

sigma

Power up: investing in infrastructure to drive sustainable growth in emerging markets

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Executive summary

Infrastructure development will help drive emerging market trend growth of 4.4% in the 2020s.

Infrastructure will help support sustainable trend growth in the emerging markets over the coming decade. The COVID-19 pandemic will inflict a sharp growth slowdown in the near term (we forecast a 4.3-percentage-point slowdown in emerging market gross domestic product (GDP) growth in 2020 to -0.5%). The pandemic has also led to supply chain disruptions, weaker commodity and energy prices, and rising debts, which in turn will add to what was an already weakening longer-term outlook for the global and emerging economies. Further ahead, we project that emerging market annual gross domestic product growth will increase by 4.4% in 2021–2030, stronger than in the advanced markets (1%), but slower than 5.5% in 2010–2019. In a global slowdown environment, investment in infrastructure will be key to improving productivity and resilience in the emerging economies.

We forecast emerging markets will invest 3.9% of GDP in infrastructure each year to 2040.

Based on current spending trends combined with our economic growth forecasts, we estimate that collectively, the emerging markets will invest an average of USD 2.2 trillion, or 3.9% of GDP, annually in infrastructure to 2040, close to double the aggregate spend in advanced markets over the same period. The main drivers will include economic growth and urbanisation; the digitalisation of (smart) cities and infrastructure; increased focus on resilient infrastructure, also to mitigate the impact of climate change; a move to renewable energy sources (from fossil fuels); and investment in health infrastructure. The investment may be front-loaded to the first 10 years as countries strive to meet the UN Sustainable Development Goals, in particular universal access to drinking water, sanitation and electricity by 2030.

Emerging Asia, and in particular in China, is where most infrastructure will be built.

By region globally, emerging Asia will build most new infrastructure over the next 20 years, with annual investment of USD 1.7 trillion (4.2% of region GDP). Sector-wise, most investment will be in energy, followed by road. China, which is also due to spend heavily on rail, will be the biggest contributor, investing USD 1.2 trillion (4.8% of GDP) annually, making up 54% of all emerging market and 35% of global spend. We estimate that Africa will invest 4.3% of region GDP in infrastructure annually to 2040. In Latin America, investments will be higher than in the last decade, but below the global average as the region's bigger economies continue to struggle. However, even these levels of spend will fall short of overall emerging market need: we also forecast an annual infrastructure gap of USD 520 billion in the emerging economies, more than double the gap of USD 239 billion in advanced markets.

The infrastructure sector presents an annual USD 920 billion- opportunity for long-term investors, including insurers....

Financing the investment spend and also closing of the gap remain challenging. With public finances under pressure and debt levels having risen significantly over the past decade, emerging market governments need to establish a more conducive environment to attract private-sector. Private sector participation will also bring innovation and efficiency gains, and with public-private partnerships governments can outsource day-to-day operations. Assuming total estimated investments and the closing of the infrastructure gap, we estimate a USD 920 billion-annual investment opportunity for the private sector. Insurers are well positioned to offer support. In the current low interest rate environment, insurers are in search of investments that deliver attractive yields to help them match their long-term liabilities. Infrastructure projects in emerging markets can meet that need, while presenting additional benefits of regional and asset class diversification, and opportunity for environmentally and socially-responsible investing.

...and more than USD 50 billion in premium potential.

Insurers can also contribute by underwriting the risks inherent in the construction and operational phases of infrastructure projects. To this end, and looking at the seven largest emerging markets (the EM7 – Brazil, China, India, Indonesia, Mexico, Russia, and Thailand), we estimate a total premium opportunity of USD 50 billion in the next 10 years based on projected levels of investment. The main lines of business to benefit will be engineering, where we estimate construction-all-risk premiums of USD 22 billion. We also estimate premiums of USD 9.7 billion from renewable energy projects across the EM7. China, on course to be the world's biggest insurance market overall by mid-2030s, will be the home of most infrastructure-related business, accounting for 60% of the premiums over the coming decade.

Key takeaways

Total infrastructure investment spend in emerging markets 2021–2040: USD 43 trillion

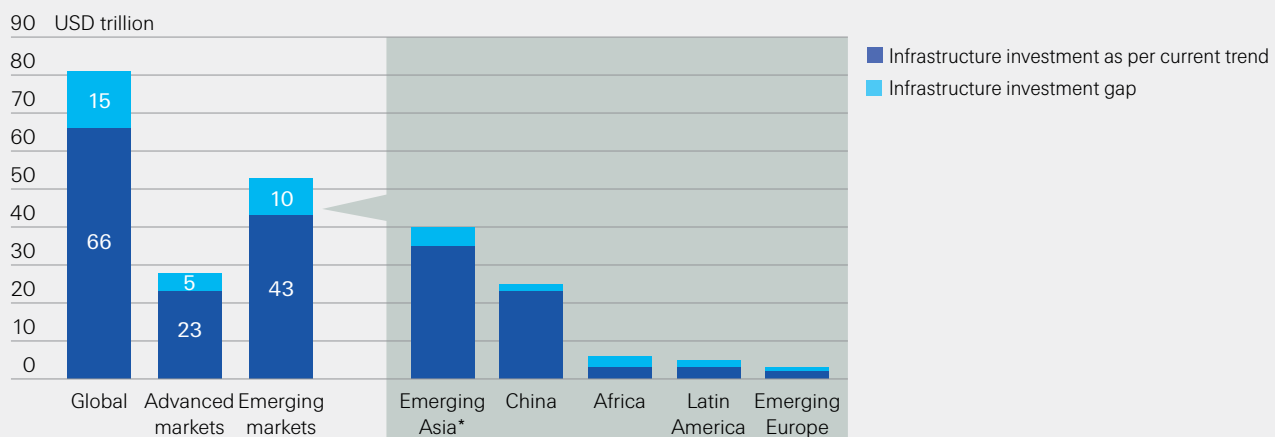
Emerging markets will invest an estimated 3.9% of GDP in infrastructure over next 20 years, or USD 2.2 trillion annually, almost double advanced market spend. Emerging Asia, led by China, will be where most infrastructure is built.

Forecast infrastructure spend, 2021–2040	USD trillion (cumulative)	USD billion (annual)	% of GDP
Emerging markets	43	2 164	3.9%
Emerging Asia	35	1 740	4.2%
Africa	3	165	4.3%
Latin America	3	150	2.3%
Emerging Europe	2	109	3.0%
Advanced markets	23	1 158	2.1%
Global	66	3 322	3.0%

Source: Swiss Re Institute estimates, based on data from Global Infrastructure Hub and Oxford Economics

Cumulative infrastructure investment gap in emerging markets 2021–2040: USD 10 trillion

Still, infrastructure need in emerging markets, is estimated at USD 2.7 trillion annually, resulting in an estimated protection gap of USD 520 billion each year over the next 20 years.

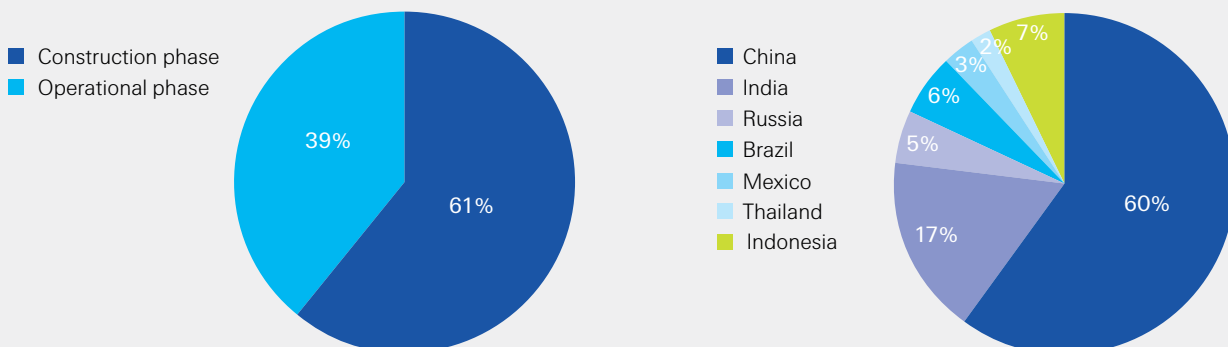


*Emerging Asia includes China.

Source: Swiss Re Institute estimates, based on data from Global Infrastructure Hub and Oxford Economics

Infrastructure-related insurance in EM7, 2021–2030

A more than USD-50-billion opportunity in premium equivalent terms in next decade, with around 60% from China.



Source: Swiss Re Institute

Infrastructure: the power behind sustainable growth

We forecast emerging markets growth to trend at 4.4% annually in 2021–30, down from 5.5% in the previous decade. There will be a significant slowdown in 2020 on account of the COVID-19 pandemic, and the risks to growth remain to the downside, including in the longer-term. Against a backdrop of weaker global economy, investment in infrastructure will improve productivity and drive sustainable growth in the emerging markets. For this reason, we believe emerging market governments need to retain a long-term perspective on infrastructure development.

Economic outlook amidst a weaker global backdrop

Emerging market growth will slow to –0.5% in 2020, alongside a COVID-19 induced global recession.

Similar to advanced markets, the growth trajectory of emerging markets has been knocked off course by this year's COVID-19 pandemic. Emerging markets are vulnerable to the weaker external demand that will result from this year's global recession, and will also suffer economic disruption domestically on account of the virus outbreak. We forecast that emerging market growth will turn negative in 2020, slowing by 4.3 percentage points (ppt) to –0.5%. We expect there to be a severe downturn in the first half, and only a slow recovery thereafter.

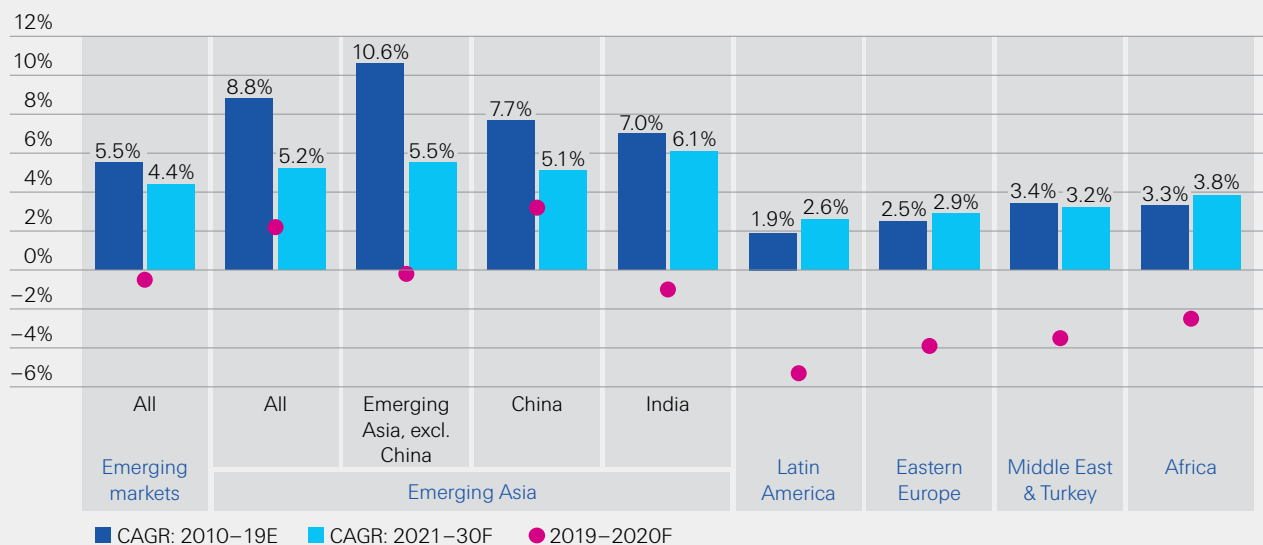
Key emerging economies are either slowing sharply or entering recession.

Growth in China was particularly hard hit in the first quarter, contracting by 6.8%, and we have lowered our full-year 2020 projection to 3.2%, from 5.9% previously. Other major emerging economies will also suffer. We expect Brazil (–5.5%), Russia (–5.5%), South Africa (–6%) and India (–1%) to contract in 2020. By region, we forecast growth in emerging Asia excluding China to stall (–0.2%) in 2020, down from a 4.9% expansion in 2019 (see Figure 1), with weaker growth across all countries and recession in some. We project that Central and Eastern Europe will contract this year (–3.9), and our GDP forecasts for Latin America (–5.3%) and Africa (–2.5%) are similarly weak.

The expected recovery will be slow, with emerging Asia taking the lead.

Longer term, we expect emerging market growth to return to trend, although at slower pace than in the previous decade, this largely reflecting a weaker global economic backdrop. We project that the emerging economies collectively will expand by around 4.4% in compound annual growth rate (CAGR) terms over the coming decade, down from 5.5% in the previous decade (see Figure 1). Emerging Asia will lead with average annual growth of 5.2% in 2021–2030, and India will take over from China as the region's fastest growing economy.

Figure 1
Real GDP growth (%), historic (2010–2019E) and forecast (2021–2030F)



Source: Swiss Re Institute

Fiscal stimulus will help cushion the negative impact of the pandemic...

Fiscal stimulus to keep things going

As the COVID-19 crisis unfolds, governments around the world, including in emerging markets, have announced fiscal stimulus to cushion the slump in growth. With large parts of the economy in lockdown, in many advanced markets the immediate focus has been on ensuring sufficient funds for healthcare and on preventing healthy companies from laying off staff and going bankrupt. While many advanced economies rely more on government credit guarantees, the most common fiscal stimulus measures in emerging markets include cash transfers, the provision of basic needs, subsidies, deferral of taxes and social security payments. The fiscal policy mix in the COVID-19 crisis is less tilted towards growth enhancing measures than was the case during the global financial crisis (GFC) of 2008–09. Excluding China, the share of public investment, such as in infrastructure, in the emerging market fiscal policy mix is only around 1% of the total, and closer to zero in advanced economies. In contrast, public investment accounts for 39% of China's fiscal stimulus package.¹ Overall, we expect the aggregate volume of global fiscal easing to amount to roughly 4% of global GDP in 2020, by far the largest seen in several decades. By way of comparison, the fiscal stimulus response to the GFC was just 1.6% of global GDP.

