

# COVID-19: Infrastructure

22 April 2020



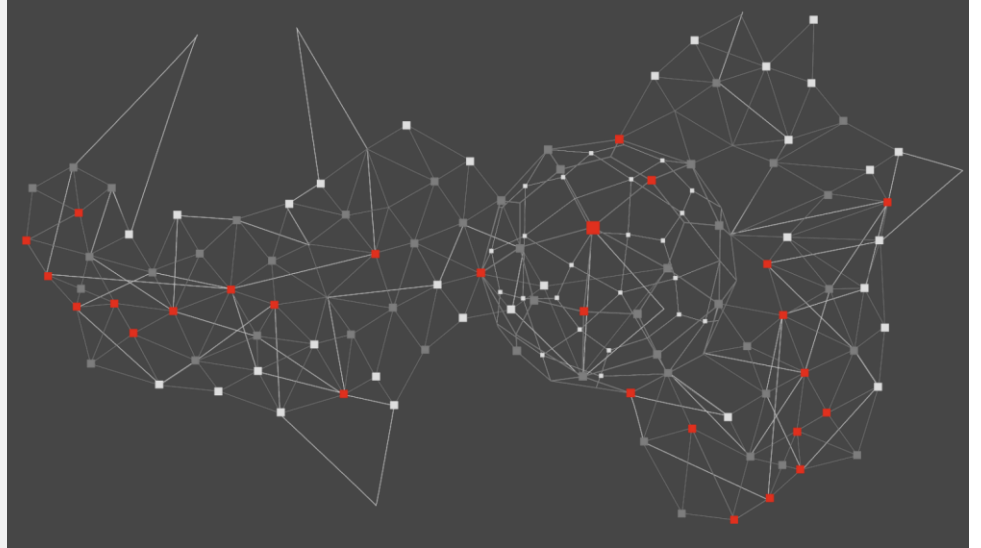
# What we will cover

**The COVID-19 outbreak has been declared a pandemic by the World Health Organization, causing huge impacts on people's lives, families and communities.**

**As the international response continues to develop, we know that infrastructure will have a role to play.**

**In the next hour, we will discuss:**

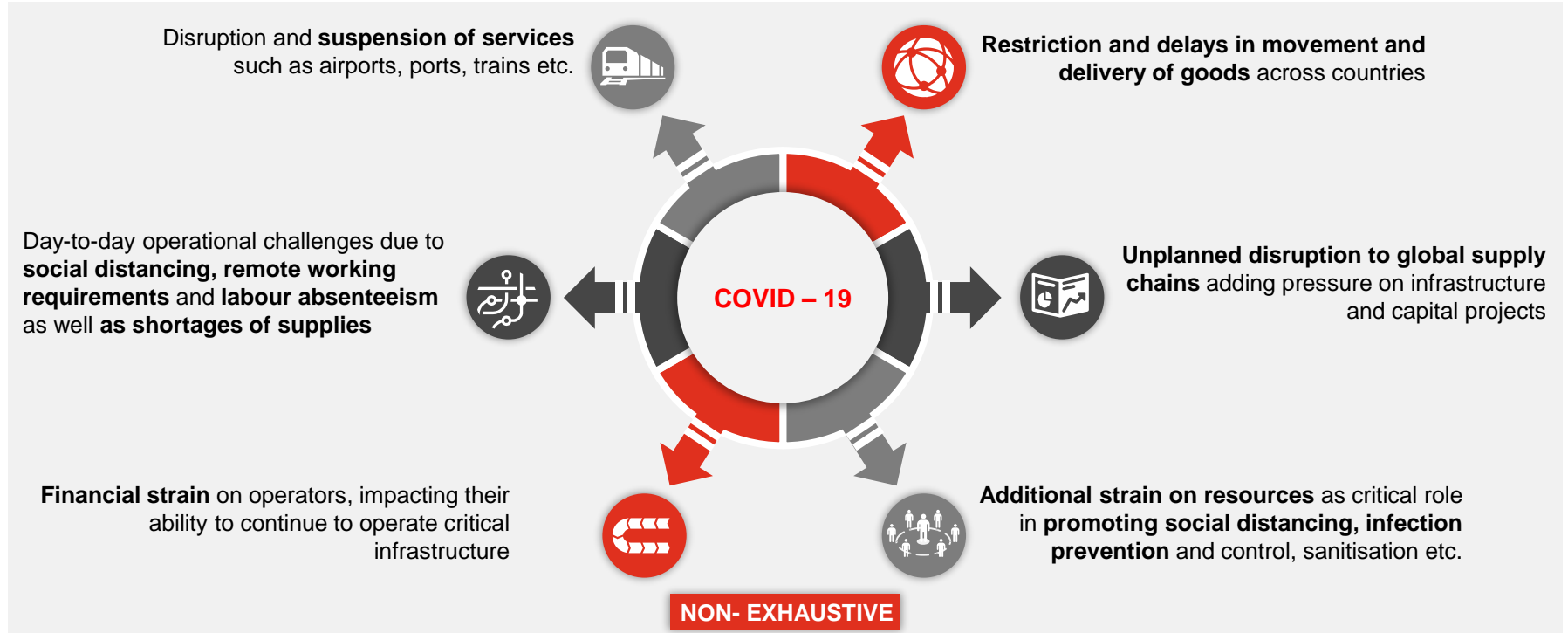
- COVID-19 – Impact on infrastructure
- Dealing with crisis
- Challenges
- Beyond COVID-19



# COVID-19 Impact on infrastructure



# The COVID-19 outbreak has caused severe disruption to infrastructure...



# ....at both an asset and project level....

## Demand risk, cash flow & liquidity

- Where projects are reliant on user/customer charges, reduction in demand will impact on revenues.
- The duration of such decreases is unclear given the uncertainty around the length of COVID-19 and any health and safety restrictions.
- The impact of reduced economic activity will likely impact inflation and therefore impact revenues that are linked to inflation.
- Where revenues come from counterparties such as in offtake agreements or take or pay contracts, the impact of COVID-19 on the counterparties will need to be assessed to determine whether they are able to continue to meet their commitments.
- There will be a need for financial restructuring or refinancing of projects and portfolios, particularly those which have short term financing and an imminent refinancing requirements.
- There is likely to be a material impact on valuations of certain assets, and funds will need to consider how this affects their strategy and communication with investors.

