asset corresponding to the green bonds they hold when calculating their capital to risk asset ratio.”

For institutional investors, meanwhile, the task force would like to see regulation making interest on green bonds tax-free, “in line with the current practice on treasury bonds”. Finally, the PBOC’s report suggests that local governments should provide a discount on “all or part” of the interest on capital raised through the issuance of green bonds.

Opinion is mixed on how desirable incentives of this kind would be. “I’m ambivalent about preferential treatment for the green bond market,” says Eklund. “Of course it would be positive because it would encourage growth in the market. But it would also create the risk of regulatory arbitrage.”

The positive outlook for supply in the Chinese green bond market was strengthened by the number of delegates from China who attended the London Stock Exchange conference on the sector in October, many of which were representatives from the corporate sector reportedly mulling over the potential of the market.

But the limitations of China’s green bond market were also highlighted at the conference by Tao Jiang. He is vice-president responsible for investment and financing business at GCL New Energy Holdings, which specialises in “developing, acquiring or investing in existing or newly built solar power plants, solar energy pro-

jects and solar energy assets”. At the end of 2014, GCL had total installed capacity of 614MW, which the company aims to increase to 2,600MW by the end of this year. That makes it one of the fastest-growing companies in the Chinese solar sector, which itself is expanding at a breathless rate. According to GCL, the projected compound annual growth rate (CAGR) of solar installed

capacity in China between 2014 and 2020 is 17%, compared with a global rate of 11%.

Jiang explained that while GCL itself has extensive capital expenditure plans and good underlying assets, its balance sheet was not yet strong enough to warrant an investment grade rating from the leading agencies. As he added that his company would be prepared to pay 8% or 9% for a bond issue, GCL would appear to be an ideal candidate to lead a new wave of high yield green bonds from Asia.

Another potential issuer which was represented at the London conference in October was XianDa International, the unlisted arm of a privately-owned Malaysian group which has been investing in China for the last 20 years. XianDa is investing RMB15bn in the world’s first integrated zero-liquid discharge desalination plant in Tianjin, capable of producing one million tonnes of clarified and 600,000 tonnes of desalinated water per day. To date, however, the company has favoured project finance facilities from local policy banks over the capital market.

In the equity market, a mechanism for green IPOs in China may take longer to develop than the Green Bond market. But the PBOC’s task force believes this could also play an important role in financing sustainable growth. “Accelerating the IPO process should be one of the measures in promoting China’s green industries,” says the green task force’s report. “We recommend that the CSRC simplify the IPO review enterprises, thereby promoting private capital to reallocate to green enterprises and enhancing their financing capabilities and ability to grow.” ▲

China's challenge — the pursuit of ecological civilisation

According to some, infrastructure in China is now so well developed that it is perhaps the Asian economy that has the least need for infrastructure investment. However, it cannot afford to slow down, not least because of the noxious state of its environment.

IN COMPARISON to India, much of China's infrastructure is space-age. "Overall, China has done very well in building up its infrastructure over the past decade," says Paul Procee, lead urban specialist at the World Bank in Beijing. "It has done especially well in developing much of the massive transportation infrastructure it needs to keep people moving, such as highways, high speed rail networks and airports. You read mind-boggling numbers that China has used more cement in building its infrastructure over the last five years than the US has in the last 100."

In areas like airports, there are no signs of this frenetic activity slowing down. According to research published by the CAPA Centre for Aviation, at the start of 2015 there were 51 airport projects in China worth close to \$60bn. The largest of these, which was given the go-ahead at the end of 2014, is Beijing's new, \$13.1bn four-runway airport at Daxing.

One result of the Chinese investment boom of the last decade, says Gavin Munro, head of Asia Pacific infrastructure finance at Société Générale in Hong Kong, is that the country's infrastructure is now so well developed that it is perhaps the Asian economy that has the least need for infrastructure investment. "If you look at transportation infrastructure, for example, some of China's regional airports now probably have enough capacity for the next 50 years," he says. "In Indonesia, by comparison, the whole system is log-jammed and congestion is chronic. Anecdotally, it is sometimes cheaper for Indonesian companies to fly products in from China than ship them from islands elsewhere in Indonesia because the ports are so congested."

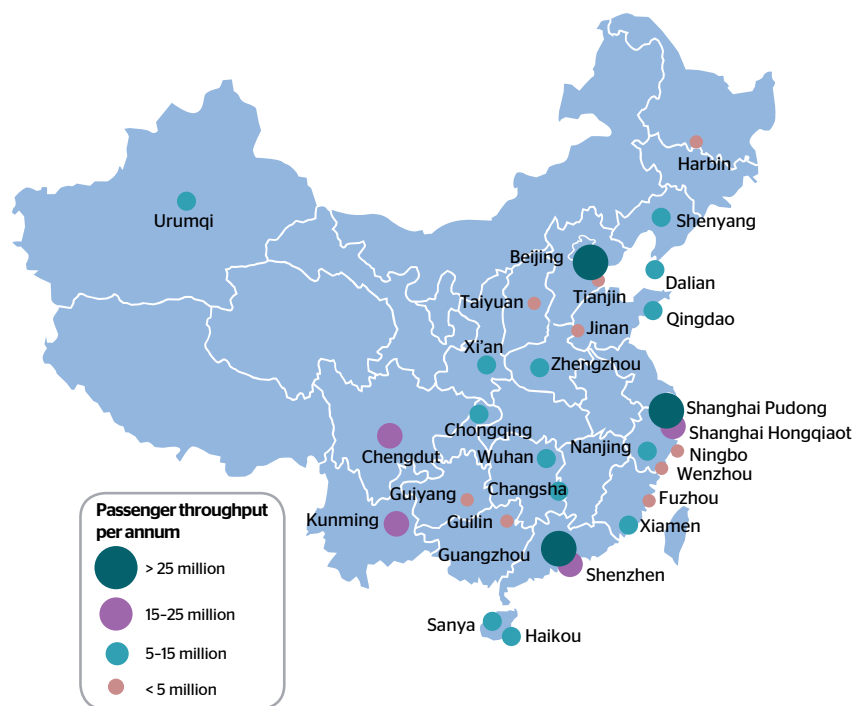
While China's transportation

system may now be the envy of emerging and developed economies across the world, this is no reason to suppose that the country can afford to slow down its infrastructure investment programme, for several reasons. One of these is that against the backdrop of well documented slowing growth, infrastructure investment is one option open to the Chinese government as an economic stimulant. According to research published by HSBC, issuing Rmb3tr-Rmb5tr of long term bonds to jump-start infrastructure projects in China could translate into a 2%-4% impact on GDP, assuming the investment is spread over two years.

The far more significant,

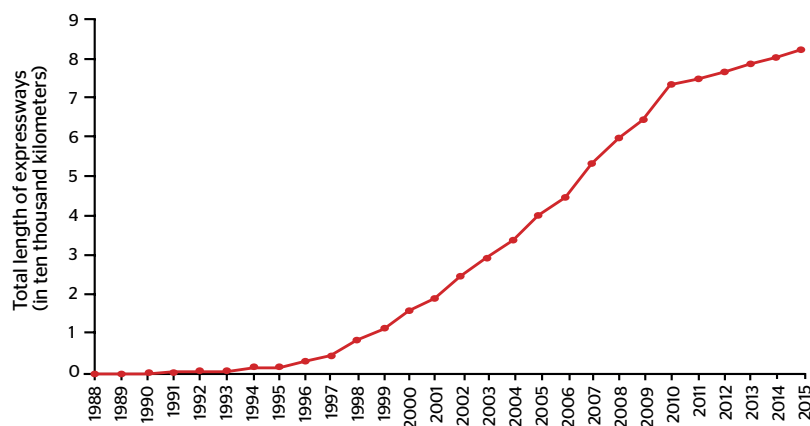
long term reason why China cannot afford to ease up on its infrastructure investment programme is the noxious state of its environment. According to the World Bank, China faces some of the world's most formidable environmental challenges due to the energy and resource-intensive pattern of its growth in recent years, coupled with its binding natural resources constraints. China has 22% of the world's population, but only 6.4% of its land area, 7.2% of its farmland and 5.8% of its annual water resources. The grim consequence for China and for the planet, says the World Bank, is that "the value of environmental depletion and degradation (i.e.

Major airports in China



Source: CAAC Statistical Report 2008, Civil Aviation Administration of China

Growth of expressways in China



Source: Standard & Poor's, McKinsey

environmental externalities) in China's economy are among the highest of any country. Given the magnitude of China's environmental impacts, global environmental problems cannot be solved without China's engagement."

The impact of urbanisation

Like in India, much of China's investment requirement for green or sustainable infrastructure over the coming two decades will be driven by an unprecedented wave of urbanisation.

According to a recent World Bank report, China's cities are growing at a rate and scale never seen before in human history. At the last count, this internal migration had seen 380m people relocating from rural to urban areas over the last two decades. By 2025, more than 200m others are expected to have made the same journey.

To put this movement of people into stark perspective, the World Bank estimates that the equivalent of the population of cities such as Hamburg or Vienna is now relocating every month.

At the World Bank in Beijing, Procee says that the key difference between Chinese urbanisation and the trend in other developing economies is that in China the process has been carefully planned and managed as a component of economic strategy. "The process of modernisation and urbanisation dates back to the 1980s, when Deng Xiaoping's government started to move from being an

agricultural to an industrial-based economy," says Procee. "This process is now accelerating as China moves from an economic model based on heavy industry to an innovation-led economy driven by rising productivity and higher consumption. Cities are seen as the places where this will happen more quickly and efficiently than anywhere else."

Procee says that by creating a more mobile and productive workforce, this dynamic will have what he describes as "humongous benefits for China's economy". The impact on the environment, however, may be less positive, given the pressure it will exert on roads, urban railways and other civic services.

As the World Bank's report warns, "while urbanisation will drive growth and raise living standards, it also brings tremendous environmental and service delivery challenges. Smaller cities in particular are struggling to keep pace with demand, especially for sewerage and waste disposal services."

This process is creating opportunities for investors in modern, sustainable infrastructure. The World Bank estimates that China's cities will need to spend some \$5.3tr on infrastructure over the next 15 years. But it adds that by developing more efficient, denser cities, China will be able to save \$1.4tr on infrastructure spending — which is about 15% of GDP in 2014.