...but to different degrees as available fiscal space varies widely across the emerging markets.

As scope for fiscal action varies widely across countries, so has the response. For instance, Poland announced discretionary spending of more than 8% of GDP, while Indonesia and Argentina are deploying only around 1% of GDP in additional stimulus: India has also announced spending measures. A few others, however (eg, Nigeria, Ecuador), have imposed fiscal austerity as a reaction to the crisis.

Central banks have reacted to the crisis by cutting policy rates.

In addition, emerging market central banks have reacted by cutting policy rates across the board and enacting measures such as reductions in reserve requirement ratios (RRR) to provide liquidity support. There have been rate cuts in most major markets including in China, India, Mexico, Russia, Brazil and Indonesia. We expect rates to decline further in 2020 alongside continued easing in G7 countries and while the inflation environment remains benign. The policy easing has come despite a pronounced and sudden stop in portfolio flows to emerging markets, as policy priorities have shifted from mitigating inflation spikes and currency depreciation to fostering financial stability and growth. In the first quarter of 2020, emerging markets experienced the largest capital outflows on record, far exceeding those during the GFC.² In this environment, the establishment of a framework in which infrastructure is a tradable asset class becomes even more important, so that emerging markets can attract capital inflows from a diverse set of foreign investors.

Though welcome and necessary, the fiscal measures do little to support future productivity growth.

...and steering long-term growth with investments in infrastructure

Even with these policy actions, the fallout from the COVID-19 pandemic will be immense. Further, the risks to the outlook remain skewed to the downside and we expect structural issues to hamper growth in the longer-term.³ While fiscal stimulus measures will cushion the immediate negative impact of the pandemic on the economy, there has been little thought about increasing future productivity. The world economy will face headwinds from impaired supply chains and production capacities, higher unemployment, business bankruptcies, and higher debt burdens. And, given the weak resilience of many economies before the onset of the crisis,⁴ we believe global growth will return to subdued levels only.

¹ *Bubble, Bubble, Toil, and Trouble: which fiscal mix will work against COVID-19?*, UBS Research, April 2020.

² *Capital Flows Report, Sudden Stop in Emerging Markets*, IIF, April 2020

³ Our forecasts carry a high level of uncertainty, but the balance of near-term risks remains skewed to the downside. At time of writing, it is unclear how long lockdowns will last and how recovery will develop.

⁴ See *sigma* 5/2019: Indexing resilience: a primer for economies and insurance markets, Swiss Re Institute.

The risks for the emerging economies remain to the downside.

The weak global backdrop includes other factors that could weigh more heavily, in relative terms, on growth in emerging markets.⁵ As a result of lockdowns, global demand for oil has collapsed and is likely to remain low for some time. For oil producing markets like Malaysia, Brazil, Mexico, Angola and Nigeria, the price fall comes at the worst possible time and raises the risk of debt defaults. Meanwhile with respect to global trade, whilst the signing of the Phase 1 agreement in January has created a hiatus in the trade dispute between the US and China, we expect no meaningful resolution anytime soon. Implementation of Phase 1 will be challenging in the current conditions, and further negotiations are needed for a comprehensive deal covering intellectual property and state aid rules.

Against the weak economic backdrop, investment in infrastructure can improve productivity and resilience.

Against the weaker global backdrop, emerging economies need to become more resilient by improving levels of productivity. For this, investment in infrastructure is essential. Infrastructure is the crux of human well-being and productive activity. Critically, infrastructure enables sustainable economic growth. Facilities such as power generation and transmission, water systems, roads, railway and airports reduce the operating cost of private sector firms and create an enabling environment for new capital formation and output growth.⁶ For instance, a well-running railway network reduces the transport cost of equipment that may be needed to set up a new factory, facilitating the start-up of new private projects and transforming the productive capacity of newly connected areas.⁷ The relationship between infrastructure and economic growth is mutually reinforcing as the latter, in turn, generates demand for more, and new, infrastructure. As productivity increases and broadens across different sectors, and as incomes rise and ways of life change (eg, evermore urbanisation), the composition of infrastructure needs also change.

Infrastructure investment has positive multiplier effects on output, more so in less developed countries.

Empirical evidence suggests that public infrastructure spending has a higher multiplier effect on economic growth than other fiscal measures like tax cuts or direct welfare payments by increasing the marginal productivity of private capital.⁸ There is no consensus on the exact output elasticity of infrastructure investment (ie, by how many units gross domestic product (GDP) increases through one unit of infrastructure investment). The World Bank estimates that an increase in infrastructure investment by 10% leads to a 0.7–1% increase in output in the long-run, with returns being higher where current endowments are lower,⁹ as is typically the case in emerging markets. While numbers can vary, a central take-away from research on infrastructure investment is that the effects on output are positive and significant, and that the elasticity tends to be substantially higher in less developed countries.

⁵ The main risks include the potential failure of emerging market governments to implement supportive monetary and fiscal policies effectively and quickly enough to provide the necessary economic support to companies and individuals; a worse-than-expected economic contraction in advanced markets, which would lead to even lower external demand and cross-border investment; significant debt distress if the economic shutdown does not normalise in due time and the US dollar appreciates further.

⁶ N. M. Odhiambo, G. Makuyana, "Public and private investment and economic growth: a review", *Journal of Accounting and Management*, 2016.

⁷ *Trends and Challenges in Infrastructure Investment in Low-Income Developing Countries*, IMF, 2017.

⁸ A. Spilimbergo, S. Symansky, M. Schindler, *Fiscal Multipliers*, IMF Staff Position Notes, 2009.

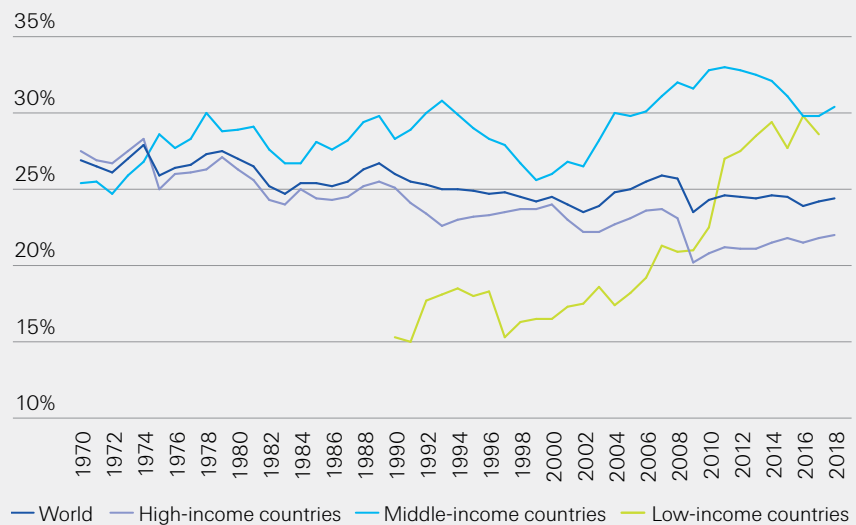
⁹ C. Calderón, E. Moral-Benito, L. Servén, *Is Infrastructure Capital Productive? A Dynamic Heterogeneous Approach*, World Bank, 2011.

Infrastructure: the power behind sustainable growth

A common yardstick to measure infrastructure investment is gross fixed capital formation.

Absence of a universally-accepted definition of infrastructure has led to scarcity of comparable data on infrastructure investment across countries. To overcome this problem, studies have used multiple measures.¹⁰ A commonly used metric is gross fixed capital formation (GFCF), a measure of net investment in fixed assets (buildings, infrastructure, machinery) in a given year that is reported by most countries. As indication of the degree of spending on infrastructure, Figure 2 shows that GFCF as a percentage of global GDP has largely remained stable since the 1970s, declining only slightly from an average of 26.8% during 1970–1979 to 24.4% during 2011–2018.

Figure 2
Gross fixed capital formation
as % of GDP for different
income groups



Source: The World Bank, Swiss Re Institute

Mid- and low-income countries have increased investment in infrastructure in the last two decades.

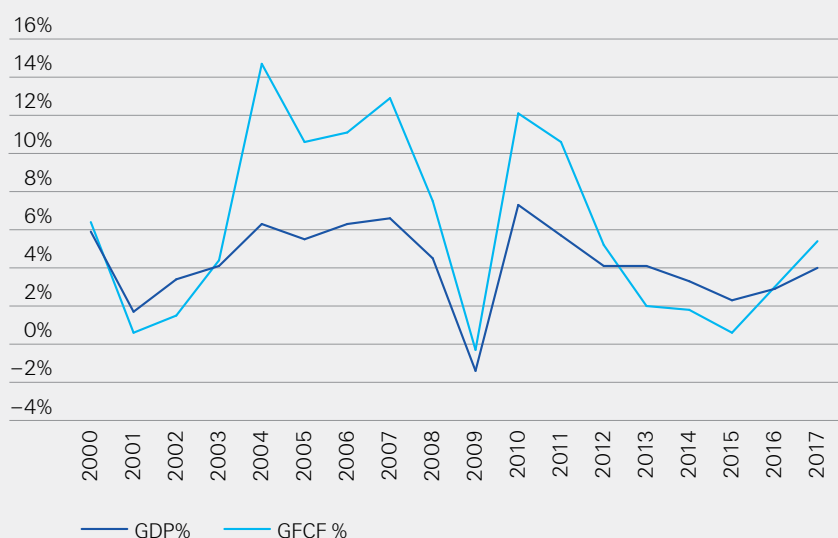
The figure also infers that investments in infrastructure by high-income markets dropped in the aftermath of the GFC in 2008–09, and never recovered to pre-crisis levels. In comparison, lower income markets have steadily increased their investment in infrastructure since the early 2000s, with a notable uptick at the time of the GFC. A notable outlier at the time of the GFC was China, which launched a CNY 4 trillion (USD 572 billion) stimulus package to fight recession and steer economic growth, most of which was assigned to infrastructure projects. The result was that China was able to maintain a GDP growth rate at above 9% in 2008 and 2009, while other emerging markets experience severe slowdown. In the current pandemic, so far fiscal stimulus in China has been limited and though there will likely be more, it will unlikely to match the size of the GFC package.

A challenge is to overcome the procyclicality of infrastructure spending in emerging markets.

In emerging markets excluding China, spending on infrastructure tends to be procyclical (see Figure 3). Large infrastructure projects rely heavily on government funding, which tends to dry up in times of crisis as sovereign borrowing costs spike, making it more difficult to finance the public budget deficits necessary for infrastructure spend. Political constraints and election cycles also contribute to the pro-cyclicality, as longer-term commitments can end up benefiting future administrations: it is easier to cut on spending for the future than for current needs. This pro-cyclicality of investment is a major weakness and economies able to circumvent these have a comparative advantage.

¹⁰ For a discussion on challenges around relevant data for measuring infrastructure see: *Meeting Asia's Infrastructure Needs*, Asian Development Bank (ADB), 2017.

Figure 3
EM7 excluding China, GDP and
gross fixed capital formation
growth (in %), 2000–2017



Source: IMF, Oxford Economics, Swiss Re Institute

Governments face immediate spending priorities, but they should retain a long-term view of spending on infrastructure development.

Prior to the COVID-19 outbreak, many emerging markets had already put multi-year infrastructure projects into motion, and we do not expect the associated investments to drop off to the same extent as seen in previous crisis periods. For instance, last year China's government doubled the value of infrastructure project approvals to counter economic slowdown resulting from the US-China trade wars.¹¹ Further, the COVID-19 pandemic has also demonstrated the urgent need for more investment in health infrastructure in many emerging markets, and we anticipate more spending in this area. Spending on infrastructure to secure supply chains will likely also be a focus. More broadly, a countercyclical approach to investment can foster sustainable growth. We encourage emerging market governments to maintain a longer-term view on infrastructure development, enlisting the support of all stakeholders, including private sector resources.

¹¹ A. Lee, "China doubles value of infrastructure project approvals to stave off economic slowdown amid trade war", *South China Morning Post*, 21 October 2019.
See chapter *Investment spend and infrastructure gap* for more examples of large-scale infrastructure investment programmes in emerging markets announced before the onset of the COVID-19 pandemic.

The growth drivers of tomorrow's infrastructure

The main drivers of infrastructure investment in emerging markets in the coming years will include: ongoing urbanisation; the digitalisation of (smart) cities and infrastructure; an increasing focus on resilient infrastructure to withstand severe weather-related shock events and to mitigate the impact of climate change; and the move to renewable energy. The COVID-19 pandemic has exposed the large gaps in health infrastructure in many countries.

Urbanisation, climate change and technology will drive and shape infrastructure investment.

By 2050, around 69% of people in emerging markets will be living in towns and cities.

Urban populations in India and China will grow fastest.

New directions for infrastructure development

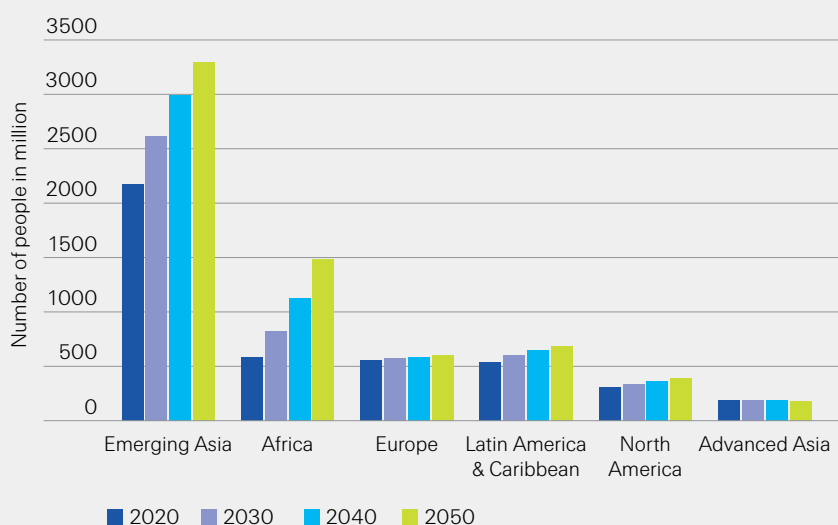
The hallmarks of economic growth include rising income levels, population expansion and increasing urbanisation, supported and mutually reinforced by infrastructure development. Beyond the sharp shock inflicted by this year's COVID-19 pandemic, the emerging economies, particularly China and emerging Asia, will remain the engine of global growth over the longer term. We believe that the realities of today, including the increasing all-pervasiveness of digital technology, awareness of climate change and desire for resilience, will both drive more demand for, and shape the direction of, infrastructure development in the emerging markets over the next 20 years.

Urbanisation

Urbanisation transforms the structure of economies and society.¹² Industrialisation creates new production potential, and the desire for a better lifestyle attracts rural populations to urban areas. Between 2019 and 2050, the global urban population is forecast to increase by around 2.4 billion. Of that rise, 1.6 billion will be in the emerging markets.¹³ By 2050, around 69% of the people in emerging markets will be living in urban areas up from 55% in 2019. In absolute numbers, this will amount to 4.6 billion people, up from 2.9 billion in 2019.

There is wide disparity in the urbanisation rates across the emerging markets, from 41% in Sub-Saharan Africa (SSA) and 48% in emerging Asia, to 81% in Latin America and the Caribbean (as of 2018). Asia (excl. Japan) and SSA are expected to see strong urban population growth over the next three decades. In particular, India and China will add 405 million and 235 million, respectively, to global urban population between 2019 and 2050 (see Figure 4).

Figure 4
Urban population growth forecasts (in millions people)



Source: United Nations Population Division

¹² *Urbanization and Growth*, World Bank, 2009.

¹³ *World Urbanization Prospects: 2018 revision*, UN Department of Economic and Social Affairs, 2018.

Expanding cities generate demand for infrastructure.

As urban populations grow, so do their infrastructure needs. These include big-ticket facilities – such as airports, high-speed rail, mass transit system, etc. Expanding cities also need investment in utilities such as electricity, gas and fresh water distribution, sanitation and waste management.

Development of smart cities can help to solve urban problems.

Digitisation, and smart everything

While urbanisation is a key driver of economic growth and infrastructure investment, it also brings challenges. The surge in urban populations is leading to severe stress on existing infrastructure, and the problem will only get worse as the number of mega cities (population >10 million), especially in emerging markets, increases.¹⁴ Many countries are developing “smart cities” which combine data and technology to create digital tools that offer more efficient solutions to urban problems. Technology can be deployed to monitor and manage city infrastructure like public transport, utilities, power consumption, healthcare provisions and waste disposals. A recent study by McKinsey estimates that a dozen of current smart city applications can improve quality of life, for instance by reducing commuting times by 15–20%.¹⁵

Many emerging Asia nations have plans for smart city development.

China is a leader in smart city technologies. For example, Shanghai has one of the most highly-developed transport control systems in the world, and Beijing is largely cashless. The value of China’s smart city project is projected to reach USD 350 billion by 2025, around 16% of the global market.¹⁶ Other countries in emerging Asia with smart city strategies include India, Indonesia, Malaysia and Thailand.¹⁷

Technology is also being embedded within physical infrastructure.

A parallel trend, in cities and nationwide, is the emergence of broader “smart infrastructure”, where physical infrastructure is embedded with tools such as sensors, Internet of Things and networks.¹⁸ Smart infrastructure allows the collection of digital data for better decision making (eg city disaster risk management) and can enhance infrastructure efficacy. For example, Da Nang in Vietnam is exposed to typhoons and flooding. There the Climate Change Coordination Office (CCCO) has developed an early-warning system to project water levels and identify areas that could be affected.¹⁹ Digital technology is also being used in power grid management (“smart grid”). China has made considerable progress in deploying smart meters and other digital systems (see *“New Infrastructure”: extending the growth frontiers of China’s digital economy*), and India and countries in southeast Asia have plans to accelerate adoption speed by 2025.²⁰

¹⁴ According to the UN, there will be 43 mega cities in the world by 2030, up from 33 in 2018. Out of these, 80% will be in emerging markets, with emerging Asia accounting for 60%. China and India are expected to have 14 mega cities between them by the year 2025. See: *World Urbanization Prospects: 2018 revision*, UN Department of Economic and Social Affairs, 2018.

¹⁵ *Smart cities: Digital solutions for a more valuable future*, McKinsey Global Institute, 2018

¹⁶ *Smart cities*, UBS, 2019

¹⁷ *Trends for smart city strategies in Emerging Asia*, OECD, 2019

¹⁸ K. Bowers, V. Buscher, R. Dentton et. al. *Smart Infrastructure: Getting more from strategic assets*, 20 March 2019.

¹⁹ *Smart cities in Southeast Asia*, McKinsey Global Institute, 2018.

²⁰ *Tracking Energy Integration: More efforts needed*, International Energy Agency, May 2019.

China will invest in “new infrastructure” as part of fiscal stimulus to sustain economic growth.

Seven specific areas are defined as “new infrastructure”.

In absolute terms, there will be a near-fivefold increase in investment in new infrastructure by 2030

“New infrastructure”: extending the growth frontiers of China's digital economy

Of late, China has emphasised the important role “new infrastructure” can play in sustainable economic growth. A near-fivefold increase in investment in absolute terms in new infrastructure by 2030 will accelerate digital transformation and upgrade urbanisation (more smart cities), ultimately benefitting China's long-term growth potential.²¹ The digital economy as a whole will account for an estimated 50% of gross domestic product by 2030, up from 35% today.²² The expansion will present insurers with new risk pools and avenues for investment in infrastructure.

According to the official definition, “new infrastructure” includes 5G base stations, industrial Internet of Things, artificial intelligence (AI), data centres, Ultra High Voltage (UHV), intercity high-speed railways (HSR) and rail transit, and electric vehicle (EV) charging stations.²³ Some areas like AI and data centres are the very first stages of development and will further promote hi-tech development. Others will be investment in emerging sectors in which China already has a leading position, such as 5G and EV.

Current investment value in new infrastructure accounts for just a small proportion in total infrastructure investment and spending in traditional infrastructure will remain the main destination for investment funds. Using the share of new infrastructure in the Public-Private-Partnership pool as a reference for the proportion of new in total infrastructure²⁴ based on announced project plans from official sources²⁵, we estimate new infrastructure investment of CNY 2.6 trillion (USD 370 billion), or 2.4% of GDP in 2020 (see Table 1 below).²⁶ External estimates see a cumulative increase in investment in new infrastructure of USD 1800 billion by 2030.²⁷

Table 1
Estimation of broad-defined new infrastructure investment

New Infrastructure areas (broadly defined)	Estimated value (CNY bn) in 2020	As % of GDP 2020	Insurance lines to benefit
5G, IoT, AI, Big data, Cloud computing	435	0.41%	Engineering, Motor, Property, Liability, Cyber
Digital transformation of traditional infra	815	0.78%	Engineering, Liability, Credit& Surety
Intercity HSR & Rail transit	800	0.76%	Engineering, Liability, Property
EV charging stations	10	0.01%	Motor, Liability, Property
Ultra-high voltage	500	0.48%	Engineering, Liability
Total	2625	2.40%	

Source: Wind, China State Grid, China Academy of Information and Communication, Swiss Re Institute

²¹ Most recently, new infra was referenced at various Politburo meetings.

²² China Academy of Information and Communications Technology (CAICT), see <http://tradeinservices.mofcom.gov.cn/article/yanjiu/hangyezk/201906/85232.html>

²³ “New infrastructure projects embrace huge development potential”, *People's Daily*, 11 March 2020.

²⁴ New infrastructure investment is derived by multiplying the proportion of new infra among PPP projects by the total amount of estimated investment in infrastructure.

²⁵ *What's new about new infrastructure*, China Central Commission for Discipline Inspection, 2020

²⁶ Data from Wind, assuming China's nominal GDP will grow at 3% in 2020.

²⁷ Time frame is 2020–2030: *New Infrastructure Opportunities Handbook*, Morgan Stanley, 2020.

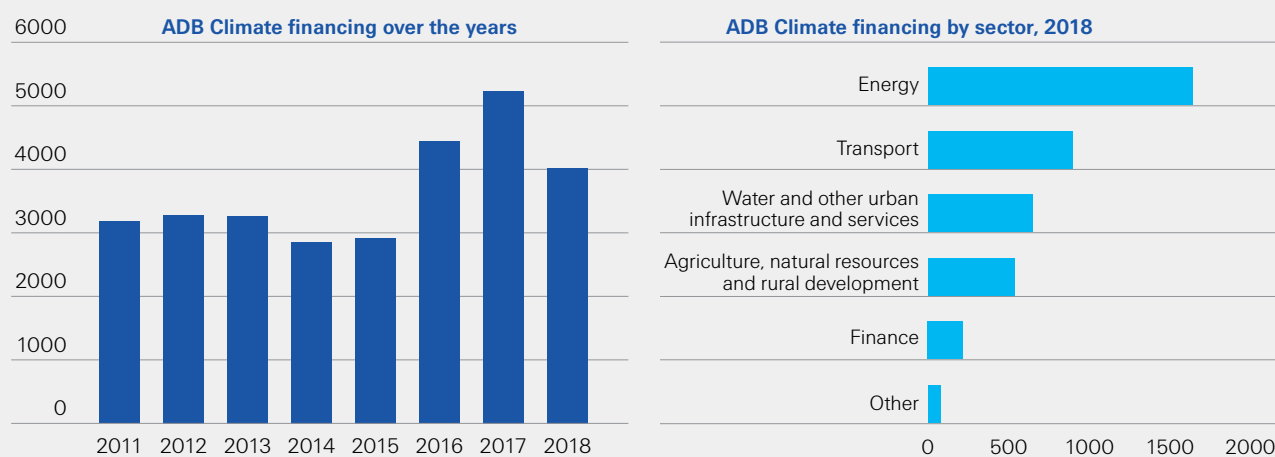
Climate change risks call for building of weather-resilient infrastructure.

Resilient/sustainable infrastructure

Another factor that will shape infrastructure in emerging markets is more focus on sustainable or resilient infrastructure.²⁸ The World Bank notes that “*disruption to infrastructure costs households and firms in low- and middle-income countries at least USD 390 billion a year, and the indirect effects place a further toll on households, businesses, and communities*’.²⁹ The Asian Development Bank (ADB), meanwhile, says four out of five people affected by natural hazards live in Asia, and that region’s developing countries are most vulnerable.³⁰ As a result, it emphasises the need to adapt to climate change and that growth should be environmentally sustainable. The ADB promotes infrastructure that is resilient to weather disasters, and has committed USD 80 billion for “climate finance” between 2019–2030.³¹

Figure 5

ADB climate financing 2011–2018 (LHS), and ADB climate financing by sector in 2018 (RHS), in USD millions



Source: Asian Development Bank

Sustainable infrastructure will increase the investment requirement...

Building resilient and upgrading existing facilities will add to the overall cost of infrastructure development. According to the UN, “*an estimated USD 5–7 trillion a year are needed to realize the 2030 Agenda for sustainable development worldwide*.”³² (See also *UN Sustainable Development Goal: number 9*). Meanwhile, McKinsey notes that an additional amount of USD 1 trillion in infrastructure is required (in addition to the investment required to keep pace with projected GDP growth) to meet UN’s Sustainable Development Goals.³³ In Asia, the ADB puts the cost of climate proofing at around USD 41 billion annually during 2016–2030, while climate mitigation would cost around USD 200 billion annually, in addition to the baseline infrastructure investment needs.³⁴

²⁸ A resilient infrastructure can be defined as any infrastructure that can withstand shocks to provide continued and reliable service. Physical infrastructure like roads, bridges, power lines, and telephone towers are considered resilient if they can withstand shocks such as natural catastrophes.

²⁹ *Lifeline: the resilient infrastructure opportunity*, World Bank, 2019

³⁰ *Asian Development Outlook 2019: Strengthening Disaster Resilience*, Asian Development Bank, 2019.

³¹ Climate finance includes the financing of efforts to mitigate (such as reduce carbon emission) as well as adapt to climate change (such as building climate resilient infrastructure). For ADB’s commitment on climate finance see: <https://data.adb.org/dashboard/climate-change-financing-adb>

³² See *UN Alliance for SDG Finance*, United Nations Global Compact.

³³ *Bridging Infrastructure Gap: Has the world made progress*, McKinsey Global Institute, 2017.

³⁴ *Meeting Asia’s infrastructure needs*, ADB, 2017.

The growth drivers of tomorrow's infrastructure

...but the longer-term benefits will outstrip the associated building costs.

The benefits of the resilient infrastructure will outweigh the costs. Investment in sustainable infrastructure will help increase the productive capacity and lift economic growth rates. At the same time, they strengthen a country's resilience to withstand and even combat potential environmental risks of tomorrow.³⁵ According to the World Bank, the net benefit of building more resilient infrastructure in low- and middle-income countries would be USD 4.2 trillion, with USD 4 billion in benefit for each USD 1 billion invested.³⁶ This is a huge multiplier and underlines the economic potential of resilient infrastructure investments.

UN SDG number 9 promotes sustainable and resilient infrastructure.