In the water sector, meanwhile,

where China faces the dual menace of shortages and pollution, Moody's estimates the country will need to invest some Rmb4tr-Rmb5tr, which will also create substantial investment opportunities. "Given the massive investment needs, Moody's expects the government to launch further policy reforms to encourage private capital investment," the agency says in a recent update. "As the industry is highly fragmented in China, the growth opportunities will result in intensifying competition and industry consolidation."

The ecological cost of China's economic boom

While urbanisation is one reason why China will need to invest heavily in sustainable infrastructure over the next decade, a more general driver is the legacy of the boom that has metamorphosed China economically as well as socially and environmentally.

Sean Kidney, CEO of the Climate Bonds Initiative (CBI), says that lifting one billion people out of poverty probably ranks as the achievement of the millennium in terms of its socioeconomic impact, both within China and elsewhere. But he adds the significant rider that this economic transformation has come at a very high ecological cost.

High indeed. The United Nations Environmental Programme (UNEP) reports that air pollution alone in China is estimated to lead to more than a million premature deaths. According to a recent report published by the Task Force on establishing a Green Financial System in China, meanwhile, around 82% of the Chinese population depend on shallow wells and rivers for their drinking water, but 75% of these sources are already polluted. Other studies, according to the same report, have found that 19.4% of arable land in China is also heavily polluted.

In financial terms, the cost of this ecological damage is considerable. In 2003, China asked the World Bank to estimate the annual cost of environmental aid and water pollution, factoring in the impact of its damage to human health. The Bank's findings were that it amounted to an eye-watering

\$100bn a year, or about 5.8% of GDP at the time. A more recent study, conducted by the Asian Development Bank and Tsinghua University in 2012, calculated that economic losses resulting from illness related to air pollution in China amount to 1.2% of national GDP.

China's response to its environmental challenge

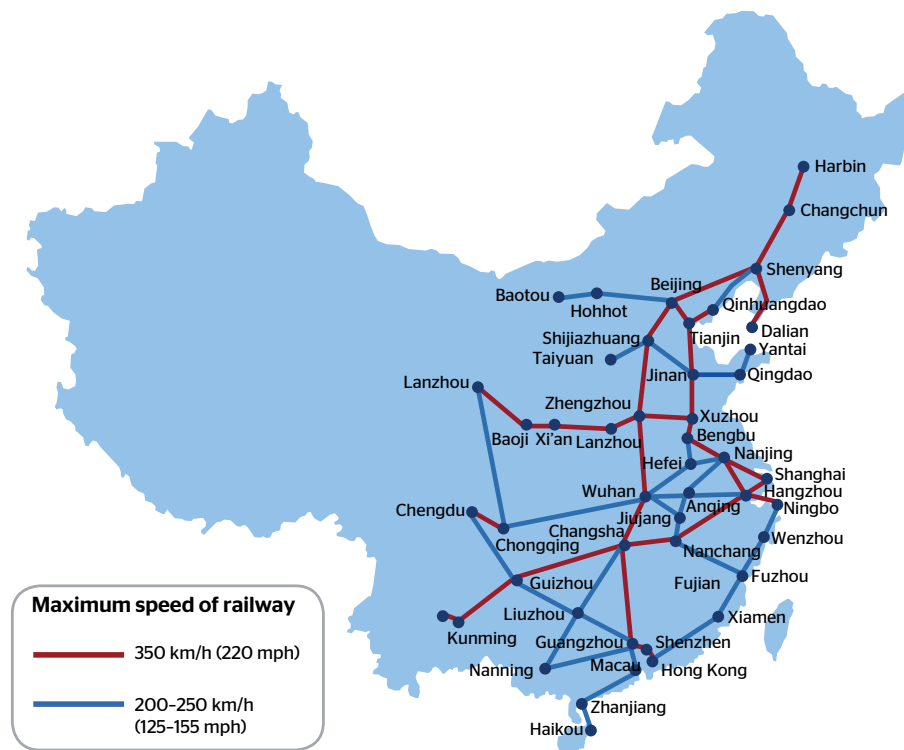
The good news is that China has taken giant strides in recent years towards tackling its environmental shortcomings. During the 11th five year plan (2006-2010), it achieved a 19.1% decline in energy intensity per unit of GDP, according to UNEP, only narrowly missing its ultra-ambitious target of 20%. Over the same period, the amount of energy required to produce a tonne of cement fell by 41%, offsetting some of the environmental impact of China's great construction boom.

In 2009, meanwhile, China pledged that by 2002 it would lower carbon dioxide emissions per unit of GDP by 40% to 45% from the levels posted in 2009. It also promised to increase the share of non-fossil fuels in primary energy consumption to about 15%, lift the country's forested area by 40m hectares, and to increase its forest stock volume by 1.3bn cubic metres compared with the 2005 levels.

China is backing its commitment to what it describes as "ecological civilisation" with substantial public and private sector investment. Take the example of its commitment to renewables in general and wind power in particular, the scale of which is hard to overstate, with China having recently pledged to build 1GW of capacity of clean energy every week between now and 2030. "In only five years," said UNEP's 2013 report, "China has gone from being a minor player in the wind power sector into the world's largest market." The Global Wind Energy Council forecasts that China's investment in wind turbines will lead to an increase in installed capacity from a projected 143GW in 2016 to 217GW by 2020 and 414GW by 2030.

Impressive progress has also been made in other renewable energy sources. According to the government's Intended Nationally

China's high-speed railway network plan



Source: Ministry of Railways and KPMG analysis

Determined Contributions (INDC) announced in the run-up to the COP21 talks in Paris, China's installed capacity of hydro power is now 300GW, which is more than 2.5 times as much as in 2005. In nuclear power, it is 19.88GW, or 2.9 times the 2005 level, and in solar power it is now just over 28GW, or 400 times the 2005 total — dwarfing even the 90-fold increase over the same period in installed capacity of on-grid wind power.

Alongside its ambitious plans for scaling up its development of wind power, China aims to increase installed capacity of solar power to 100GW by 2020 and to "proactively develop geothermal, bio-energy and maritime energy".

These are impressive objectives. "The scale of Chinese investment in renewable energy is dwarfing the rest of the world," says Kidney at the CBI. "The switch in investment from fossil fuels to renewables has been unbelievable."

Kidney also welcomes much of China's investment in its transportation systems. Granted, he

says, that many of the provinces and cities have channelled investment into poorly thought-through highways that have exacerbated rather than eased China's traffic congestion. But he echoes others when he applauds the job China has done in building the world's largest high speed railway network.

Aside from being a super-efficient way of moving people across its 16,000 kilometres of track, China's ultra-modern high-speed rail network is gentle on the planet. "It is a critical low-carbon investment which takes cars off the roads and aeroplanes out of the sky," says Kidney. That is an important initiative, given that the global aviation industry already accounts for about 3.5% of the total human contribution to climate change, according to Heathrow Airport. The Intergovernmental Panel on Climate Change has estimated that at current rates of growth, this will rise to between 5% and 15% by 2050.

Anecdotal evidence suggests that the Chinese population is already breathing easier — literally — as

a result of the measures taking to address emissions over recent years. The World Bank's Procee, a Dutchman who grew up in Brazil and has lived in Beijing for the last 5-1/2 years, says that some of the most lurid stories about urban pollution in China are outdated, or apocryphal, or both. Accounts of housewives hanging white T-shirts out to dry in the morning, and finding them jet-black by evening are, he says, a misrepresentation. "In Beijing, we don't see the black soot we used to get, now that all the city's coal-fired plants have been shut down," he says. "In the time I've been here, I have seen a considerable improvement in terms of air quality. It's true that there are some days when we have concentrations of fine particles of 300ppm [parts per million]. But that is down on the levels of five years ago."

Perhaps. But as Procee says, some cities still have hazardous measurements, with Shenyang recently recording 1,500ppm. The urban average is perilously close to levels deemed to be unsafe, and it is generally recognised that China still has a huge problem with its air quality as well as with water pollution and scarcity, which Procee says will be the country's biggest long term ecological threat.

New environmental targets

This is why China recognises that the progress it has made to date on mitigating greenhouse gas emissions represents little more than the tip of the iceberg. A clear recognition of this was made when President Xi recently announced tougher, revised targets requiring China's emissions to peak by 2030 at the latest, and for the non-fossil fuel share of the country's energy mix to rise to 20% by the same year. China has also announced that it will cap its coal use by 2020.

These targets were also specified in China's INDC statement released in June. This insisted that "China attaches great importance to addressing climate change, making it a significant national strategy for its social and economic development and promoting green and low-carbon development as an important component of the ecological civilisation process." It



Premier Xi and President Obama: "A shared conviction that climate change is one of the greatest threats facing humanity and that their two countries have a critical role to play in addressing it"

added that "new industrialisation, urbanisation... agricultural modernisation and greenisation will be promoted in a co-ordinated manner. Resource conservation and environmental protection have become the cardinal national policy, placing mitigation and adaptation on equal footing, promoting innovation in science and technology and putting in place the necessary management and regulatory mechanisms and systems."

Among the recent pledges made by the National Development and Reform Commission (NDRC) is a commitment to the launch of China's national emission trading system in 2017, covering key industry sectors such as iron and steel, power generation, chemicals, construction materials, paper-making and non-ferrous metals. "China commits to promote low-carbon buildings and transportation, with the share of green buildings reaching 50% in newly built buildings in cities and towns by 2020 and the share of public transport in motorised travel reaching 30% in big and medium-sized cities by 2020," adds the NDRC. "It will finalise next-stage fuel efficiency standards for heavy-duty vehicles in 2016 and implement them in 2019."

Many believe that by establishing targets for attacking the ravages

of climate change that would have been unimaginable a decade or so, China has manoeuvred itself into a leadership position in advance of COP21. At the historic US-China Climate Summit in Beijing in November 2014, the governments of the two superpowers paved the way for this by announcing that they would work together "to make sure international climate change negotiations... reach agreement as scheduled at the Paris Conference in 2015." The US-Chinese accord was hailed by environmental groups such as Ceres, which describes itself as a non-profit organisation advocating for sustainability leadership, as a "game-changer" in the global battle against global warming.

When Premier Xi met US President Obama in Washington in September, they reaffirmed their "shared conviction that climate change is one of the greatest threats facing humanity and that their two countries have a critical role to play in addressing it".