UN Sustainable Development Goals: number 9

The United Nations' Sustainable Development Goals (SDGs) are a blueprint of actions to achieve a degree of global prosperity by the year 2030.³⁷ Seventeen integrated goals address social, economic and environmental sustainability. With respect to resilient and sustainable infrastructure, Goal 9 is "Industry, Innovation and Infrastructure", a call to action to build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation. The broader theme of infrastructure is part of other goals also, such as "Clean Water and Sanitation" (Goal 6), "Affordable and Clean Energy" (7), "Sustainable Cities and Communities" (11) and Climate Action (13).

There is a notable shift towards renewable energy.

Renewable energy

The energy sector represents a key pillar of national infrastructure, but is also a main source of emissions contributing to global warming, through burning of coal, oil and natural gas. Given increased focus on combating global warming, a notable trend in investment is the shift towards renewable energy. Globally, investment in renewable energy increased from USD 177.4 billion in 2008 to USD 326.3 billion in 2017 (CAGR of 7%), before easing to USD 288.9 billion in 2018.

Emerging markets accounted for 55% of global renewable energy investments in 2018.

In emerging markets, investment in renewables rose from USD 56.5 billion in 2008 to USD 158.2 billion in 2018, up 12% annually compared with 3.2% in advanced markets (see Figure 7). The share of emerging markets investment increased from 32% of the global total in 2008 to near 55% in 2018.³⁸ Asia has become the largest investor, accounting for 52% of global spend in 2018, mostly China (32% of global and 60% of all-Asia spend), where the government has mandated lower dependency on traditional energy sources.³⁹

³⁵ J.J. Haegeli, "We need to act now for sustainable infrastructure investments", *World Bank Blogs*, 10 December 2019.

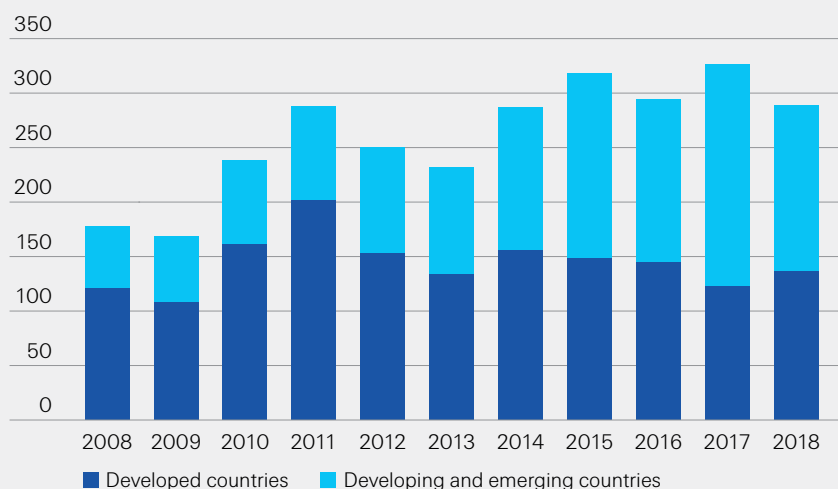
³⁶ *Lifeline: the resilient infrastructure opportunity*, World Bank, 2019.

³⁷ See *Sustainable Development Goals*, United Nations.

³⁸ *World Energy Outlook 2019*, International Energy Agency, 2020.

³⁹ The 13th Five Year Plan set official targets for investment in renewable energy during 2016–2020.

Figure 6
Global new investment in
renewable energy, 2008–2018,
in USD billions



Note: Figure does not include investment in hydropower projects larger than 50 MW.
Source: *Renewables 2019: Global Status Report*, Renewable Energy Policy Network for the 21st Century, 2019

Governments of several emerging markets support renewable energy.

India is also investing heavily in green energy. Between 2008–2018, India's investment in renewable energy increased by a CAGR of 11.3% to reach USD 15.4 billion at the end of 2018.⁴⁰ The government is promoting renewable energy by providing subsidies to wind farms and solar energy. India is home to some of the largest solar energy parks in Asia. Other Major emerging markets investing in renewable energy include Brazil, Mexico, Chile, Indonesia, Thailand, South Africa, Turkey and Ukraine.

By 2030, wind and solar energy will be cheaper than coal and gas.

Advances in technology, government tax incentives and subsidies, falling prices are making renewable energy more attractive.⁴¹ In addition, multinational organisations are supporting countries in making the shift to green energy.⁴² By 2030, it is forecast that wind and solar energy will be cheaper than coal and gas across most of the world. The latest World Energy Outlook from the International Energy Agency notes that the amount of renewables in final energy consumption will more than double (+128%) by 2040, and that share of renewables in global heat will increase by 60%.⁴³ Other estimates say that wind and solar together will account for almost 50% of the global electricity generation by 2050. The IEA estimates that cumulative investment in renewable energy globally from 2019–2040 will amount to around USD 10 trillion.⁴⁴

Health

The COVID-19 experience will increase investment in health infrastructure.

The outbreak of COVID-19 and the quick spread of the virus across the world have highlighted the insufficiency of health infrastructure, particularly in emerging markets. Health infrastructure includes all tangible and intangible assets that contribute to the maintenance and improvement of the general public's health and overall well-being. Similar to other sectors, health infrastructure can be viewed as public goods which generate positive externalities for society. The management of health infrastructure requires special attention:

⁴⁰ *Renewables 2019: Global Status Report*, Renewable Energy Policy Network for the 21st Century, 2020.

⁴¹ According to a survey by of infrastructure institutional investors in 2019, renewable energy was chosen as the sector of interest by maximum number of people. See: *Infrastructure Institutional Investor Trends: 2019 Survey Results*, Probitas partners, 2019.

⁴² For example, *Global Infrastructure Facility* recently approve USD 1.5 million to support the World Bank's work with the Government of Vietnam on the *Solar Pilot Auction Program*.

⁴³ *World Energy Outlook 2019*, International Energy Agency, November 2019.

⁴⁴ Ibid.

The growth drivers of tomorrow's infrastructure

- Although health infrastructure is national in nature, associated benefits span the globe. Cross-border cooperation is required such that a local outbreak, for instance, does not risk endangering the entire world.
- Successful public and private partnership (PPP) can help to improve the efficient functioning of a health system, particularly in emerging markets lacking financing resources to invest in long-term health infrastructure projects.
- Health infrastructure investment is a continuous process. Medical advances call for quick updates. Furthermore, good maintenance of health infrastructure is needed to deal with both ongoing concerns such as chronic illnesses or aging populations, and emergencies like pandemics and natural disasters.
- The intricacy of modern society and rising need for quality life mean that health infrastructure is only effective if supported by other types of infrastructure. For example, a well-functioning health ecosystem needs access to clean water for hygiene and robust (digital) communications networks to support operations.

In emerging markets, most healthcare spend is privately financed.

In many countries, government plays a large role in the provision of healthcare and associated infrastructure. However, to date many low-income countries have not invested enough, which in turn has resulted in a higher ratio of private spending on healthcare. According to Emergo, the ratio of public versus private health spending globally is around 6:4 but in emerging markets, the dependency on the private sector is much higher. For example, in India 70% of spending comes from the private sector (2016 data).⁴⁵ This has become a critical challenge in the current pandemic as most COVID-19 patients are being treated in public hospitals.

Health infrastructure needs to be integrated into social planning.

Traditionally international aid has also been a major source of health infrastructure financing in lower income countries. However, as countries move up in the income ladder, the aid drops off while public financing continues to lag. In many emerging markets, the provision of hospital beds and critical care facilities has been trending down due to rapidly rising costs.^{46, 47} We expect demand for healthcare services, equipment and related infrastructure will remain high as governments take stock of the lessons learned from the COVID-19 experience, and try improve the resilience of their national healthcare systems. Simply spending more is not necessarily the best option: efforts to ensure accessible and fair services and reducing “waste and leakages” are also important. For each individual country, choosing the right mix of health infrastructure will depend on factors such as demographics, preferred treatment methods (eg, hospital, home-based) and integration of technologies (eg, smart hospitals). In addition, health infrastructure needs to become an integrated part of social planning, and be supported by other types of infrastructure as well as accessible and affordable healthcare systems. Swiss Re Institute estimates that as of 2018, the global health protection gap stood at USD 616 billion (premium equivalent) with more than 67% coming from the emerging markets.⁴⁸ Emerging Asia is the most stressed area in terms of both the size of the gap and resilience. There has been progress in implementation of universal health care schemes, but with the region's rapidly increasing aging population, pressures will likely remain.

⁴⁵ *Worldwide Spending on Healthcare*, Emergo, July 2016.

⁴⁶ OECD data

⁴⁷ J. Phua, et.al, “Critical Care Bed Capacity in Asian Countries and Regions”, *Critical Care Medicine*, 9 January 2020

⁴⁸ The health protection gap is the difference between healthcare needed and healthcare available, in premium terms. For more details, see *sigma* 5/2019 op. cit.

Investment spend and infrastructure gap

We estimate that infrastructure investment in emerging markets will accumulate to USD 43 trillion over the next 20 years, with average annual spend at 3.9% of GDP. The largest investments will be in emerging Asia, with China spending 4.8% of its annual GDP on infrastructure, followed by India (3.3%). Africa will invest 4.3% of GDP, but absolute volumes will be low. A total infrastructure gap of USD 10 trillion across the emerging markets will remain. In relative terms, the gap will be largest in Latin America, followed by Africa.

Infrastructure spend in emerging markets

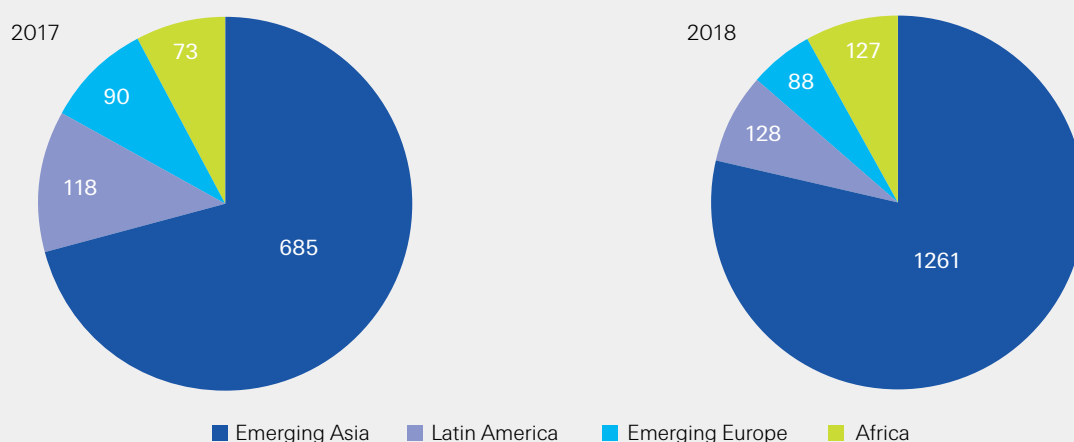
Global infrastructure investment averaged USD 2.1 trillion per year between 2007 and 2018.

Based on a review of different external data and projections, we estimate global infrastructure investment on average increased by a steady 3.2% (USD 2.1 trillion) each year between 2007 and 2018.⁴⁹ Total accumulated infrastructure spend was USD 25.7 trillion by the end of that period. Sector wise, energy attracted most investment (34%) followed by road (30%).⁵⁰ Excepting a marginal gain for energy, the split of investment among different sectors remained largely stable.

Sixty percent of the spend was in the emerging markets.

By region, over half (60%) of the global infrastructure investment in 2007–2018 came from emerging markets.⁵¹ Emerging Asia accounted for on average about 75% (USD 967 billion) of total annual emerging market spend. More than two-third of this came from China. Latin America invested 10% (USD 126 billion) of the emerging market total annually, while emerging Europe and Africa invested USD 95 billion (7.4% of total) and 94 billion (7.3%), per annum, respectively, during the period.

Figure 7
Emerging market infrastructure investment by region, 2007 and 2018, in USD billions



Source: Swiss Re Institute estimates, based on data from the Global Infrastructure Hub and Oxford Economics

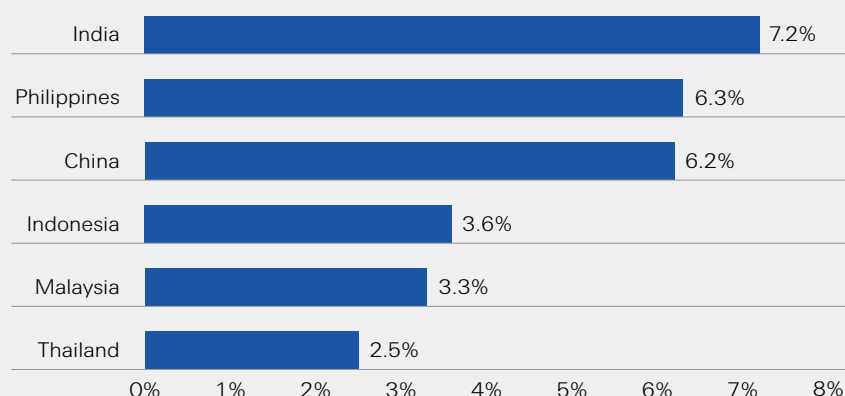
⁴⁹ Infrastructure investment current trends and outlook numbers in this report are estimated using the “infrastructure investment as percent of GDP” data from the *Global Infrastructure Outlook* by the Global Infrastructure Hub (GIH, a G20 initiative) and Oxford Economics, GFCF data are from the World Bank and GDP estimates and forecasts from Swiss Re Institute. All numbers are in 2015 prices and exchange rate. For GIH data please visit: <https://outlook.gihub.org/>

⁵⁰ In this study, we consider economic infrastructure as including energy, transport (rail, road, ports and airports), telecommunication, and water & sanitation. Health infrastructure is not part of the economic infrastructure investment estimates.

⁵¹ Regions are defined as per the definition used by Global Infrastructure Hub. According to this, emerging Asia also includes emerging Middle East and Central Asia.

- Emerging Asia built more infrastructure than any other emerging region between 2007 and 2018.⁵² As a whole, Asia's annual investment in infrastructure increased by more than 65%, from USD 893 billion in 2007 to USD 1.5 trillion in 2018. Emerging Asia accounted for around 80% of that spend, and China for about two thirds of the emerging Asia total. China invested around 7% of its GDP in infrastructure, the highest in the region.⁵³ Rapid economic growth, supportive government policies and the launch of global initiatives like the Belt and Road initiatives (BRI) all contributed.⁵⁴ There was also a strong 7% (CAGR) increase in investment in infrastructure in India from 2007 to 2018 (around 4% of GDP). The Philippines increased investment by more than 6% annually, although in absolute terms the size of investment was small (see Figure 8).

Figure 8
Infrastructure investment CAGR
in key emerging Asian markets,
2007–2018



Source: Swiss Re Institute estimates, based on data from Global Infrastructure Hub and Oxford Economics

- Latin America invested around USD 126 billion per year in infrastructure (around 2.5% of GDP) during 2007–2018, less than 1% in CAGR terms. The three largest economies – Brazil, Mexico and Argentina – together accounted for two-thirds of the investment in the region, although their combined share has been on a decline in recent years. In comparison, the share of Peru has increased considerably. Most investment in Latin America was in roads (31%) followed by energy (30%). Rail received just around 6% of total infrastructure investment, well below the global average. Telecoms received 18%, higher than the global average.
- Emerging Europe invested around USD 95 trillion per year (accounting for 4.5% of global and 7.4% of total emerging markets) in infrastructure during 2007–2018. The overall trend was almost flat during the period. Russia, the biggest market of the region remained weak, which offset growth in Poland, the other key market of the region. Close to a third of the investment was in energy (33%), followed by road (27%). Rail and telecommunications received 15% each.
- Africa accounted for less than 5% of global infrastructure investment in 2007–2018, averaging USD 94 billion annually (up 5% in CAGR terms). Nigeria accounted for most of the spend (16% of total), followed by Ethiopia (11%), South Africa (9.3%) and Egypt (8.6%). More than one third of the investment in Africa was in energy (37%), followed by water (20%), road (19%) and telecoms (16%). Airport, port and rail together accounted for around 7% of the total.

⁵² *Meeting Asia's infrastructure needs*, ADB, 2017.

⁵³ A McKinsey report estimated that during 1992–2013 China spent more on economic infrastructure annually than North America and Western Europe combined. See: *Building Global Infrastructure Gaps*, McKinsey Global Institute, 2016.

⁵⁴ *China's Belt & Road Initiatives, and the impact on commercial insurance*, Swiss Re Institute, 2016.

Outlook: investment and need 2021–2040

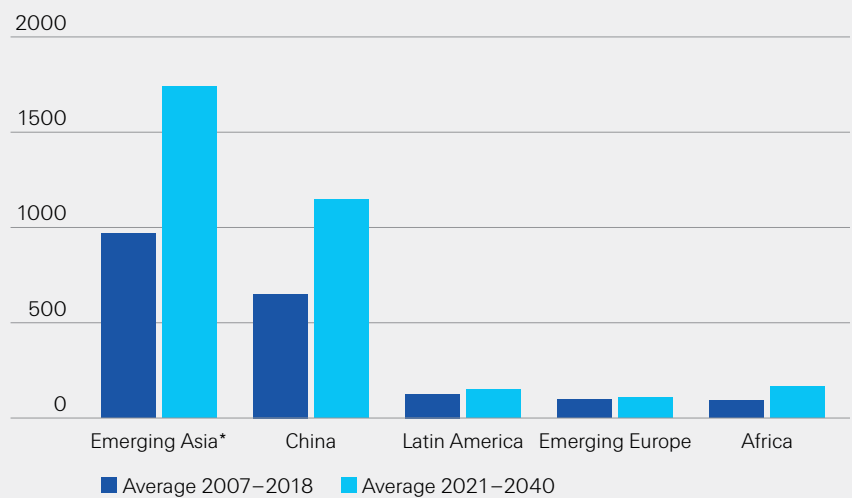
Emerging markets will account for two-thirds of global investment in infrastructure over the next 20 years.

Emerging market spend: USD 2.2 trillion per year

Based on current trends using data from Global Infrastructure Hub, and noting the disruption caused by this year's COVID-19 pandemic (see *COVID-19: infrastructure projects interrupted?*), we forecast that global investment in infrastructure will reach USD 3.3 trillion per year (3.0% of GDP) in 2021 to 2040, or USD 66 trillion in total (USD 8 500 per person globally over next 20 years). Of the global total, two thirds will be in emerging markets: on average USD 2.2 trillion per year (around 3.9% of GDP) accumulating to a total of 43 trillion in total by 2040 (see Figure 9). If the UN SDG for universal access to drinking water, sanitation and electricity by 2030 is met, the annual spend will likely be front loaded to the first 10 years of the 20.

Figure 9

Annual average investment by region, 2007–2018 and 2021–2040, in USD billions



*Emerging Asia includes China.

Source: Swiss Re Institute estimates, based on data from Global Infrastructure Hub and Oxford Economics

Table 2 lists some of the large-scale infrastructure development projects for the coming five years in key emerging markets. These were announced before the COVID-19 pandemic outbreak.

Table 2

Examples of large scale infrastructure programmes in select markets for the next five years

India	National Infrastructure Pipeline: USD 1.5 trillion 5-year plan (2019–2024) in support of PM Modi’s ambition to build a USD 5 trillion economy by 2024.
Russia	USD 417 billion National Plan to make Russia the world’s fifth largest economy by 2024, with USD 96 billion specifically allocated to the modernisation of infrastructure
Indonesia	USD 400 billion 5-year plan (2019–2024) for infrastructure spend, including the building of 25 new airports and the groundwork for a new capital city
Philippines	USD 180 billion “Build, Build, Build” programme featuring 100 flagship projects over six years (2018–2024), part of President Duterte’s “Golden Age of Infrastructure” vision.

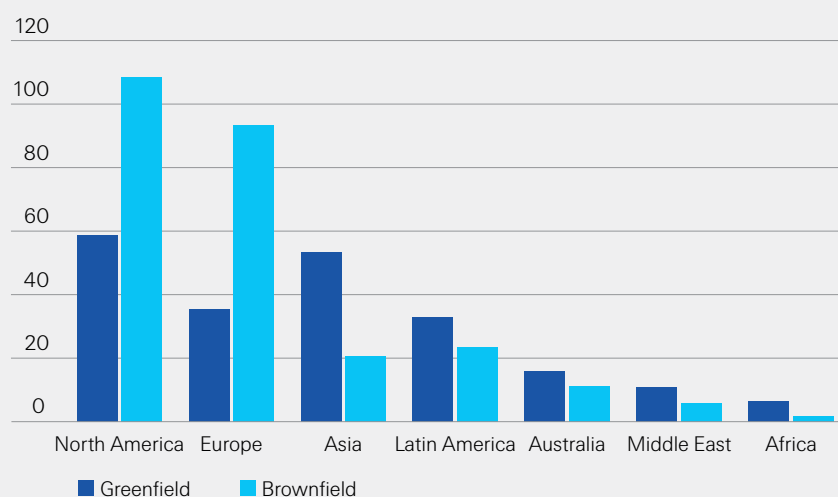
Source: “India: becoming a superpower through infrastructure spending”, *webuildvalue.com*, 26 February 2020; “Factbox: Russia’ new PM pledges to accelerate work on national projects”, *Reuters*, 16 January 2020; *Indonesia’s bold infrastructure plan*, KPMG, October 2019 ; “Philippines to revise ‘Build, Build, Build’ plan to make it more achievable”, *Reuters*, 25 October 2019.

Most infrastructure investment in emerging markets is in greenfield projects.

A striking feature of infrastructure investment in emerging markets is that most spend goes to greenfield projects, which involves the building of new power plants, roads and airports on mostly hitherto unused land (see Figure 10). In contrast, investments in advanced markets are largely brownfield (eg, refurbishing existing assets such as the widening of roads, strengthening bridges, or adding a new terminal to an airport).⁵⁵

Figure 10

Greenfield and brownfield infrastructure transaction value (private) by region in 2019, in USD billions



Source: Inframation news

⁵⁵ *Infrastructure Investment Policy Blueprint*, World Economic Forum, 2014.

Emerging Asia will invest USD 1.7 trillion per year in infrastructure over the next 20 years.

Africa will register a moderate growth but in Latin America it will be below the global average,

Energy and roads will continue to be the key infrastructure growth sectors.

Infrastructure build to continue, in emerging Asia in particular

Once again, emerging Asia will be where most new infrastructure is built. We forecast that total investment in infrastructure in emerging Asia will average USD 1.7 trillion annually over the next 20 years. China will remain the largest contributor, accounting for 35% of global, 58% of all Asia, and 54% of all emerging market investment in infrastructure. We forecast that China will invest USD 1.2 trillion (4.8% of GDP) each year to 2040. The total spend may show as front-loaded as in 2019, the government doubled the value of infrastructure project approvals to counter economic slowdown resulting from the US-China trade wars.⁵⁶

India is the second largest emerging market in terms of infrastructure investment, and is projected to contribute USD 170 billion (3.3% of GDP) each year (5% of global investment and 8% of total emerging market spend) to 2040. Meanwhile, we estimate that Africa will contribute USD 165 billion (4.3% of GDP) per year, growing by a CAGR of 1.8% during the period, mainly driven by Nigeria, Egypt and Ethiopia. Latin America will invest around USD 150 billion (2.3% of GDP) in infrastructure to 2040. Growth is expected to be higher than seen in the past decade, but will remain below the global average as bigger economies continue to struggle. Also, Basel III has restricted the flow of funds from banks, which has been the largest source of private financing in the region.⁵⁷ Emerging Europe will add USD 109 billion per year over next 20 years, with investment growing at a rate slightly lower than global average.

Sector-wise, energy (34% of total investment) and roads (33%) will remain the key infrastructure growth sectors in emerging markets over the next 20 years. Around one third of the energy investment will be in the renewable sources. This will be mainly driven by emerging Asia, in particular China and India, which together will account for more than half of renewable energy investments in emerging markets. In terms of technology, the investments will be mainly in wind energy, closely followed by solar PV. There will be large investment in road and rails in key markets like China, India and Indonesia. In China, rail investment tops the list of key infrastructure projects for 2020 as the country focuses on improving inter-city connectivity through high-speed rail.⁵⁸ In India, government projects like Bharatmala⁵⁹ will increase investment in road and highways. In Africa energy will continue to be the leading sector, followed by water, road and telecommunications.⁶⁰ In Latin America and emerging Europe, most investment will be in roads, followed by energy.

⁵⁶ A. Lee, op. cit.

⁵⁷ *Overview of infrastructure investment in Latin America*, Marsh & McLennan, 2018.

⁵⁸ C. Zhou, "China's top 10 infrastructure projects for 2020 and beyond will help boost its slowing economy", *South China Morning Post*, 28 January 2020.

⁵⁹ See *Bharatmala Pariyojana*, national portal of India.

⁶⁰ *Renewable energy: new power for Africa's economy and insurance markets*, Swiss Re Institute, 2020.

COVID-19 will encourage increased investment in information and communication infrastructure.

COVID-19: infrastructure projects interrupted?

The impact of the COVID-19 induced lockdown will vary across different sectors. For example, transport infrastructure such as airport, ports and toll roads will be adversely affected due to decline in demand.⁶¹ On the other hand, investment in information and communication infrastructure will increase as countries upgrade their communication infrastructure and more firms encourage remote working.⁶² Supply-side factors such as shortage of labour⁶³ and materials (due to supply chain disruptions) will also affect infrastructure projects in the short term.

Table 3
Stylised impacts of pandemics on infrastructure projects

	Short term	Medium to long term
Negative	<ul style="list-style-type: none"> Travel, tourism & hospitality, retail trade severely affected thus reducing demand for related infrastructure Supply chains disruptions could result in major restructuring; near term impact over-shadowed by reduced demand Lockdowns and tight containment measures put a stop on ongoing infrastructure construction Delays in major international events (eg. Olympic Games) could reduce demand for infrastructure 	<ul style="list-style-type: none"> Reduction in infrastructure spending by governments with fiscal constraints Lower private participation in infrastructure investment due to heightened uncertainty The permanent adoption of remote working could reduce non-essential business travel Reverse migration of people from urban to rural areas could slow the speed of urbanisation Re-prioritisation of investment eg. more spending on health infrastructure could take a toll on other infrastructure segments
Positive	<ul style="list-style-type: none"> Increasing demand for information and communication infrastructure Surge in demand for health infrastructure 	<ul style="list-style-type: none"> Governments encouraging infrastructure construction to support growth; provided they have fiscal flexibility Increased investment in health infrastructure Further upgrade in information and communication infrastructure Supply chain restructuring could bring in additional infrastructure requirement particularly for those emerging markets benefitting from relocation

Source: Swiss Re Institute

Countries with lower debt and more fiscal leeway could spend more on infrastructure to support the economy...

The impact will be mixed across different emerging markets. Governments carrying high debt burdens may have to focus on preventing total collapse of key economic sectors like banking, retail and manufacturing, with little left over for infrastructure. Private investment in infrastructure may also slow due to lingering uncertainties about the duration of the pandemic and the economic outlook.⁶⁴ The impact on infrastructure companies is already visible. For example, the EDHEC*infra* equity index, which captures the investable infrastructure companies, declined by 6.4% in the first quarter of 2020.⁶⁵ The pandemic also raises concerns about infrastructure risk management and financial planning in terms of how to insulate cash flow projections from major shocks.