At the same time, the China-US Joint Presidential Statement on Climate Change reaffirmed China's commitment to promoting "green power dispatch, giving priority, in distribution and dispatching, to renewable power generation and fossil fuel power generation of higher efficiency and lower emission levels." ▲

PPPs at the heart of Asia's infrastructure drive

China's One Belt, One Road project and rising supply of investable projects will help to underpin growing institutional demand for infrastructure assets in Asia, which in turn should drive the acceptance of public-private partnerships across the region.

IF THE PRIVATE sector is to take its fair share in helping to support Asia's infrastructure deficit, bankers say that public-private partnerships (PPP) will need to play an increasingly prominent role. Already, there are some promising signs that PPP is gaining traction across a number of Asian markets.

"Governments in Asia recognise the benefits of transferring the risk associated with infrastructure investment across to the private sector, and we are already seeing the green shoots of a PPP market in some Asian markets," says Scott Dickens, global co-head of infrastructure finance at HSBC.

One country that is establishing a blueprint in this area is Japan, where the government has an ambitious plan to complete ¥12tr (\$100bn) of PPP and private finance initiative (PFI) projects by 2022, according to a recent update from Moody's. As the credit ratings agency explains, this is driven chiefly by the growing debt burden limiting the investment capacity of regional and local governments (RLGs), traditionally the main source of infrastructure finance in Japan.

For a gauge of how successful PPP is likely to be in Japan, investors will be keeping a close eye on the outcome of the \$18bn concession to

run the New Kansai International airport in Osaka Bay — Japan's fifth busiest — for 45 years.

According to Moody's, which describes the proposed privatisation of the city's transportation system as a "bellwether" for Japanese PPP, Osaka's gross debt at the end of March 2014 was about ¥4.8tr, or 196% of total revenues.

"For Osaka, placing its transport system under private management would improve its efficiency and reduce the city's subsidy and maintenance expenses," says Moody's. If successful, Moody's adds, the privatisation will "encourage private-sector participation in a broader range of Japanese infrastructure projects."

PPP in China

China has similar incentives to Japan for fast-tracking PPP as a financing option for infrastructure, given the credit metrics in the RLG sector. Ayumi Konishi, director general for East Asia at the Asian Development Bank (ADB), says that at 38% of GDP, the debt of China's RLGs is not excessive by international standards.

Nevertheless, with economic growth slowing and RLGs' receipts under pressure, their financial position is likely to weaken.

In October 2014, China announced that as part of its broader fiscal reforms, RLGs would be encouraged to increase bond issuance and explore PPP as an alternative source of infrastructure finance. The following month, the finance ministry issued details on 30 pilot PPPs in 15 provinces, calling for total investment of Rmb180bn (\$28.17bn). Eight of the projects are new, with the remainder transferred from local financing platforms.

As well as addressing the issue of unsustainable debt in the RLG sector, PPP is seen by China as a way of making infrastructure investment more efficient. "While China has spent a fortune on infrastructure, there is a concern that some of the investment has been channelled into prestige projects, and one hears stories of virtually unused sports stadiums," says Gavin Munro, head of Asia Pacific infrastructure finance at Société Générale in Hong Kong. "PPP is seen as a means of injecting



PPP poster child: New Kansai International airport

more discipline into ongoing infrastructure investment.”

Perhaps the most notorious and widely derided embodiment of wasteful Chinese expenditure on infrastructure are the country’s ghost cities — expensive urban sprawls where nobody wants to live.

But inefficiencies in infrastructure investment have even extended to China’s extensive upgrading of its transportation system. According to CAPA Centre for Aviation Research, lack of profitability remains a critical factor for China’s airports, with only around 25% of the country’s airports making a profit.

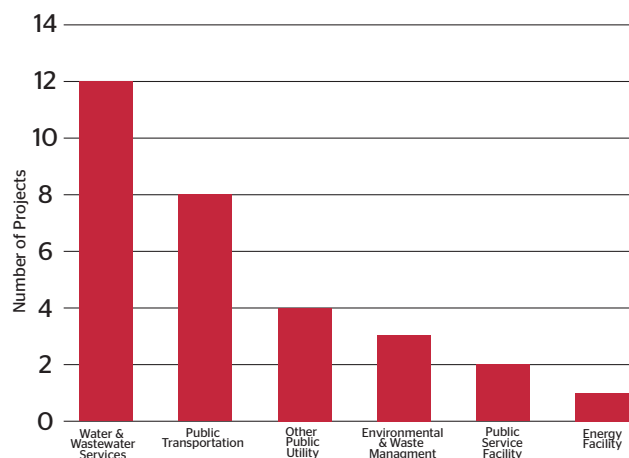
2014: a landmark year?

The progress that has been made recently in drawing up new mechanisms for attracting private sector capital to infrastructure projects has led some observers to hail 2014 as a landmark year for PPP in China. In a report published in April 2015, the Canada-based International Institute for Sustainable Development (IISD) advised that “there is no doubt that 2014 was an important year for development of PPPs in China. Many elements are now assembled to allow PPPs to flourish: strong central government endorsement, the need for investment, the limited financial resources of local governments, pilot programs, dedicated institutions and increasing experience”.

Analysts caution, however, that the PPP road map that the Chinese government has been championing is very different from the mechanism that would be recognisable to bankers and investors in London, Sydney, Toronto or any of the other financial centres where these partnerships have gained important traction as infrastructure financing techniques.

As Moody’s points out, in the Chinese version of PPP, the private partner can be a state-owned enterprise (SOE). That, says Moody’s, means that infrastructure-related

Chinese Ministry of Finance’s 30 PPP projects breakdown by industry



Source: MOF, Moody’s

debt is simply reshuffled from the balance sheets of RLGs to those of SOEs, without reducing the public sector’s leverage. Moody’s adds that is also raises “uncertainty over whether global best practices for such partnerships... will apply consistently in China”.

The participation of SOEs in Chinese PPPs is in part a reflection of the large size of investments required in these projects, twinned with their low profitability, which Moody’s says puts them beyond the reach of most Chinese private sector companies. This is especially applicable to many areas of the renewables space. According to UNEP, the typical wind power plant in China calls for an investment of close to Rmb300m (\$47m), which means that the market is dominated by companies with access to large amounts of capital. Private firms represent less than 5% of total grid capacity.

An underdeveloped legal framework

Another obstacle to greater private sector participation in PPPs identified by Moody’s is a lack of clarity in the legal framework governing the contractual relationship between RLGs and project companies. Lawyers agree that a weak legal framework is likely to deter private sector participants weighing up the opportunities in China’s PPP space.

“Private entrepreneurs are still very sceptical about PPP because of the government’s track record for observing its contractual obligations,”

says Jingzhou Tao, managing partner at the Beijing office of the law firm, Dechert. “In the event of a dispute, entrepreneurs would prefer to resort to international, rather than Chinese, arbitration.”

The private sector has good reason to be mistrustful of the Chinese government’s credentials as a dependable partner in PPP deals. The IISD’s report recounts two examples of cautionary tales for would-be co-investors in the Chinese PPP market. In the first, the Beijing subway Line Four

deal, one large investor reportedly complained that the government’s influence over the project meant that his investment felt like a “generous donation”. In the second, the toll-based Citong Bridge PPP, the local government chose to build seven toll-free bridges halfway through the concession period, “drastically reducing the revenue from the Citong Bridge”.

The potential for PPP in One Belt, One Road

Be that as it may, market participants are constructive about the role that may be played by PPP in supporting big-ticket infrastructure development in countries impacted by the Chinese government’s One Belt, One Road project.

“Cross-border projects such as those envisaged by One Belt, One Road, may be better candidates for PPP than domestic Chinese projects,” says Dechert’s Tao. “This is because instead of being governed by Chinese law, these projects are likely to be based on triparty or multi-party contracts.”

PPP has clearly been identified by ADB as a potentially critical component of infrastructure financing across the region. Already, the bank has advised on a number of these transactions in Asia, including the \$1.3bn 450MW CHP5 power plant in Mongolia, which was the country’s first PPP. ADB has also advised on the 1,800km cross-border Turkmenistan-Afghanistan-Pakistan-India (TAPI)

gas pipeline, which has an annual capacity of 33bn cubic metres of natural gas.

An Indonesian blueprint

From the perspective of environmental protection, meanwhile, one of the most significant projects backed by the ADB alongside private sector lenders is the Sarulla geothermal power development project in Indonesia. Documentation for this limited recourse project financing, the first of its kind in Indonesia since 1997, was signed in March 2014, with project completion expected in 2018. The state electricity utility, PT PLN, will off-take the energy produced by the geothermal plant for 30 years.

The 320.8MW facility in North Sumatra will be owned and operated by Sarulla Operations Ltd (SOL), a consortium of Itochu Corporation (with a 25% stake), Kyushu Electric Power Corp (25%), PT Medco Power Indonesia (37.5%) and the US geothermal specialist, Ormat International (12.75%), which is supplying the plant’s geothermal combined cycle units (GCCU).

Financial closure of the \$1.17bn project was announced in May 2014, with a substantial chunk of the financing coming from Japan’s JBIC, which provided a \$492m and a \$329m political risk guarantee. Support from the ADB came in the form of a \$250m loan and two additional tranches of ADB senior debt provided by the Clean Technology Fund (\$80m) and the Canadian Climate Fund for Private Sector in Asia (\$20m). The commercial bank lending was provided by Bank of Tokyo Mitsubishi UFJ, ING Bank, Société Générale, Sumitomo Mitsui Banking Corp (SMBC), Mizuho Bank and National Australia Bank (NAB).

The structure and financing of the Sarulla plant is regarded as an important blueprint for PPP in environmental projects in the region because it represents a significant milestone in Indonesia’s battle against the damaging impact of greenhouse gas emissions. According to the ADB, if Indonesia continues to grow at the 6% that the economy averaged between 2009- 2012, demand for electricity will expand by more than 8% per annum until 2029.

“As Indonesia currently uses

coal and oil to produce 65% of its electricity... a failure to diversify into cleaner energy sources for power generation will magnify the country’s contributions to global greenhouse gases (GHGs) and ultimately its own exposure to climate change risks,” the ADB warns.

This is why the government has identified its plentiful geothermal resources as a critical source of clean energy. To put those resources into perspective, they are estimated at about 29GW, which is the equivalent of 40% of the global total. Little wonder that while wind, solar and biomass will all help Indonesia to cut emissions, geothermal will play a pivotal role in the government’s drive to increase the share of renewables in the country’s primary energy supply. This envisages increasing this share from 5% in 2010 to 25% by 2025 and achieving a reduction in GHG emissions of 26% by 2020.