⁶¹ According to S&P, in China alone, the toll road as a whole may lose around USD 38 billion or more during 2020. Further, global air passengers will decline by around 20–30% in 2020 from 2019.

⁶² *Digital infrastructure, public-health crisis COVID-19*, World Economic Forum, April 2020.

⁶³ Work has halted along the China-Pakistan Economic Corridor and other Belt-and-Road Initiative (BRI) projects as Chinese workers are unable to travel to the project sites. See "D.R Chaudhury, 'COVID-19 pandemic puts brakes on Chinese projects', *The Economic Times*, 6 April 2020.

⁶⁴ According to a survey, around 37% said projects will be postponed and another 47% said projects will be delayed. Out of the first group around 61% said at least 1–2 projects will be cancelled. Survey from Roads & Bridges, 16 April 2020.

⁶⁵ *2020Q1 Index Release: COVID-19 lockdown highlights the importance of understanding risk in unlisted infrastructure investments*, EDHEC*infra*, 15 April 2020.

...but some short-term setbacks are to be expected.

It is too early to assess whether the pandemic will be a game changer for future infrastructure plans. Some short-term setbacks are to be expected given a slump in public revenues. Additionally, international and national travel restrictions have emptied airports, and national lockdowns led to a fall in the use of toll roads, putting severe financial stress on operators. Some planned projects have also been affected. For instance, in Vietnam, foreign companies pulled staff off energy projects, leaving construction on hold. And in India, public road construction has been suspended.⁶⁶

Current infrastructure investment falls short of spending needed.

Emerging market infrastructure gap: USD 520 billion per year

In spite of our forecasts for investment over the next 20 years, according to estimates based on data from Global Infrastructure Hub, infrastructure growth in emerging markets, based on current trends falls short of full needs. In other words, there is a substantial infrastructure gap.⁶⁷ Table 4 provides estimates from different studies as to the size of the global infrastructure needed. A review of academic study by OECD notes that investment need as a percent of GDP ranges from 3.3% to 7.9%.⁶⁸

Table 4
Estimates of global infrastructure needs

Study	Period	Cumulative (USD trillion)	Annual average (USD trillion)	% of GDP
Ernst and Young (2013)	2013–2030	57	3.2	3.5
McKinsey (2017)	2017–2035	69	3.6	4.1
Global Infrastructure Hub (2017)	2016–2040	97	3.9	3.7

Source: *Infrastructure 2013 – Global Priorities, Global Insights*. Ernst & Young, 2013, *Bridging infrastructure gaps: has the world made progress?*, McKinsey Global Institute, 2017; *Global Infrastructure Outlook*, Global Infrastructure Hub, 2017.

We estimate an annual infrastructure gap of USD 520 billion per year.

We estimate that the global infrastructure need during 2021–2040 will total USD 82 trillion (USD 4 trillion per year, or 3.6% of GDP), considerably higher than the USD 66 trillion spend we forecast. Emerging markets account for 66% of this need during the period (USD 2.7 trillion per year, or 4.9% of GDP). This results in an overall global infrastructure gap of USD 15 trillion during the period at the global level (USD 760 billion per year or 0.7% of global GDP). Emerging markets account for 69% of the gap, USD 10 trillion (USD 520 billion per year, or 1.0% of GDP). This estimate assumes the UN's SDG for universal access to drinking water, sanitation and electricity by 2030 is met.⁶⁹

⁶⁶ "COVID-19: Chardham all-weather road project to be delayed due to lockdown", *Economic Times*, 16 April 2020.

⁶⁷ Infrastructure investment gap is measured as the difference between investment needed and investment projections based on current trends.

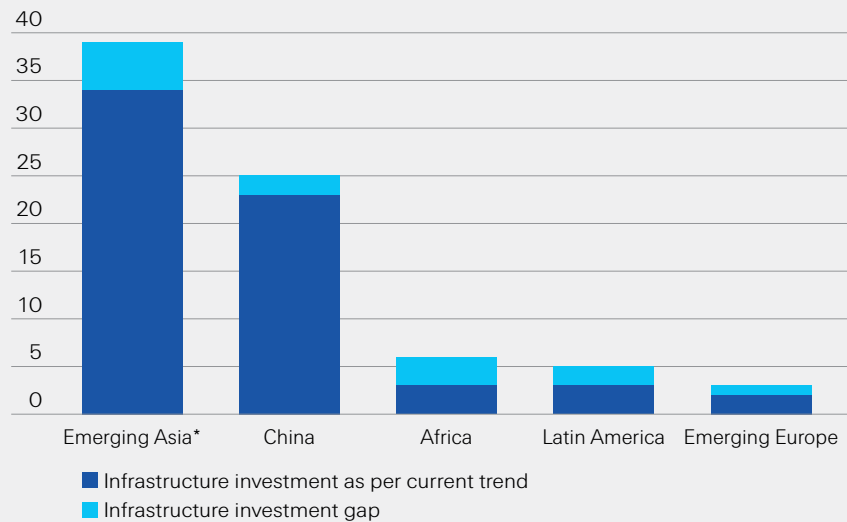
⁶⁸ *Infrastructure 2013 – Global Priorities, Global Insights*. Ernst & Young, 2013.

⁶⁹ However, meeting the targets is not mandatory but a voluntary commitment by country signatories and if they are not met, the emerging market infrastructure gap would be, at USD 7.9 trillion or USD 393 billion per year.

Investment spend and infrastructure gap

Figure 11

Infrastructure investment gap
(cumulative amount 2021–2040)
by emerging region, in USD trillions



*Emerging Asia includes China

Source: Swiss Re Institute estimates, based on data from Global Infrastructure Hub and Oxford Economics

In relative terms, the gap is highest in Latin America.

The infrastructure gap is highest in Africa (where infrastructure investment needs are 76% higher than forecast) and Latin America (75%) followed by emerging Europe (48%). The gap is relatively small in emerging Asia (13%). By sector, for the emerging markets overall, the gap is highest for airports (47%) and roads (24%). However, this differs across regions. In emerging Asia, the gap is biggest for airports (45%), and is near zero (0.3%) for rail and is also low for roads (5%). This is in large part due to China's heavy investments in road and rail. In emerging Asia excluding China, there are high gaps for water (26%), ports (25%) and roads (18%). In Africa, the gap is highest in roads (more than 100%). In Latin America, investment need in roads is around one and half times higher than the investment forecast.

Financing infrastructure and closing the gap

Infrastructure projects in emerging markets will present an annual USD 920 billion opportunity for long-term investors over the next 20 years. In the current low interest rate environment, the projects can deliver attractive yields to help insurers match their long-term liabilities, while also offering region and asset class diversification, and opportunity for environmentally and socially responsible investing. However, to attract private sector finance, policy makers will first need to establish a market-friendly framework in which infrastructure investments move closer to becoming a standardised asset class.

Mutual interests

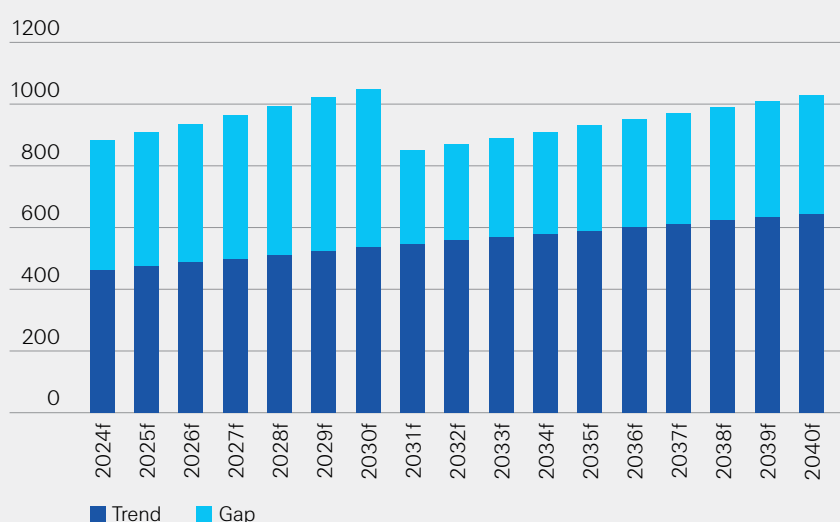
Emerging markets can leverage institutional investments in infrastructure spending.

Assuming the private sector were to step in and take on a larger share of the existing investment gap, we estimate a close-to USD 1 trillion annual investment opportunity.

Infrastructure projects require large volumes of long-term financing. The private and public sectors have a vested interest in resilient infrastructure that promotes sustainable economic growth. Traditionally, emerging markets have relied mostly on public funding and also commercial and development bank lending for their infrastructure needs. With the development of capital markets in emerging economies, we believe institutional investors, including insurers, can make a significant contribution to the financing in the future.

Typically, around 75% of infrastructure investments in emerging markets are funded by the public sector.⁷⁰ However, national budgets remain under pressure, and governments tend to prioritise urgent short-term needs, especially in times of crisis like the COVID-19 pandemic. Assuming the private sector were to step in and cover 75% of the existing infrastructure gap identified in this report, and also 25% of the total identified spend, we estimate a total infrastructure investment opportunity for the private sector in emerging markets of USD 18.4 trillion in 2021–2040, or USD 920.0 billion per year. This would change the overall sourcing mix to 65%/35% split, with the public sector still making up for the greater share. Once again, our estimation assumes that the UN's SDG for 2030 is met, which accounts for the front-loading of the investment estimates showing in Figure 12.⁷¹ Given the voluntary nature of the goals, a conservative scenario where the goals are not met, but investment flows simply support the expected growth trends, would still constitute a USD 14.0 trillion investment opportunity for the private sector.

Figure 12
Private-sector infrastructure investment opportunity in emerging markets, 2021–2040, in USD billions



Source: Swiss Re Institute

⁷⁰ See *Institutional Investment in Infrastructure in Emerging Markets and Developing Economies*, 2014, World Bank, 2014; and also *Infrastructure Investment Demands in Emerging Markets and Developing Economies*, World Bank, 2015.

⁷¹ Given the voluntary nature of the goals, a conservative scenario where the goals are not met, but investment flows simply support the expected growth trends, would still constitute a USD 14.0 trillion investment opportunity for the private sector.

Financing infrastructure and closing the gap

Private investors tend to prefer brown field infrastructure projects as they are considered to be less risky.

Brazil, China, India, Mexico and Turkey have higher levels of PPP in the infrastructure sector.

The higher cost of PPPs can be justified with the higher effectiveness of the private sector.

A proven track record of established and stable institutions is linked to greater progress on PPP projects.

The private sector can also offer finance-embedded risk transfer.

FERTs grant greater risk dispersion to geographies, sectors and size of projects.

The distinction between green- and brown- field infrastructure can have important implications in terms of projects finance. Private capital seems to prefer brown-field projects as investors can see the returns from the existing infrastructure, making for a less risky undertaking.^{72, 73} To incentivise the private sector to go the extra mile and get involved in greenfield infrastructure, governments in emerging markets are promoting the use of public-private partnerships (PPPs).

Public-private partnerships

PPPs are cooperative efforts between a government agency and a private sector company (or companies), usually of long-term nature, with the purpose of gaining financial leverage and maximizing the private sector's innovation capabilities. PPPs rose to prominence in the 1990s, initially in advanced markets and more recently in emerging markets. Globally, the five countries with the highest levels of private sector investment in infrastructure projects in 2019 were China (USD 26.3 billion), Brazil (USD 18.6 billion), India (USD 7.6 billion), Vietnam (USD 4.5 billion) and Russia (4.1 billion).⁷⁴

There is a trade-off to PPP: higher costs to taxpayers in exchange for the benefits of private-sector participation like innovation and efficiency gains. In theory, the difference is the cost of public sector borrowing in comparison with the cost of private capital. Studies find that financing involving private capital, although pricier, is cost effective relative to public sector-only finance models, which are characterised by delays, budget overruns and other inefficiencies. Further, by using PPPs and other alternative methods of funding that include the private sector, governments can outsource day-to-day operations and reallocate resources to planning and regulation.

However, there are still challenges for PPPs in emerging markets, including the absence of appropriate regulatory frameworks, under-developed capital markets and sometimes lack of competitive industry. Countries with proven a track record of established and stable institutions and regulatory systems have been able to achieve more progress on PPP projects.⁷⁵ To enhance the attractiveness of PPP, the involvement of multi-lateral development banks is often necessary. It provides investors with a sense of credibility as they seek for as many risk reduction elements as possible. A private sector solution that can further contribute to that are finance-embedded risk transfer products.

Finance embedded risk transfer

Large-scale infrastructure projects carry a risk of financial distress to both borrower and the lender. With finance embedded risk transfer (FERT), the cash flows of the loans can be insured in case of a disaster event. FERT works just like a standard parametric insurance product where pay-outs to cover the scheduled payments are triggered following a pre-defined event such as a hurricane, drought or pandemic. These instruments have a great degree of flexibility as they can be modified in several dimensions such as: 1) the type of event; 2) the duration of the coverage; 3) whether the coverage applies to interest payments only or the entire loan; and/or 4) the proportional size of the coverage.

The benefits from inserting insurance coverage to these infrastructure-related loans are manifold. Borrowers can prevent financial distress and free up liquidity for post-disaster activities, lenders have an increased certainty of their cash flow, and in cases where projects are being funded with public finances, taxpayers get assurance that their taxes meet their intended purposes. More broadly speaking, FERT can help improve risk dispersion by limiting the exposure to a specific

⁷² *Infrastructure Investment Policy Blueprint*, World Economic Forum, February 2014.

⁷³ T. Duvall, A. Green, M. Kerlin, *New horizons for infrastructure investing*, McKinsey, 2015.

⁷⁴ *Private Participation in Infrastructure (PPI)*, 2019 annual report. World Bank, 2019.

⁷⁵ *The state of PPPs: Infrastructure Public-Private Partnerships in Emerging Markets & Developing Economies 1991–2015*. World Bank.

geography, sector and/or size of project. It can also provide protection against specific exposures, including natural catastrophes, thus helping to foster bigger participation of private sector investors in long-term infrastructure projects.

Long-term investors currently face increased pressure to find attractive yield opportunities. Infrastructure projects in emerging markets can meet that need.

Infrastructure investments can be tied to the ESG directives of insurers.

Enticing long-term institutional investors can support long-term productivity while adding to economic output today.

An investment opportunity for insurers

Due to their business model, pension funds, insurance companies, mutual funds, sovereign wealth funds, endowments and foundations have an incentive to commit capital to long-term investment opportunities. In the existing low interest rate environment, these long-term investors are in search for projects that can deliver attractive yields: infrastructure investments in emerging markets can meet that need. The riskiness of long-term infrastructure investments differs considerably depending on the type of project and on the form of investment. They can be loans, equity or bonds, and they also provide insurers and others benefits of regional and asset class diversification.

Infrastructure investments can also be a handy tool for insurers to link to their environmental, societal and corporate governance (ESG) directives and ambitions. The global trend is that regulatory bodies are dialling up the pressure for insurers to play a greater role in sustainable growth. Beyond the imperative of regulatory compliance, it is critical for the industry to understand this push as in its own best interest. For P&C insurers for example, natural and man-made hazards are critical for credit quality. The financing and overall support of sustainable infrastructure projects would help mitigate the effects of climate change, and consequently, ameliorate the frequency and severity of natural catastrophes. For L&H insurers, the social directives are of greater relevance. They would benefit from an adequate infrastructure that supports a more orderly urbanisation process, mitigating the morbidity and mortality risks associated with overcrowding, air pollution and change of daily behaviour that results in physical inactivity.

Enticing institutional investors

Investment in infrastructures accelerate the path to higher long-term productivity while adding to economic output today. For example, research finds that a USD 100 million infrastructure investment in developed markets can generate up to 50 000 annualised direct and indirect jobs,⁷⁶ and that a 1-ppt increase in public spending (including on infrastructure) increases output by 3% in the medium term.⁷⁷ In the past, institutional investors – insurers included – from advanced markets have refrained from investing in emerging economies, mostly due to the lower credit ratings, the higher volatility and established limits on the level of exposure overseas. Their contribution to global investment in developing-country infrastructure is only of 0.67% as per the World Bank's Private Participation in Infrastructure Database.⁷⁸ In recent times however, there has been a strengthening of the fundamentals in emerging markets and this has solidified their asset quality. Even so, more needs to be done. For emerging markets to be able to better access the global asset base of close to USD 80 trillion under management of insurers, pension funds and sovereign wealth funds⁷⁹ for their long-term infrastructure investment needs, a functioning market-place must be put in place.

⁷⁶ *Infrastructure for development: meeting the challenge*. Centre for climate change economics and Policy, 2012.

⁷⁷ *Is it time for an infrastructure push? The macroeconomic effects of public investment*. World Economic Outlook, International Monetary Fund, October 2014.

⁷⁸ *A simple way to close the multi-trillion-dollar infrastructure financing gap*. World Bank blog, April 2020.

⁷⁹ Swiss Re Institute estimates

Financing infrastructure and closing the gap

Market-friendly frameworks, low tariff complexity and fiscal prudence are key directives to embrace.

Policymakers need to improve the market structure to enhance the liquidity of infrastructure financing.

We put forward a list of policy actions that would help support the development of infrastructure investments towards a standardised asset class.

Attracting private sector financing in emerging markets can be more challenging given absence of some underlying “best practice” principles and regulations. There is a great degree of heterogeneity across the emerging markets in terms of a conducive framework to infrastructure investment, and common shortcomings include: 1) political risk; (2) legal risk; (3) macroeconomic and financial volatility; (4) lack of transparency in bidding processes and rules; and 5) lack of continuity in long-term policymaking.

Infrastructure investments are by nature long term, but investors of all types need to be able to adjust their portfolio mix when needed. In many cases, the existing market structure in emerging economies lacks the liquidity, the right tools and debt instruments to make long-term projects attractive for investors. Furthermore, regulation can present hurdles for portfolio allocations, for example by restricting how much can be invested in non-traditional asset classes. Or in extreme opposite cases, like Argentina, the regulator has gone as far as to make it mandatory to invest a large share in infrastructure projects of questionable attractiveness.

Policy recommendations

We believe a key differentiator for emerging markets in the next 20 years will be the ability to commit to policies that favour market-friendly frameworks, low tariff complexity and fiscal prudence. Markets that embrace these directives will be able to attract infrastructure (and other) investments more easily, and consequently build stronger economic growth and resilience. To this end, we have a policy wish-list to support development of infrastructure investments in the framework of a more standardised asset class that is transparent, harmonised and accessible.^{80, 81} These apply to both emerging and advanced markets as ultimately, harmonised standards globally benefit all.

- **Ensure financial development** through deeper and more efficient financial markets, including insurance.
- **Promote information sharing and disclosure** (eg a World Bank database) on infrastructure projects across the world.
- **Reduce policy uncertainty** through consistent global regulatory roadmaps across sectors.
- **Mitigate the pro-cyclicality of regulatory changes underway** by defining a phased-in approach or by establishing transitional provisions.
- **Harmonise legislation for infrastructure investments** and revive securitisation markets. Recognition of equivalent legal and operational requirements across jurisdictions would increase market liquidity.
- **Strengthen investors’ rights** in cases of sovereign debt restructuring and facilitate an orderly restructuring of debt.
- **International Financial Institutions (IFIs) and Multilateral Development Banks (MDBs) to develop best practices** for bond documentation and due diligence and enforce them through their financing arms, which could be further increased through PPPs.
- **Agree on a common taxonomy on sustainable finance** and establish a risk-based market consistent regulatory framework for Environment, Social and Governance (ESG) investments.

⁸⁰ *Infrastructure Investing. It Matters.* Swiss Re and Institute of International Finance, 2014.

⁸¹ *sigma* 5/2019: op. cit

ESG directives are an opportunity for investors to showcase their institutional character.

Emerging markets are moving away from fossil fuels with more investment in ecological solutions.

Investing in environmentally and socially conscious initiatives does not necessarily mean lower investment returns.

Socially-responsible investing

ESG directives are a key driver in modern-day investment strategy. Global warming, resource depletion, and labour and gender topics are among the important issues that ESG strategies seek to address. They highlight the sustainability and societal impact of investments, adding credibility and improving reputation. They are a key vehicle for institutional investors to demonstrate their commitment to being good citizens.

To date, global economic growth has been largely powered by fossil fuels and there is growing focus on renewable and ecologically sustainable alternatives, including in emerging markets. For example, China's government has been promoting green policies domestically, with a focus on aligning environmental and commercial interests. The Chinese approach focuses on pursuing green, circular and low-carbon development. It focuses on the strengthening of rural infrastructure construction and the overhauling of urban water supply and drainage, flood prevention, rainwater collection and utilisation, heating, gas supply and the environment.⁸² In Latin America, the introduction of climate policies and related initiatives has grown rapidly over the last two years, with increased awareness of investing in green infrastructure and sustainable development. In 2019, Chile became the first country in the region to issue a sovereign green bond; meanwhile Brazil dominates the region's corporate green bond issuance, with a 41% market share.⁸³

Evidence supports the wisdom of ESG strategy. Data shows that companies in emerging markets with high ESG performance do better than their sector peers.⁸⁴ The 10-year period annualised gross returns of investing in the MSCI EM ESG Leaders Index, which tracks large and mid-cap companies across 26 emerging markets with ESG exposure, is 350 basis points higher than the broader MSCI Emerging Markets index. The ESG screening process of these firms provides investors with an additional level of information about the nature of the investments compared to more traditional financial models. It helps capture some of the intangibles that could hurt stock performance down the road.

⁸² Opinions of the Central Committee of the Communist Party of China and the State Council on Accelerating the Construction of Ecological Civilization (Ecological Civilization). *Environmental-partnership.org*

⁸³ Latin America & Caribbean: Green finance state of the market, 2019. Climate Bonds Initiative, United Nations Development Program.

⁸⁴ MSCI Emerging Markets ESG Leaders Index (USD). See <https://www.msci.com/documents/10199/c341baf6-e515-4015-af5e-c1d864cae53e>

A more than USD-50-billion premium opportunity

We forecast an insurance opportunity of more than USD 50 billion in the EM7 markets in premium equivalent terms by 2030. The main lines of business to benefit during the construction phase of infrastructure projects will be contractors all risk and marine. The operational phase, where property insurance can provide coverage for asset exposure, will account for 39% of premiums. China will be the largest market, accounting for 60% of infrastructure-related premiums in the EM7 markets.

Insuring and investing in infrastructure-related projects could be an important differentiator.

The insurance industry can protect against risks during both the construction and operational phases of infrastructure projects.

We estimate an insurance business opportunity worth over USD 50 billion in premiums over the next decade for infrastructure projects in the EM7.

Insuring the infrastructure boom

Emerging markets will remain the engine of global insurance market growth in the coming years even in light of cyclical and structural factors currently weighing on long-term prospects.⁸⁵ We expect for the greater share of premium growth contribution to continue to shift towards the east, and for China to become the biggest insurance market in the mid-2030s. For infrastructure-related lines, the trend is not any different.⁸⁶

In terms of risk protection business, insurers' charge a premium for taking on the risks associated with an infrastructure project, in different phases. 1) the construction phase, when specialty lines such as engineering, credit & surety, contractors' all risk, marine and energy-related insurance products provide coverage; and 2) the operational phase, when property and business interruption covers insure the finalised project. At the economy-wide level, infrastructure complements both capital and labour, helping increase output returns and therefore facilitating economic growth. Research finds a positive relationship between infrastructure and economic growth,^{87,88} and also between GDP per capita and insurance penetration.⁸⁹ The GDP per capita levels of many emerging markets indicate that these are either entering or are already in a sweet spot for insurance demand, with income elasticity for insurance demand is at its greatest. This stage of development is associated with greater levels of income for individuals – which supports the demand for personal insurance – but also with greater infrastructure needs, in turn generating demand for commercial insurance. For this reason, we can expect insurance benefits beyond the construction and operational phases of infrastructure projects.

A more than USD-50-billion insurance opportunity

For the purpose of simulation, we consider the seven largest emerging markets (EM7). Our baseline assumption for these markets is USD13.6 trillion in total investment over the next decade (2021–2030). Roads would make up for little over a third (34.4%) of the total, closely followed by energy-related infrastructure (33.4%). Railways would make up for 17.6%, while water and energy slightly over 5% each.⁹⁰ Using the respective insurance rates for each line of business in each country, and layering by types of infrastructure, we estimate an insurance business opportunity worth USD 50 billion premiums in the EM7 aggregate over the next decade. The transportation and energy sectors are expected to yield the most premiums, and country-wise, China will generate the most business, followed by India at a distant second. Our estimate includes both the construction and operational phases. For the construction phase, we expect for the Construction All Risks opportunity to be of USD 22 billion; for Marine, USD 4.1 billion; for construction liability (summing general liability and single project professional indemnity) USD 2.9 billion; and Delay in Start Up insurance USD 1.9 billion. For the operational

⁸⁵ Ibid.

⁸⁶ See sigma 1/2019: Emerging Markets: the silver lining amid a challenging outlook, and sigma 3/2019: World insurance: the great pivot east continues.

⁸⁷ *Infrastructure Capital and Economic Growth: How well you use it may be more important than how much you have*. 5847. NBER Research Working Paper.

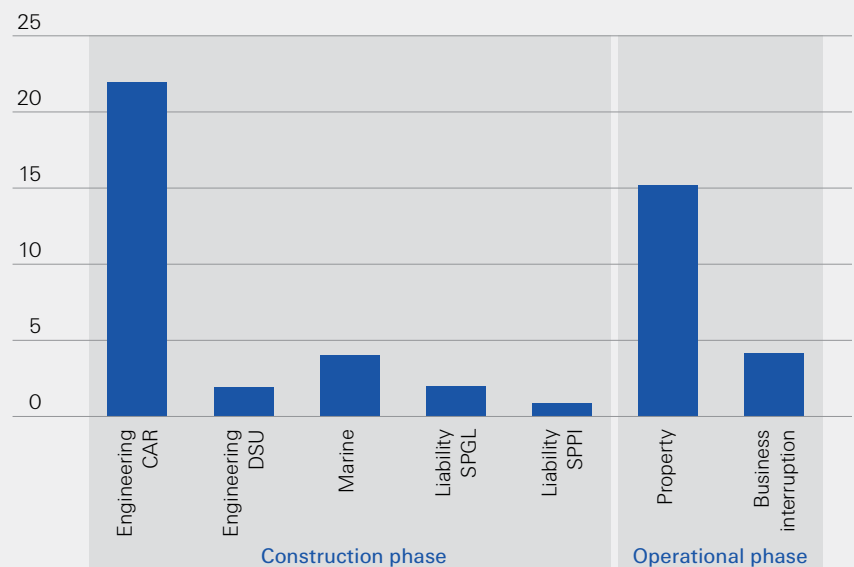
⁸⁸ *Is Public Spending Productive?* 1989. Journal of Monetary Economics 23 (2).

⁸⁹ *The S-Curve relation between per-capita income and insurance penetration*. The Geneva Papers on Risk and Insurance Vol. 25, No. 3, 2000.

⁹⁰ Ports and airports close down the list with smaller shares of 2.0% each.

phase, we estimate property insurance needs worth USD 19.4 billion, of which USD 4.2 would be related to business interruption coverage. With respect to renewable energy, we estimate that related infrastructure investment will yield about USD 9.7 billion in insurance premium across the EM7.⁹¹

Figure 13
Premiums related to the boom in infrastructure in EM7 over the next decade, in USD billions



Source: Swiss Re Institute

We believe this to be a key moment for insurers to consider infrastructure-related coverages as part of their growth strategy.