The potential of geothermal power to make a sizeable contribution to this ambitious objective is self-evident. According to the ADB, despite the compelling opportunity presented by Indonesia’s untapped geothermal resources only a little over 1,220MW of installed capacity has been developed to date — a modest 4.2% of the country’s total potential. One of the main reasons for this underdevelopment, which has held back investment in renewable power the world over, is the high up-front costs of geothermal development.

As ADB explains, “commercial financing has not materialised even though geothermal regulation in Indonesia has substantially improved since 2003. The investment needed to develop the country’s full geothermal potential will only appear when the actual and perceived risks are reduced through the financing,

implementation, and operation of projects with the demonstrative capacity to initiate market transformation.”

ADB’s commitment to PPP

This is why the support of multilateral development banks (MDBs) for PPP is regarded as so important if developing economies such as Indonesia are to keep their GHG emissions in check.

ADB showed that it meant business in this area when it opened a new PPP office at its Manila headquarters in September 2014. This provides advice on project marketing, deal structuring, bid packaging and strategies helping regional governments complete their transactions and achieve financial close. This advice is not tied to any ADB lending, and is provided on a fee basis.

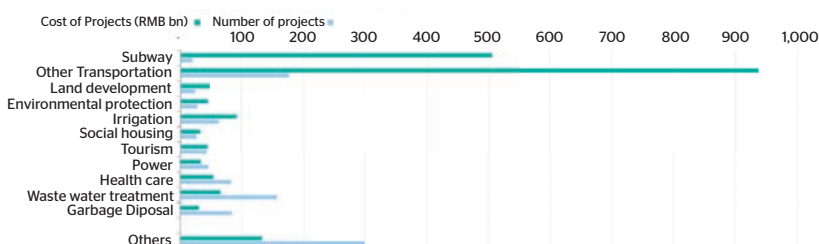
Ryuichi Kaga, a former executive director of Japan Bank for International Co-operation (JBIC) who is now head of the ADB’s PPP office, says that there are two broad constraints to the smooth development of PPP in Asia. The first is the absence of a regulatory and institutional framework throughout the region.

“Some countries, like the Philippines, Korea and India, have all created such a framework for PPP, while others, like Bangladesh, have recently passed PPP laws for the first time,” says Kaga. “But many others don’t even have a PPP law. So it is important to avoid legal duplication by creating a consistent framework.”

Kaga also says that individual countries across the region need to establish PPP co-ordination mechanisms that assure consistencies within their own national boundaries.

“Co-ordination between central

Chinese PPP proposal by asset type, as of May 2015



Source: National Development and Reform Commission

and local governments will be key to PPP playing a successful role in financing Asian infrastructure,” says Kaga. “In countries like China, Indonesia and Vietnam, PPP projects have been initiated by local governments and municipalities, as well as at a central government level, which can create inconsistencies. Promoting PPPs nationwide in a harmonised way is a big challenge for some countries in the region.”

The second impediment to PPP taking off as a mechanism for infrastructure financing in Asia, says Kaga, is inadequate implementation capacity. “Even in countries with a sound institutional and regulatory PPP framework, limited implementation capacity means that processing individual PPP projects can be very slow. It can also be very challenging for PPP agencies with limited resources to identify, prioritise and structure individual projects that are viable and bankable. For example, a couple of countries in the region have identified between 40-60 PPP projects — the question is, how many of these are viable and bankable?”

Another challenge faced by individual PPP agencies across the region, says Kaga, is to ensure that transactions are transparently mandated and structured. Until recently, he says, the multilateral development agencies prioritised solicited project proposals presented by governments. The drawback with this approach, says Kaga, is that it risked restricting the opportunities for PPP by excluding so-called unsolicited proposals from the private sector.

Historically, however, accepting unsolicited proposals projects risked opening the door to corruption, which is why the ADB’s PPP office is insisting on maximising competitiveness and transparency during the bidding process by applying, for example, the so-called “Swiss challenge”. This refers to the process in public procurement where the authorities publish details of the unsolicited bids they have received and invite third parties to match or improve on them.

Kaga says he is encouraged by the steps that a number of governments in the region have taken towards enhancing transparency by publicly

announcing and tendering new projects. “We’re also pleased to see that these countries have set up PPP offices or centralised units to promote PPP, which is helpful for investors because it provides them with a one-stop shop,” he adds.

Kaga explains that in order to support regional governments committed to using PPP as a means of financing their infrastructure shortfalls, together with the transfer of the private sector’s knowhow, the ADB has set up the Asia Pacific Project Preparation Facility (AP3F). Co-funded by the ADB alongside the governments of Australia, Canada and Japan, A3PF provides financial assistance to developing member country governments to support the “financial, legal and technical advisory services required to prepare and structure transactions”. According to Kaga, a number of projects has already been identified as suitable candidates for support from A3PF, which is due to start dispersals in December.

Another important initiative aimed at helping governments to structure PPPs and maximise their appeal to the private sector was the co-advisory agreement signed with eight banks at the ADB’s annual 2015 meeting in Baku which is expected to accelerate the flow of private investment into infrastructure projects. This octet of banks brings together a who’s-who of advisors from Asia and Europe, including Bank of Tokyo-Mitsubishi UFJ, BNP Paribas, Crédit Agricole CIB, HSBC, Mizuho Bank, Macquarie Capital, Société Générale, and Sumitomo Mitsui Banking Corporation.

Kaga says that appetite among commercial banks for Asian PPP projects is strong. “Over the last 20 years the preference among commercial lenders has been mainly for deals in the power generation sector, which they generally regarded as being low risk and easy to structure,” he says. “But they are now expanding into other sectors such as transport and social infrastructure.”

This support, he adds, is now coming from a more diverse mix of local and international banks. “A very interesting dynamic in the project finance market is that we are now seeing domestic lenders in countries like the Philippines and Thailand

providing long-dated tenors both in local currencies and US dollars,” he says.

Global project bonds: a supply-demand imbalance?

In part, this may reflect a disequilibrium in the supply-demand dynamic for sound infrastructure projects.

“The biggest challenge for the market at the moment is lack of supply,” says Munro at Société Générale in Hong Kong. “When opportunities arise, either through PPP or privatisation, deals are being bid incredibly aggressively.”

This problem is not confined to Asia. As S&P warns in its analysis of insurance companies’ demand for infrastructure assets, “regulation, project complexity, illiquidity and a lack of suitable projects” may all thwart the capacity of institutions to invest in the infrastructure market.

Market participants are, however, optimistic about the potential for project bonds to play a key role in supporting infrastructure finance in developed and emerging markets.

As the law firm, White Case, notes in a recent report on project bonds in Latin America, “the complexities and risks of project bonds can give pause even to the most experienced of dealmakers and investors. But the common perception that some project bond issues are insurmountable is a myth, and as the number of successful project bond deals increase over time, this myth will continue to fade away.”

Perhaps. But one of the reasons bankable deals are rare in some Asian markets, Munro adds, is the fragmented structure of land ownership. In some countries, complications over land acquisition has protracted projects tortuously.

“If you look at a project like the third runway at Jakarta Airport,” he says, “it took three years to figure out who owned the land and the process that would have to be undergone to acquire it. The Indonesian authorities have been trying to address this issue by introducing a more efficient, compulsory land acquisition process. But they can’t just ride roughshod over individuals’ ownership rights, and there are plenty of other vested interests hindering land acquisition.”

Project bankers say that this is a

Domestic assets under management in Asia (USD, all year-end 2014)

\$bn	Public Pensions	Corporate pensions	Collective investments	Insurance	Domestic institutional funds	AUM as a % of GDP
Taiwan	106	–	69	534	708	134%
Hong Kong	–	110	355	14	480	166%
China	247	512	732	1,637	3,128	30%
Korea	429	101	345	605	1,481	105%
India	125	0.5	193	339	658	32%
Singapore	208	–	374	149	730	237%
Thailand	19	25	107	83	235	63%
Malaysia	213	–	98	64	375	115%
Indonesia	15	–	21	24	60	7%
Asia ex-Japan	1,363	750	2,294	3,449	7,856	47.10%

Source: Various media reports, HSBC

complication that is common to all the large democracies in the region, most notably India, where property rights have made the construction of new airports notoriously difficult. This is in stark contrast to China, where fewer objections are raised when the authorities earmark sites for redevelopment. The sharp cultural and political differences between China and large swathes of the rest of Asia, say bankers, is one reason why One Belt, One Road projects may be implemented rather more slowly than Chinese investors and lenders have come to expect in the domestic market.

Over the long term bankers expect the One Belt, One Road project to support accelerated growth and diversification in the Asian capital market, with rising institutional liquidity across the region looking for long-dated assets offering a pick-up over government bonds. “In the infrastructure market, reducing FX risk is critical, so I would expect to see more local currency capital market issuance across the region, which will be helped by the One Belt One Road initiative,” says Dickens at HSBC.

Moody’s agrees that the One Belt, One Road project and rising

supply of investable projects will help underpin institutional demand for infrastructure assets in Asia. In a report published in November, it noted that “institutional investors are ideally suited to providing longer-tenor debt which matches the long life of infrastructure assets. This channel of long-term financing will enhance funding diversity by supplementing bank loans and government-sourced funding. The diversification will rebalance the average debt composition of Asian infrastructure corporates, which tend to rely heavily on bank loans.

“Institutional funds are an especially important fresh source of capital, because bank limits on lending to individual countries, sectors or borrowers will over time restrict their ability to increase funding to the sector. Infrastructure lending by banks also faces regulatory constraints under Basel III.”

None of this, says Moody’s, is to suggest that banks’ role in supporting infrastructure development in Asia will be greatly diminished. “We expect the banks to continue to play a pivotal role in funding projects during their construction and ramp-up phases, while debt capital markets provide

India’s project bonds potential

According to the ADB, only 21% of India’s colossal infrastructure funding requirement under its 12th five year plan will come from “currently identified sources”. Historically this has meant local banks, but there are at least three reasons why the Indian banking sector is increasingly unable to meet the country’s sizeable infrastructure funding challenge. The long-term repayment profiles of infrastructure projects creates asset-liability mismatches, as they do for banks in other markets. Also in common with lenders elsewhere, higher capital requirements under Basel III are limiting banks’ appetite for infrastructure lending.

Additionally, the Reserve Bank of India (RBI) has established a limit of 20%-25% of regulatory capital on banks’ exposure to individual infrastructure borrowers, and of 50%-55% on their exposure to groups of related infrastructure borrowers. As ADB explains, “banks are approaching these

regulatory limits, which are already significantly higher than international comparators,” which means there is little room for manoeuvre to relax them.