Engineering & construction insurance deals with onshore construction of projects.

Such a privileged momentum also comes with challenges. For non-life insurers, realising when a line of business is bound to become saturated, and their ability to broaden a portfolio to include lines of business that are likely to take off – in this case, infrastructure-related business – will likely prove a key differentiator. With the expected boom in infrastructure investment, now would be a good moment for insurers in emerging markets to consider infrastructure-related coverages as part of a growth strategy.

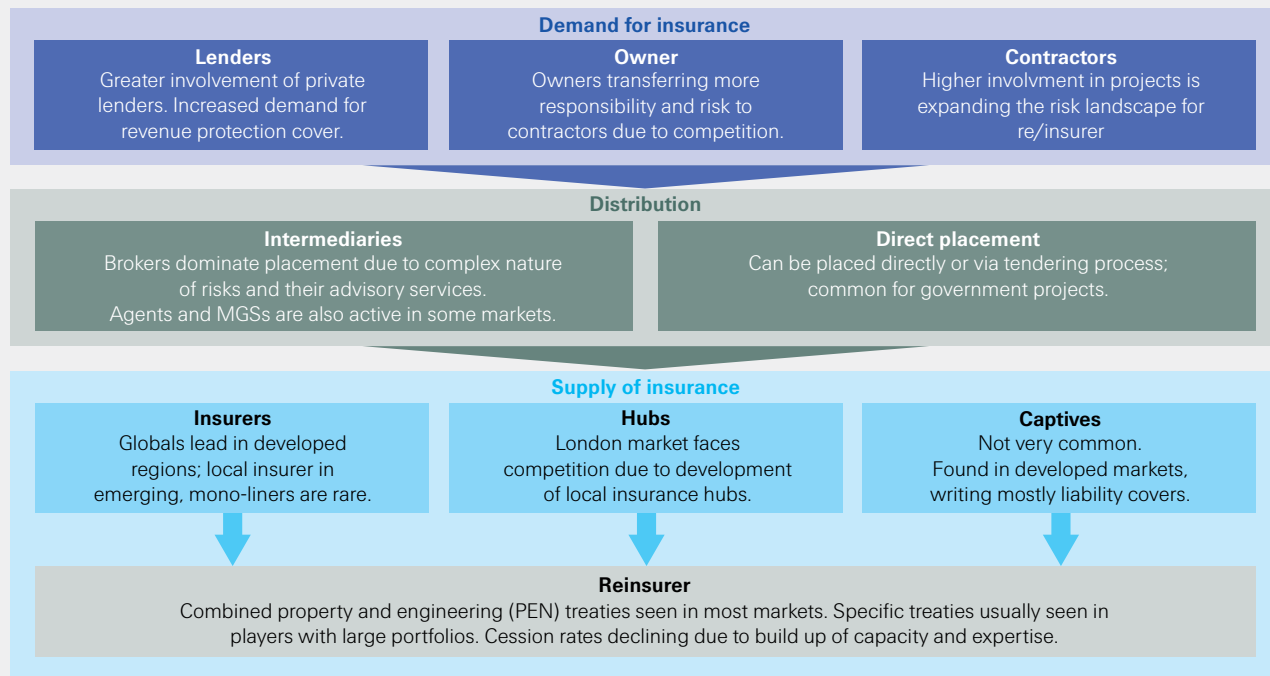
Engineering & construction insurance

Engineering insurance involves project-specific solutions based on technical engineering. It deals with the onshore construction of projects related to oil, gas, petrochemicals, liquefied natural gas, nuclear, power & utilities, tunnels, buildings, dams, ports and bridges. The main coverages include delay in start-up; third-party liability; contractors' plant & equipment; existing assets; and construction, erection and builder's all risk.⁹²

⁹¹ Note. Premiums figures are for the illustration of future premium potential and are subject to changing pricing environment, underlying project types and locations etc.

⁹² See *sigma* 2/2018, Constructing the future: recent developments in engineering insurance, Swiss Re Institute.

Figure 14
Engineering insurance stakeholder map



Source: Swiss Re Institute

CAR insurance provides cover related to physical loss or damage to works during the construction process.

Contractors' All Risk

Contractors' All Risk (CAR) insurance provides cover for risks related to the physical loss or damage to works during construction process. Works can come to a standstill when (1) investors become unable to fulfil their obligations, (2) liquidity problems arise as local currencies devalue against a hard contract currency and loan interest rates soar, (3) changes in the economic environment challenge the viability of a project, (4) disputes between principal and contractor over the interpretation of the contract agreement, (5) time schedule delayed due to shortages or late delivery of material/equipment.⁹³

DSU provides protection against delays to start-up.

DSU

Delay in start-up (DSU) cover is designed to secure the portion of revenue which the principal requires to service debt and realise anticipated profit. It provides fairly broad protection against delays arising from physical damage caused by any type of peril included in the relevant material damage cover, ie the builder's risk (CAR/EAR) and/or marine cover. A prerequisite for triggering DSU cover is that the property insured under the material damage section sustains physical damage from an insured peril during the insurance period, and that any interference with the construction or erection works or testing schedule caused by the loss occurrence either delays or interferes with the principal's business operations.⁹⁴

⁹³ Standstill covers under CAR and EAR insurance, 1999, Swiss Re.

⁹⁴ Delay in start-up insurance, 2003, Swiss Re.

Liability insurance can protect constructors from injury-, damage- and product- related claims.

Marine insurance protects risk for cargo, hull, offshore exploration and production, and liability.

The expected boom in infrastructure investment will create demand for related insurance premiums.

Over the coming years, China is set to develop infrastructure targeting less populated cities.

There will be both public and private sector demand for infrastructure-related insurance in India.

Construction liability

Construction liability insurance is a risk management tool that protects against the corporate liability risks that may occur during construction works. A policy with broad coverage would include protection against injury-related claims that incur in medical and funeral expenses, as well as legal compensations; the damage claims caused by a contractor to the customer's property; and damages caused by the final product. Low-risk construction projects can seek for protections under their standard business owner insurance policy without resorting to a liability-specific coverage, but larger scale infrastructure projects, especially those where the public sector is involved, are for the most part required to have extended insurance coverage for their operations.

Marine

Marine insurance is an intrinsic part of how insurance supports infrastructure projects. It can be broken down into: (1) cargo, basically anything loaded onto a vehicle for the purpose of transportation from A to B; (2) hull, the means of transportation whether it floats or moves; (3) offshore, oil exploration and production carried out at sea, away from land; and (4) liability, professional and legal liabilities of carriers, forwarders, wharfingers, stevedores, ship repairers, longshoremen, charterers, etc.

Infrastructure-related insurance outlook in the EM7

Emerging markets are coming out of what were a dire five years in terms of economic growth, with multiple external headwinds that included low commodity prices and slower global growth stemming from trade-related tensions. The downturn affected negatively the demand for most non-life lines of business due to their tight relationship with the economic cycles. Consequently, and given the cyclical nature of infrastructure investments, the demand for related insurance was a reflection of the broader economic outlook. A return to higher growth rates that resemble those of the past is expected to be a gradual process, more so under the uncertainty brought upon by COVID-19 to the investment outlook. However, with a two decade period as a horizon, we can make sensible projections of the premiums volume associated with the push of infrastructure investment.

Infrastructure-related premiums in **China** fluctuate considerably from year to year due to the ebbs and flows of public sector stimulus. The main focus of infrastructure investments over the coming decades will include smart cities, investment in "new infrastructure", as well as easing infrastructure bottlenecks in rural China.⁹⁵ China has a competitive insurance market, which added to relatively low loss ratios of the past, make up for affordable insurance rates for emerging market standards. Take-up could be higher given the large magnitude of the construction sector, but market players tend to seek to be associated with more high-profile projects – leaving smaller ones underserved. With China becoming the world's biggest insurance market by mid 2030s, more insurers are likely to take interest in entering the market in coming years which could put further downward pressure on rates.

The coming decade is expected to create large opportunities for engineering insurance in **India** as the government pushes on with an ambitious infrastructure programme with strong focus on transportation projects. Private sector construction will also prompt up the demand for residential and commercial insurance. Like in China, insurance related to the construction phase of infrastructure remains quite competitive. As for the operational phase, GIC Re – the sole domestic reinsurer in

⁹⁵ Opinions of the Central Committee of the Communist Party of China and the State Council on Accelerating the Construction of Ecological Civilization (Ecological Civilization). *Environmental-partnership.org*

A more than USD-50-billion premium opportunity

India – has reportedly increase premium rates by an average 25% for key property risks. The rise in rates is a welcome development given the softness of market rates in recent years, and it should help cushion profitability over the short- to medium term.

Given Russia's exposure to geopolitical matters, we hold moderate expectations for market growth performance.

Russia had economic difficulties for most of the second half of the 2010s. At times, contractors reduced their insurance coverage as a way to scale back on costs and in order to cope with the slack. Being an active geopolitical player, Russia is susceptible to international economic sanctions, hindering the economy from catching on the more upbeat dynamic of a typical emerging market. For that reason we have moderate expectations for Russian market prospects. Oil and gas reserves remain a key component of the economy and are still an important source of insurance premium origination. There are several projects aimed at renovating oil and gas refining facilities and pipelines, but also to construct new ones. The rate environment continues to soften but loss ratios remain low.

A turn to privatisation in Brazil would generate more business opportunities in insurance.

In **Brazil**, amid a steep economic slowdown induced by the widespread corruption scandals involving large contractors, infrastructure and construction activity slowed considerably in recent years. It is expected that under President Jair Bolsonaro – a proponent of small government leadership –, parts of the economy will be subject to privatisation. Which in turn could mean that more business becomes available for private insurers. There remains a great deal of infrastructure-related opportunities in the north and east parts of the country. Prices remain competitive with big presence of foreign insurers.

Interventionist policies from the government have made investors more risk averse in Mexico.

The late 2017 earthquakes in **Mexico** were expected to bolster the demand for non-life insurance across the board. It did more so on personal lines like homeowner's insurance – owing to an already low penetration –, rather than on large-scale infrastructure projects due to strong austerity measures that came soon after. The halt to the privatization of the Mexican energy sector has also closed large-scale opportunities for the insurance sector that could've resembled the biennial insurance policy of PEMEX operations – worth close to USD 500 million in annual premiums. Also, the cancellation of the international airport in Mexico City in 2019 was seen by investors as a red flag of what eventualities could be expected during Andres Manuel Lopez Obrador's six-year presidential term.

The market growth attractiveness of Thailand and Indonesia have increased market competitiveness.

In **Thailand**, the insurance market has become significantly competitive across the non-life space. For infrastructure-related insurance it has not been any different due to a rise of private-sector involvement on infrastructure investment. Due to the market pressure, some players may exit the market, or at the very least, make changes to their business mix to increase exposure to more profitable lines of business. In **Indonesia**, construction and engineering insurance averaged a 14% growth rate over the 2015–2018 period with large public investments in the transportation and power sectors. The market remains soft and competitive. Given the large population and high growth prospects of the economy, there is increased interest from foreign players to enter the market and take part on their long-term infrastructure development.

Conclusion

Emerging market investments in infrastructure will be almost double that of the advanced markets

Under current trends, we expect emerging market investment in infrastructure of close to 4% of GDP annually over the next 20 years, compared with just over 2% in the advanced markets. Most of the increase will be in emerging Asia, in particular China, which will invest around 4.8% of its GDP in infrastructure. The main drivers of the investment will include urbanisation, ongoing digital transformation, increasing focus on resilient infrastructure, the move to renewable energy sources, and development of health infrastructure.

Insurers can play an important role in supporting the infrastructure boom.

Insurers – an intrinsic part of the long-term investor base of the global economy – can support the infrastructure boom in emerging markets from both sides of their balance sheet. On the liability side, they can offer risk transfer mechanisms to cover the unforeseen eventualities associated with both the construction and operational phases of the projects, from which we estimate a USD 50 billion insurance premium opportunity over the next decade. And on the asset side, insurers can allocate capital to infrastructure investments. Here we estimate an investment opportunity just shy of USD 1 trillion per year for the private sector over the next two decades.

A commitment to infrastructure projects will reinvigorate long-term economic growth prospects.

The COVID-19 induced economic slowdown is an unforeseeable setback for emerging markets. It has led to an immediate need for reprioritisation of fiscal spending to cushion the negative impact of the pandemic. However, we believe a strong commitment to long-term infrastructure investment remains paramount to sustain trend growth rates over the long term. This also requires that the governments seek to maintain fiscal sustainability, for instance by taking actions to protect fiscal budgets against natural catastrophe and weather-related shocks that could become more frequent and intense as a result of climate change effects.⁹⁶ Private sector involvement on the financing side will also expedite the quest to close the infrastructure gap, helping prepare emerging markets more broadly for the mounting challenges that climate change could present.

⁹⁶ *sigma* 2/2020: Natural catastrophes in times of economic accumulation and climate change, Swiss Re Institute

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Swiss Re Management Ltd.
Swiss Re Institute
Mythenquai 50/60
P.O. Box
8022 Zurich
Switzerland

Telephone +41 43 285 2551
Email institute@swissre.com

Authors

Fernando Casanova Aizpún
Dr Mahesh H. Puttaiah
Olga Tschekassin
Viola Wang
Clarence Wong

sigma editor
Paul Ronke

Managing editor

Dr Jerome Jean Haegeli
Swiss Re Group Chief Economist

Explore and visualize sigma data on natural catastrophes and the world insurance markets at www.sigma-explorer.com

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Swiss Re Management Ltd.
Swiss Re Institute
Mythenquai 50/60
P.O. Box
8022 Zurich
Switzerland

Telephone + 41 43 285 2551
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