Some of India’s infrastructure funding gap could be plugged by local institutions, such as life insurance companies, pension funds and provident funds, all of which have long term liabilities which mirror the long dated cashflows of infrastructure assets. The exposure of these institutions

“Historically, the market has been dominated by the banks, but the government has started to put into place the necessary regulatory and tax incentives to enable capital market financings to take place”

Scott Dickens, HSBC



to infrastructure remains minimal, despite a regulatory regime designed to increase their participation in the market. According to the ADB, India’s life insurers have a regulatory requirement to invest at least 15% of their assets in infrastructure and housing, but as of March 2012 this share was 10%. “The impediment has been credit quality,” notes ADB. “Infrastructure projects typically have domestic credit ratings of A or lower – ratings that prohibit or limit institutional investors.”

In the 2011-12 budget, the Indian finance ministry unveiled plans for infrastructure debt funds (IDFs) to encourage more institutional support for the government’s infrastructure development programme in two key ways. First, by selling debt with domestic ratings of double-A or higher to local insurance companies, pension and provident funds, the IDFs will act as a conduit allowing more institutional funds to reach

refinancing,” the agency advises.

There is certainly no shortage of institutional liquidity in Asia looking for productive and in many cases long-dated investment opportunities. Since 2011, HSBC has been monitoring the growth in assets under management among Asian investors, and its latest findings — published in November — are eye-catching. “We calculate that, as of December 2014, total assets managed by domestic investors across Asia (including pension, insurance and mutual funds) stood at \$7.8tr, up 13.7% from the previous year and 51% since 2011,” it reports. “That represents a CAGR of 11% in US dollar terms in the period 2011-2014. Total AUM as a percentage of GDP for the region now stands at 47.4%, up from 40% in 2011.”

Many of the region’s largest pension funds have announced plans to increase their allocation to infrastructure, although the largest of them all — Japan’s Government Pension Investment Fund (GPIF) — has indicated that it will be confining its infrastructure investment to developed markets. GPIF has established a co-investment agreement with Development Bank

10 largest institutional investors investing in infrastructure by current allocation

Rank	Investor	Type	Location	Current allocation to infrastructure (\$bn)	Current allocation (% of AUM)
1	OMERS	Public pension fund	Canada	13.8	24
2	CPP Investment Board	Public pension fund	Canada	10.4	5.8
3	National Pension Service	Public pension fund	Canada	10.4	2.6
4	APG – All Pensions Group	Asset manager	Netherlands	9.5	2
5	Ontario Teachers’ Pension plan	Public pension fund	Canada	9.1	8
6	Corporación Andina de Fomento (CAF)	Government agency	Venezuela	9	42
7	AustralianSuper	Superannuation scheme	Australia	8.3	14
8	Future Fund	Sovereign wealth fund	Australia	6.7	8
9	Government Savings Bank of Thailand	Bank	Thailand	6.1	10
10	CDP Capital – Private Equity Group	Asset manager	Canada	5.9	3.4

Source: Standard & Poor’s

of Japan (DBJ) and Canada’s OMERS to invest in infrastructure assets such as power generation, electricity transmission, gas pipelines and railways.

For the time being, however, stiff competition from the very liquid bank market remains an obstacle for the development of a larger and more diversified market for project bonds globally. “After rising sharply

in 2014, the share of project bonds in the Asian infrastructure market globally is likely to fall in 2015,” says David Gardner, head of project and export finance at HSBC in Hong Kong. “The banks are competitive to the point where they have started to push out the capital market, which had slowly been gaining ground as a viable financing alternative for infrastructure projects.” ▲

infrastructure projects. Second, a withholding tax of 5% – compared with 20% for corporate debt – is designed to attract overseas investors to the Indian infrastructure space via IDFs. According to ADB’s report, published in late 2014, of the \$51bn that foreign institutional investors may invest in Indian corporate debt, \$10bn has been allotted for IDFs.

The potential for growth in the Indian project bond market is colossal. “India’s requirement for renewable energy and infrastructure mean that it should be one of the most significant project bond markets in the world,” says Scott Dickens, global co-head of infrastructure finance at HSBC. “Historically, the market has been dominated by the banks, but the government has started to put into place the necessary regulatory and tax incentives to enable capital market financings to take place. We have seen a couple of successful road project bonds, for example, and we expect to see more.”

There seems to be no shortage of demand for exposure to infrastructure-related bonds in India. Witness the response to the \$288.75m seven year

bond issued at the start of 2015 by Delhi International Airport (DIAL) to refinance a \$350m loan facility. This was the first Asian high yield bond of the year and was 16 times oversubscribed.

Anecdotally, there is also growing appetite among Indian institutions for green bonds. At a conference in Delhi last year, according to the Climate Bonds Initiative, a representative from India Life Insurance Corporation said that his institution was “keen” on supporting green bonds. “This is no trivial statement,” wrote the CBI’s chief executive, Sean Kidney, soon after the conference, “as LIC has \$230bn of assets under management.”

Others agree that India’s bond market could play an important role in financing the country’s plans in the renewables sector. India reports that between 2002-2015, its renewable grid capacity increased more than six times, and that the share of non-fossil fuel in the country’s total installed capacity is projected to expand from 30% in 2015 to 40% in 2030. According to the government’s Intended National

Determined Contribution (INDC) to the UN Framework Convention on Climate Change (UNFCCC) published in October, “India is running one of the largest renewable capacity expansion programmes in the world.”

If this programme is to meet its promise, more progress will need to be made in liberalising the capital market. “India has an amazingly ambitious renewables programme, but it needs to find ways to get private international institutional capital flowing,” says Kidney. “The main issue that needs to be addressed is currency volatility. At the moment, currency hedging costs for investors are about 7%, which eats up a lot of their coupon. If the Indian government and international donors could find a way of reducing this, to around 3%, billions of dollars could be saved on the costs of rolling out renewable energy in India between now and 2020. That in turn would help India to achieve the sustainable industrial and economic growth it needs to feed the 30 million-plus people who enter the labour force every year.” ▲

China's capital market: the birth of a financial superpower?

The opening up of the renminbi bond market could be as important and transformational for global capital markets as the launch of the euro.

“THE PACE AND trajectory of Beijing’s reform programme, if maintained, puts the country on track to become a financial superpower to rival London and New York as one of the world’s pre-eminent financial hubs by 2020.” So says a report published in October by PineBridge Investments, which has \$38bn of fixed income assets under management.

The breathless growth of China’s bond market supports this prognosis. According to PineBridge, the country’s onshore bond market has grown at a compound annual growth rate (CAGR) of 21% over the last decade. As of June 2015, the market was worth Rmb39.5tr (\$6.2tr), making it the third largest in the world, trailing only the US and Japan.

The growth of this market has important implications for infrastructure financing throughout Asia, because it will increasingly allow borrowers from overseas to access the huge pool of liquidity in China as the internationalisation of the renminbi gathers pace.

“We are very excited by the opportunities that are being created for international borrowers in the Chinese market,” says Alexi Chan, global co-head of debt capital markets at HSBC, based in Hong Kong. He adds that the Rmb1bn three year Panda bond issued by HSBC Hong Kong in October was a significant milestone in the opening up of the market, which

he expects will attract an increasingly diversified range of issuers.

Another driver of new issuance in the RMB market, think some analysts, will be China’s ambitious One Belt, One Road initiative (*see page 2*). “One of the major themes of the New Silk Road roadmap is the way it will integrate China’s financial market with the rest of Asia,” notes a recent HSBC report. “For a start, China will support governments and foreign companies with good credit ratings to issue Rmb bonds in China.”

As striking as the development of China’s domestic capital market in recent years has been the speed with which Chinese issuers have integrated with the international capital market. Chan points out that issuance of bonds denominated in the G3 currencies (dollars, euros and yen) by Asian borrowers rose from \$72bn in 2011 to \$206bn in 2014. “The majority of that threefold increase was driven by Chinese borrowers,” he says.

Towards a more institutional market

Much of the growth in the Chinese bond market to date has been driven by bank demand. Bankers think that will change as more regional and global institutional money flows into the market, and as a more durable fixed income culture gains traction within China.

“We are looking at a major step forward for China’s financial architecture”

Alexi Chan,
HSBC



Paradoxically, the upheavals in the Shanghai stock market during the summer of 2015 may act as a catalyst for the development of this culture, as retail investors recognise that there is an investment universe beyond the wildly gyrating equity market or fly-by-night wealth management products. “The recent correction we’ve seen in the Chinese equity market is superb for the development of the bond market,” says Sean Kidney, CEO of the Climate Bonds Initiative (CBI).

Already, there is evidence that there has been a substantial shift among Chinese investors from equities to fixed income since the summer, which has led to a sharp tightening in corporate bond spreads. As HSBC notes in a recent update, “as equity turnover shrank to a quarter of peak levels and with IPOs on hold, liquidity moved away from stocks and into credit markets. Corporate bonds benefited because they are traded in the exchange market, making them accessible to retail investors.”

China’s commitment to building its bond market

It is easy to see why China is committed to encouraging the expansion of its bond market. As Goldman Sachs Asset Management (GSAM) explains in a recent report: “We believe one of the key reasons that China’s government has been striving to develop a domestic bond market is because Chi-

Bond ownership in six emerging Asia debt markets (%)

	Central Bank	Government	Banks	Contractual Savings Institution	Non-resident	Others
China	0.0	0.0	76.2	5.1	2.0	16.7
India	16.1	0.0	48.1	27.5	1.7	6.7
Indonesia	7.0	0.0	27.7	19.6	37.9	7.8
Korea	3.0	19.3	17.0	31.3	15.3	14.1
Malaysia	0.7	0.0	22.0	28.2	45.5	3.6
Thailand	4.1	1.0	15.1	52.1	17.6	10.1

Source: Xinhua, HSBC

nese corporations still rely primarily on equity issuance and bank loans for financing. The government has a strong incentive to develop a bond market and encourage corporations to raise funds by bond issuance, as this would help to diversify credit risk concentrated in the banking system.

“Infrastructure development is another important reason for the growth of China’s bond market,” adds the GSAM report. “Although fiscal revenues have grown rapidly, China still needs additional financing to fund infrastructure construction.”

This requirement is likely to become increasingly pressing given the pressures on the credit profiles of China’s regional and local governments (RLGs). As Moody’s explains in a recent report, RLGs are responsible for much of China’s infrastructure investment, and rely largely on land sales to fund it. That was fine as long as land values were on the up-and-up in China. But as Moody’s says, proceeds from land sales fell by 34.7% year-on-year to Rmb2tr in the first three quarters of 2015. This compares with increases of 45% in 2013 and 3.1% in 2014. “If sustained over the next two to three years,” warns Moody’s, “the decline in land sales could have a material impact on the RLG sector’s creditworthiness.”

Rising inflows of institutional funds will have important implications for infrastructure finance in China. “As more institutions and overseas investors come into the onshore market via the Qualified Foreign Institutional Investor (QFII) and Renminbi QFII schemes, we will see additional demand for the longer-dated tenors which are a regular feature of numerous other bond markets across the world,” says Chan at HSBC.

Another impetus for lengthening maturities and adding diversity to the onshore bond market in China will be the growth of the market for local government borrowers. As Manulife notes in a recent research note on China’s local government debt, the transition away from opaque local government financing vehicles (LGFVs) to more transparent bond issuance will be an important milestone in the maturing of the local capital market. The same note adds that the growth of this market “should help develop the long end of China’s yield curve, as local governments move to match

their debt maturity profiles with project timelines.”

Already, the internationalisation of the investor base in the Chinese capital market is gathering momentum. “We’ve recently seen the implementation of a number of measures aimed at giving further support to the onshore market,” says Frank Kwong, Asia syndicate head at BNP Paribas in Hong Kong. “We think the recent increase in quotas for central banks and sovereign wealth funds is another important step in the liberalisation of the market.”

Others agree that it is only a matter of time before international investors play a more influential role in the Chinese bond market. According to the PineBridge report, as of the first quarter of 2015, foreign investors owned Rmb713bn (\$111bn) worth of onshore bonds, of which Rmb235bn (\$38bn) was in Chinese government bonds (CGBs). As PineBridge comments, this is small in percentage terms, with just 2% of the onshore bond market — and 2.8% of CGBs — held by non-resident investors. It is also very low relative to overseas investors’ participation in other Asian bond markets such as Malaysia and Indonesia, where their share is 44% and 38%, respectively.

PineBridge says that it expects foreign ownership of the onshore bond market to double to 4% by 2020, and that over the longer term this share could reach 15%. “This 2% increase translates into Rmb2.9tr (\$450bn) in

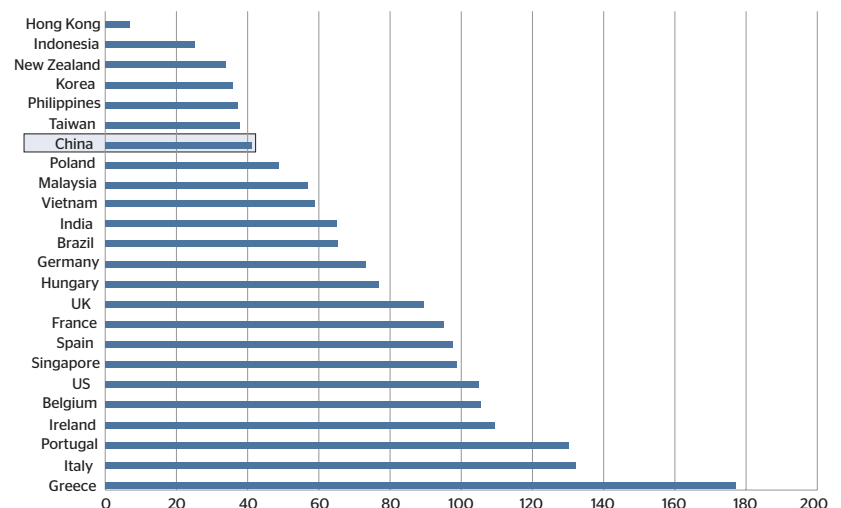
additional net foreign purchase over the next five years,” notes the PineBridge report. Continued liberalisation of the Chinese capital market, the yield pick-up that China offers over other major bond markets, and eventual inclusion into the most widely-followed government bond indices should all attract rising flows of inward portfolio investment, thinks PineBridge.

Much of these inflows will be driven by passive money. But actively managed funds are also likely to be attracted to the market, in part because of the very low correlation of Chinese government bonds with other major bond markets. According to PineBridge, correlations in benchmark five year bonds with US Treasuries, Japanese government bonds (JGBs) and German Bunds are just 0.09, 0.13 and 0.1, respectively.

HSBC’s Chan says that building a deeper capital market in China will be a continuing process, across multiple areas, including hedging. “It is essential that the cross-currency and interest rate swap markets are developed alongside the Rmb funding market in order to give issuers maximum flexibility,” he says.

“We are looking at a major step forward for China’s financial architecture,” says Chan. “The opening up of the renminbi market could be as significant and transformational for global capital markets as the launch of the euro was in 1999.” ▲

Debt to GDP ratio (%)



Source: Green Finance Task Force

Scaling up the green bond revolution

Given that green bonds still account for a minuscule 1% of the total global fixed income market, it is supply that is needed most if the sustainable capital market is to gather the traction it needs.

FOR DEVELOPED as well as emerging markets facing daunting investment requirements to counter the damaging impact of climate change, an increasingly liquid source of funding is the green or sustainable bond market.

The World Bank launched the first green bond in 2008 to “respond to specific investor demand for a triple-A rated fixed income product that supports projects that address the climate challenge”.

According to SEB, which led the World Bank’s inaugural Skr2.35bn six year issue, “in a world where there is ever-increasing awareness on climate concerns, the green bond is a tool that raises industry engagement by encouraging investments in sustainable projects, processes and technologies with a transparency that allows investors to understand the challenges and thus diversify risk. At the same time, the green bond provides issuers with an opportunity to have a closer dialogue with investors and adapt issuance.”

The speed with which the market has evolved since 2008’s curtain-raiser, which was placed exclusively among Nordic investors, is illustrated by the growth since then of the World Bank’s green bond programme. At the last count, this had raised about \$8.5bn equivalent from 100 transactions in 18 currencies.

The \$600bn climate-aligned market

By one definition, the green bond market is now worth around \$600bn, according to the Climate Bonds Initiative (CBI). This is the CBI’s latest figure for the size of the total market for bonds defined as being climate-aligned as well as for those more narrowly defined as “green”. In broad terms, climate-aligned bonds

(or unlabelled green bonds) refer to those printed by issuers that generate 95% or more of their revenues from climate-aligned assets.

In other words, they are adjudged to be bonds that support what the CBI calls “a rapid transition to a low-carbon and climate-resilient economy”.

Labelled green bonds, meanwhile, all of which also qualify for categorisation as climate-aligned instruments, refer to fixed income securities issued for a specific, verifiable environmental purpose. According to the CBI, as recently as 2013 worldwide issuance of labelled green bonds was just \$11bn. This tripled to \$36.6bn in 2014, and by early June 2015, total outstanding issuance had reached \$65.9bn. The CBI is expecting total issuance in 2015 of \$70bn.

Green Bond Principles

An important impetus for growth in green bond issuance over the last two years was the launch in 2014 of the Green Bond Principles (GBP). These are described by ICMA as “voluntary process guidelines

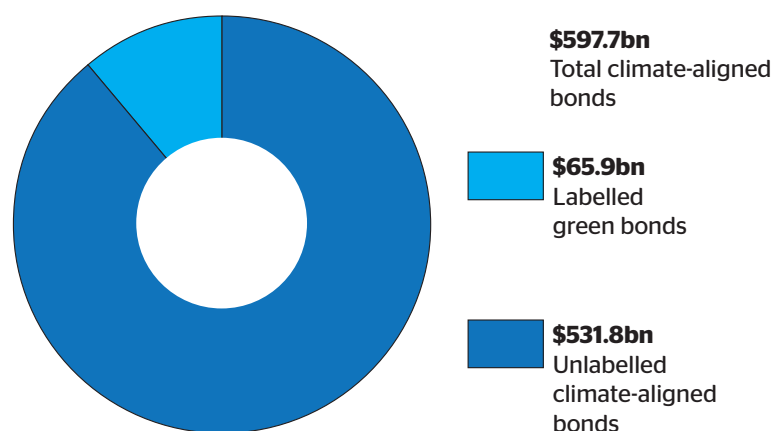
that recommend transparency and disclosure and promote integrity in the development of the green bond market by clarifying the approach for issuance of a green bond.”

Pivotal to these principles is the requirement that for a bond to be categorised as “green”, it needs to be certified as such by the Climate Bond Standards Board. This is made up of scientists, investors and other experts, and represents institutions with \$34tr of assets under management.

The Board’s stamp of approval is given when an eligible third party verifier — 11 of which have now been approved by the CBI — has issued an assurance report that the bond meets the Climate Bond Standard’s environmental and financial requirements.

“The benefit of the Standard is that it provides clear, science-based criteria on what is green,” the CBI explains. This is an important imprimatur, because it safeguards against so-called greenwashing — the dubious practice of allocating bond proceeds to assets that have little or no environmental value.

Climate-aligned bond issuance



Source: Climatebonds.net

This may be less of a threat to the green bond movement than it was in the formative days of the market. “I don’t think an isolated greenwashing incident would be enough to derail the growth of the market,” says Ulrik Ross, global head of public sector and sustainable finance at HSBC. “If this happened, it would be very damaging for the reputation of the issuer. But the market is now sufficiently mature to withstand a setback of this kind.”

Bankers say that it was the establishment of the Green Bonds Principles and of the Climate Bonds Standards Board that has driven the recent rise in issuance and the strengthening recognition of green bonds as an asset class. “The last two years have been game-changing for climate change financing,” says Jean-Marc Mercier, global co-head of debt capital markets at HSBC. “It is only two years since we established a standard for green bond issuance, since when the market has grown like wildfire.”

Green bonds — benefits for borrowers

It is easy to see why green bonds have appealed to an increasingly broad community of borrowers. Speaking at a conference on the development of the Chinese green bond market, which was hosted by the London Stock Exchange in October, Spencer Maclean, head of debt capital markets for Europe at Standard Chartered, said that the number one attraction of green bonds for issuers is the opportunity it gives them to diversify their investor bases.

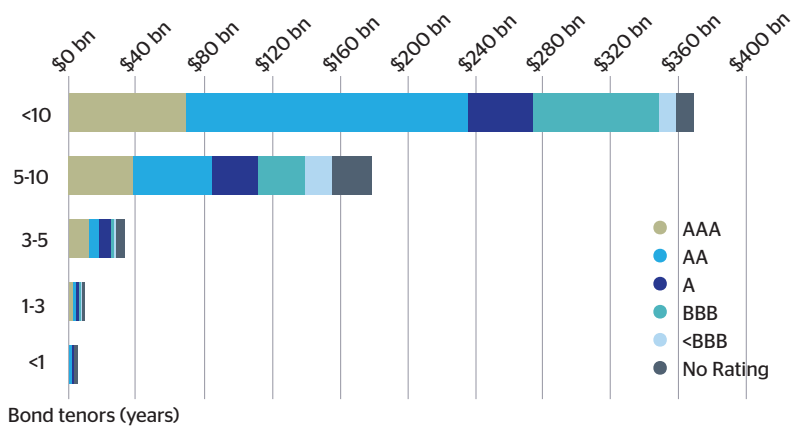
“It is only two years since we established a standard for green bond issuance, since when the market has grown like wildfire”

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While pricing in the green bond market is flat to the conventional curve today, Maclean added that he expects a pricing advantage to

Climate-aligned bonds tenors and ratings



Source: Climatebonds.net

emerge over the longer term, just as it has for borrowers in the sukuk market. Today, he says, the growth of the dedicated investor base for sukuk has created a “definitive” pricing advantage in the market of between 10bp and 20bp.

Others are less convinced that there will be persuasive pricing reasons for borrowers to access the green bond market. “I continue to believe that it is credit rather than anything else that ultimately determines pricing,” says Ross at HSBC. “I am sure there are plenty of ancillary benefits that issuers can generate by accessing the green bond market, such as investor diversification. But I believe that the only way we will be able to generate a pricing advantage for borrowers in this market is by offering other incentives to issuers and investors. These could range from more favourable risk-weighted assets treatment to tax incentives.”

The CBI shares this view, identifying three ways in which the tax regime could be tweaked to support green bond issuance. Tax credit bonds, in which investors receive tax credits instead of interest payment, have been successfully applied in the US market for clean renewable bonds and qualified energy conservation bonds. A second option is direct subsidy bonds, which have also been used in the US, where bond issuers receive cash rebates from the government to subsidise their net interest payments. A third is tax-exempt bonds, in which investors pay no

income tax on interest from green bonds, which have been used to finance wind projects in Brazil.

At October’s London conference, Morgan Stanley’s executive director of capital markets, Navindu Katugampola, added that for corporate issuers the green bond market is of increasing strategic importance. He pointed to the example of Unilever, which issued a £250m four year green sustainability bond in March 2014, as an example of a company that has successfully put sustainability at the heart of its corporate strategy, aligning it with its capital market funding programme.

For their part, corporates have injected welcome diversification and scale into the green bond market, which in its early days was dominated by multilateral development banks. In a report published earlier this year, Standard & Poor’s forecast that corporate issuance could double in 2015, and anecdotal evidence from the banks that are driving the growth of the market supports the belief that the green corporate bond market is well positioned to lift off in the near future. Mercier says that HSBC, for one, is in various stages of dialogue with at least 100 clients today about coming to the green bond market — the vast majority of which will be debut issuers.

An increasingly diverse market

This will add to the process of diversification in the green bond market, which has been an important feature of its growth in

recent years. Initially driven by multilateral development banks, the market has now been embraced by a much broader range of issuers, most notably from corporates such as GDF Suez. It took the market into new territory in 2014 when it launched the largest corporate green bond to date, a €2.5bn issue in six and 12 year tranches. As S&P notes in its recent report, “not only have corporates introduced scale, but they have also offered a range of currencies, geographic locations and maturities — all great for liquidity in the market.”

HSBC’s Ross agrees the corporate sector has been the principal driver of diversity in the green bond market. “The Green Bond Principles and their guidelines on use of proceeds have meant that the market is not restricted to companies such as those in the renewable energy space,” he says. “They have also provided access to the market for companies whose standalone business profile is not necessarily green, but which are making an important contribution to the climate agenda.”

As well as Unilever, examples

of issuers in this category range from companies such as Toyota, which has issued green bonds to refinance electric and green car loans, to Australia’s Stockland, which used the proceeds of its debut green bond to develop green star-rated properties.

In the FIG space, meanwhile, Bank of America launched the first green bond from a bank in November 2013 to finance renewable energy projects, since when others such as TD Bank and HSBC have followed.

To date, corporate issuance in the green bond market has been dominated by investment grade borrowers. Abengoa Greenfield issued the first high yield green bond in October 2014, since when there has been a handful of other sub-investment grade transactions, notably from the US-based renewable energy company, TerraForm Power, which launched an \$800m eight year issue in early 2015. But high yield issues remain no more than a minor segment of the overall market.

Diversification of the green bond market has also been provided

“We need this to be a \$1tr market by 2020. Otherwise we will be failing in our environmental objectives”

Sean Kidney,
Climate Bonds
Initiative



by sub-sovereign borrowers. Massachusetts became the first state or local government in the US to issue a green bond in 2013 with a \$100m transaction marketed to retail and institutional investors. In Europe, the City of Gothenburg provided the curtain-raiser for Nordic municipal green bonds in the same year, with a Skr500m transaction. And outside developed markets, Johannesburg issued the first municipal green bond from an emerging market issuer in 2014.

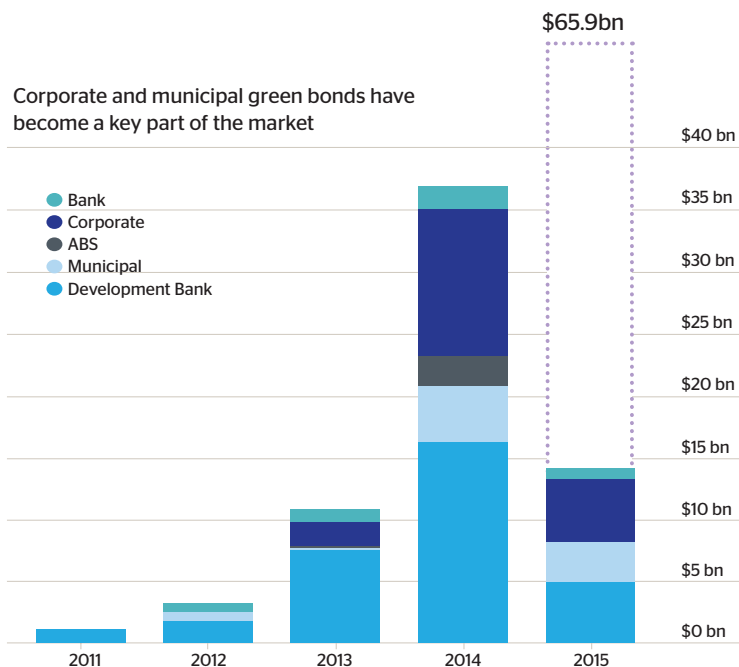
The potential of green bonds in emerging markets

More broadly, emerging market borrowers are signing up to the social responsibility and climate change movement with increasing enthusiasm. In Latin America, Brazil, Mexico and Peru have all seen issuance in the green bond market, while in Asia and the Middle East a number of borrowers are reported to be weighing up the potential of green bonds issued in a Shariah-compliant format (sukuk). Malaysia, for example, drew up an SRI framework for sukuk issuance in August 2014, while the government’s investment fund, Khazanah Nasional, launched the first Shariah-compliant SRI issue in June 2015.

In South and East Asia, meanwhile, issuance is also gathering momentum, with the Asian Development Bank (ADB) itself launching its debut green bond in March 2015. This was a \$500m 10 year issue “aimed at channelling more investor funds to ADB projects that promote low-carbon and climate-resilient economic growth and development in developing Asia”.

Elsewhere in Asia, in early 2015 Yes Bank and the Export-Import Bank of India became the first

Sharp growth of the labelled green bonds market with \$65.9bn outstanding by June 2015 – with greater diversification in issuance



Source: Climate bonds.net

issuers of green bonds from the Indian banking sector. CLP Wind Farms chalked up another first for India in September, when it launched the country's inaugural green corporate bond, a Rp6bn (\$91m) three-tranche issue led by HSBC, IDFC and standard Chartered and sold principally to local mutual funds. CLP Wind Farms, which is the renewable energy arm of CLP India — itself a subsidiary of Hong Kong's China Light and Power — is the largest wind power developer in India, with a committed pipeline of 1,000MW of wind energy assets in six states, according to CBI.

China: the game changer for green bonds?

China's first labelled green bond, meanwhile, was launched by Xinjiang Goldwind Science and Technology in the Hong Kong market at the end of July, generating orders of \$1.4bn for the three year issue.

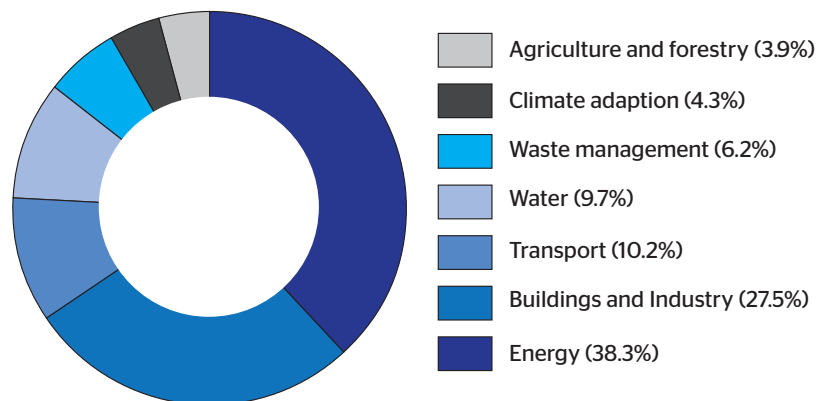
Another important recent milestone for Asian issuers in the global green bond market came in October, when the Agricultural Bank of China (ABC) printed the first international green bond from a Chinese borrower, raising just under \$1bn in a healthily oversubscribed three-tranche issue. This was subdivided into a \$400m three year tranche, alongside a \$500m five year portion and a Rmb600m (\$95m) two year offering.

"I hope ABC will be door-knocking in Beijing to spread the word about the incredible success it had with its London-listed green bond," said Sean Kidney, CEO and co-founder of the Climate Bonds Initiative at the London conference in October. This was staged in the same week as the ABC transaction, which also coincided with a high-profile visit to the UK by Chinese premier Xi Jinping.

"Not only was the bond four times oversubscribed," said Kidney, "but the RMB portion was oversubscribed by eight times."

Analysts clearly believe there is plenty more issuance to come from China (see chapter 5). In its review of developments in the green bond market in the second quarter of 2015, Moody's commented that it expects Chinese entities to "drive the growth

Green bonds use of proceeds



Source: Climatebonds.net

in green bond issuance in Asia over the coming years, as policymakers embrace such securities as a means of financing their environmental policy goals." S&P, meanwhile, has said it believes China could be "the game changer" for the green bond market.

More diversification ahead

At the London conference, Kidney strongly hinted that further diversification of the market is in the offing, and that the first sovereign green bond may be announced during this month's COP21 summit at Paris. Failing that, Kidney said that he could "guarantee" that 2016 will see the launch of the first green bond from a sovereign borrower.

The broadening of the green bond market to include a wider cross-section of corporates, emerging market borrowers and sovereigns will all help lift annual issuance to \$300bn by 2018, according to the CBI's estimates. But as Kidney said at October's London conference, this will still fall well short of the total that will need to be raised via green bonds if the capital market is to make a meaningful contribution to the investment needed to counter climate change, which Kidney puts at between \$4bn and \$5bn annually. "We need this to be a \$1tr market by 2020," he added. "Otherwise we will be failing in our environmental objectives."

Bankers point out that despite its obvious growth potential, the green bond market should only be regarded as part of a much broader mosaic of green or sustainable

financing options. "It's difficult for some of the smaller, niche or esoteric projects to come to the capital market, especially in developing countries," says Ross at HSBC. "This is why the UN's Green Climate Fund is such an important initiative for adding risk capacity." By mid-2015, 33 governments had pledged close to \$10.2bn to the Green Climate Fund, which was due to start allocating resources in advance of COP21 in Paris.

Initiatives such as these, twinned with the rapid advance of the green capital market, will all be instrumental in ensuring that sustainable finance moves into the mainstream of the global financial services industry sooner rather than later. As Mark Carney, governor of the Bank of England, put it in a speech delivered at Lloyd's of London in September, "green finance cannot conceivably remain a niche interest over the medium term".

The range of geographies that appear to have embraced green finance suggests that it is already shedding its image as a niche area. Nick Robins, co-director of UNEP's Inquiry into the Design of a Sustainable Financial System, says that a "quiet revolution" is gathering pace across the world. "Whether it's in China, Bangladesh, Brazil or the UK, it is increasingly clear sustainability is being incorporated into the political and regulatory architecture of finance," says Robins, who was head of HSBC's Climate Change Centre before he joined UNEP. ▲

Incentives needed to develop the SRI investor base

With green bonds accounting for a minuscule 1% of the total global fixed income market, a lot more needs to be done to grow the institutional demand needed to help meet climate change targets.

SINCE 2008, when a handful of Nordic investors subscribed to the World Bank's first green transaction, the investor base for labelled green bonds has expanded very rapidly.

At the last count, in April 2015, close to 1,400 signatories with assets under management (AUM) of \$59tr, had put their name to the United Nations' Principles for Responsible Investment (PRI), which were originally launched in 2006.

The goal of the PRI Initiative is to "understand the implications of sustainability for investors and support signatories to incorporate these issues into their investment decision-making and ownership practices."

The AUM of PRI signatories in April 2015 is a 29% increase over the previous year, and means that investors from over 50 countries managing just over half of the institutional assets on the planet have signed up to the PRI.

Ulrik Ross, global head of public sector and sustainable finance at HSBC, explains that the UN PRI assets under management are not all relevant to the green bond market, because they also cover equity investors and institutional signatories to the broader environmental and social and governance (ESG) guidelines.

The equity investor community for ESG investment, he adds, has historically been constructed around the exclusion of individual companies and sectors failing to meet acceptable environmental standards. By contrast, the buyer base for green bonds has been driven by the inclusion of individual securities based on their sustainability criteria. "It is absolutely clear that we now have a huge wall of money that is committed to responsible and sustainable investment in fixed income markets worldwide," he says. "However, we

still have a huge gap to fill if we are to meet the climate change targets."

Part of that gap could be filled, says Ross, if institutions were to create broader internal mandates to encourage sustainable investment. "Green bond funds are an important source of demand, but if we are going to achieve the scale that the market needs, it is essential that mainstream institutions implement a sustainability policy across all investment decisions and all asset classes," he says.

Ross — himself once of the Nordic Investment Bank — says that in Europe the main sources of institutional demand in the early stages of the green bond movement were from northern Europe, especially from Scandinavia. Today, Nordic investors remain influential players in the market. Sweden's AP4 pension fund, for example, reports that in 2014 it participated in 14 green bond issues with a total investment value of Skr2.9bn, which corresponded to about 1% of the total value of green bonds in the primary market globally. The fund is also explicit about its objective of supporting the growth of the market, commenting that part of its climate change strategy is trading green bonds "to help the asset class to become more liquid and attractive".

But as Ross says, new issues of green bonds no longer stand or fall on the basis of strength of demand from investors in northern Europe, with the market now supported by a well diversified body of institutions on either side of the Atlantic.

The sustainable investment penny is even starting to drop in some sections of the hedge fund community, populated by improbable bedfellows for environmentalists. A survey published by Unigestion in May 2015 found that in recent years there has been a "significant" increase from 25% to 40% of hedge funds

"In Asia, we're still at the beginning of a journey for sustainable investment, but things are now speeding up"

Ulrik Ross,
HSBC



incorporating ESG criteria into their investment strategies. Unigestion reports that while 60% of hedge fund managers are still reluctant to allow ESG considerations to influence their investment decisions, that is an advance on the 75% that were unmoved by ESG in its previous survey in 2011.

This still leaves plenty of room for hedge funds to play a more active role in the market. "Hedge funds typically buy higher yielding assets, and there has not yet been much supply of green bonds in the sub-investment space," says HSBC's Ross. "We would like to see more high yield issuance, but so far there has not been much appeal for hedge funds from a risk-return perspective. However, it is clear that the hedge fund world is becoming more active on the equity side in terms of excluding certain stocks and sectors from their investment universe. I'm pleased to see that hedge funds are thinking much more seriously about ESG in general, and hopefully this means that in time they will participate more in the fixed income side of sustainable investment."

Mixed signals on Asian demand
Geographically, if there has been one investor base that has perhaps been slower to respond to the opportunity presented by the green bond market than those in Europe and the US, it



Keen on green: Atiur Rehman, central bank governor of Bangladesh

has been Asian investors.

Japanese retail investors have shown strong support for so-called “themed” or SRI Uridashi instruments pioneered by Daiwa, which have included vaccine bonds, poverty bonds and water bonds. But green bonds have been slower to catch on among institutional investors in Asia. “It’s true that Asian investors have been lagging behind slightly when it comes to thinking about sustainability — perhaps because the Asian investor community has been very return-driven,” says Ross. “But I think this is starting to change, with Chinese investors increasingly attracted to the green bond market and progress also being made in India. In Asia, we’re still at the beginning of a journey for sustainable investment, but things are now speeding up.”

Green bonds: the limitations

UNEP’s recent report on options for sustainable financing — entitled *The Financial System We Need* — has drawn up a 10 point agenda for action on green bonds. A number of these are already being implemented. The call for “strategic issuance” from public agencies such as development banks and municipalities, for example, has been answered by European borrowers such as Germany’s KfW and the City of Gothenburg in Sweden, which became the first city in the world to issue a green bond in September 2013.

Also on the UNEP Agenda for Action is the facilitation of green bond investment from public institutions through mandates for sovereign wealth funds and pension funds. Again, Scandinavia has led the way in this respect. Norway’s government

pension fund, for example, has been issuing environmental-related investment mandates since 2009, which cover listed equities and green bonds.

The relative illiquidity of the green bond market will mean, however, that these instruments continue to play a low-key role in the fund’s fixed income portfolio for the time being, as it explained in a letter to the Norwegian Ministry of Finance in November 2014. “The segment is dominated by institutions buying the bonds with the aim of holding them to maturity,” this noted. “This may mean that green bonds are less available in the secondary market, and that opportunities for new investments may be limited to issues of new bonds. The proportion of bonds in the fund’s environment-related mandates in the early years will therefore be relatively modest.”

This will change as the market grows. But if it is to do so, a number of the other recommendations in the UNEP Agenda for Action will also need to be taken up. Foremost among these is what the UNEP document describes as “market integrity”, or support for the establishment of common green definitions, standards, verification and certification, as well as enforcement through securities regulation to protect customers. The UNEP action plan also calls for better international co-operation “to avoid market fragmentation and underpinning market liquidity through mutual recognition of standards”.

Bond investors would certainly welcome more standardisation in the green bond market, with index providers still applying different

definitions of what constitutes a green bond. Fixed income investors would also be sure to favour some of the other proposals in the UNEP wish-list, which are aimed at broadening the product range, and improving the returns on offer in the market. More specifically, this argues that initiatives such as tax credits and incentives would strengthen the market, as would a preferential weighting for green bonds in banks’ capital requirements.

Tax incentives

Bankers agree that incentives would be a powerful impetus for the growth of the green bond market in general, and more particularly to encourage its use as an infrastructure financing instrument. “If we really want to foster institutional demand for long-dated green issuance it is essential that we consider more tax and regulatory incentives for issuers and investors,” says Jean-Marc Mercier, global co-head of debt capital markets at HSBC.

In the European market, perhaps the most obvious way to bolster demand for green bonds, however, would be for policymakers to respond constructively to the suggestion that central banks include green bonds in their reserve management and asset purchase programmes.

In this, the EU could take a leaf out of Bangladesh’s book. During October’s IMF meeting in Lima, central bank governor Atiur Rehman announced that Bangladesh Bank (BB) plans to invest some of the country’s foreign exchange reserves in “liquid issues of green bonds of multilaterals and other highly rated financial corporate houses”.

At HSBC, Ross says that the Bangladeshi initiative is an encouraging pointer for the green bond market in emerging economies in general and Asia in particular. But he says that it is supply that the market needs most if the sustainable capital market is to gather the traction it needs, given that green bonds still account for a minuscule 1% of the total global fixed income market. “Scale is our number one mission statement,” he says. “But this can only be achieved by introducing government-sponsored incentive structures for the green bond market.” ▲



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