## Financing availability and counterparty risks

- Impact on lenders liquidity, cost of capital and reserving requirements;
- Impact on credit quality of borrowers;
- The financial robustness of project counterparties (e.g. builders, operators, offtakers could be impacted);
- Release of finance under existing facilities where the borrower breaches existing covenants; and
- Pressure on government budgets, particularly at sub-sovereign level, will be a particular challenge for public infrastructure spending.

## Workforce disruption

- The availability of construction labour due to lockdown measures, sickness or travel restrictions is likely to be reduced.
- The day-to-day project operations and management of projects could also be affected due to employees being absent due to sickness, especially when it comes to project operations and maintenance project knowledge.

## Supply chain disruption

- Supply chain disruption is impacting on the delivery of materials and equipment. For example ports, in China, have been congested putting scheduled deliveries 18-20 days behind schedule in some cases. According to Alphaliner, a Paris-based marine data provider, a record two million containers of seaborne shipping capacity was idled in late February 2020.
- There may also be solvency concerns about potential key supply chain members.

# ...and across all key sectors...

## Power & utilities companies:

- ❑ Services must remain reliable, even if workforce declines. Business continuity measures such as mutual aid may not be able due to all companies being impacted the same way.
- ❑ Regulated utilities are mandated to have access to adequate supplies of critical components and materials for emergencies. Not immune to supply shortages from countries highly affected by COVID-19.
- ❑ Renewable energy projects could potentially experience difficulties in getting critical components (e.g. PV cells) from suppliers in affected countries, especially Asia.
- ❑ Cheap oil will lessen the attractiveness of investment in renewables in the short term.
- ❑ Some utilities to experience load reductions due to dampened demand for power, gas and water.
- ❑ Some customers are struggling to pay their bills.

**SEE APPENDIX 1 : UK ENERGY SYSTEM CASE STUDY**

## Transport operators:

- ❑ Transport operators in this extremely difficult situation are impacted by significant demand reduction and heavy traffic revenue reduction.
- ❑ Coupled with additional costs for sanitizing vehicles and stations and operation downsizing costs.
- ❑ Some cost reductions are also incurred, e.g. lower energy consumption, reduced energy costs, decreased infrastructure charges. But such cost reductions are likely to be offset by the large losses.
- ❑ Modification of customers behaviour in the medium / long term will impact future business and operating models

## Telco companies :

- ❑ Shift to remote work driving demand for networking and connectivity.
- ❑ Excessive demand on mobile and communications networks affect service quality.
- ❑ The manufacture and delivery of network equipment will likely be delayed, slowing 5G and fibre network builds, which could affect revenue and capex projections.
- ❑ A number of telcos have high debt loads, which could put pressure on their debt-reduction programmes, as dividends are maintained.

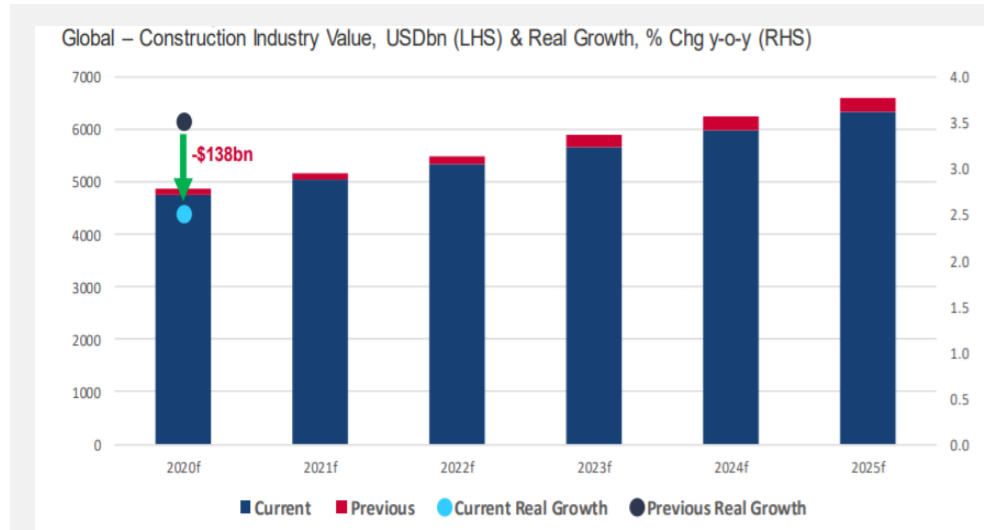
# ...with some key considerations for PPP structures.

- Demand risk for projects has always been controversial.
- Longer term questions about business models for challenged social distancing assets e.g. airports, airlines, passenger rail etc.
- Lockdowns and job losses have reduced revenues for infrastructure projects
- Many infrastructure services are essential so need to continue, with reduced revenues meeting wage bills and servicing debt is challenging and therefore likely requiring taxpayer bailouts
- Where Government is the off-taker / payer, projects are not going to be impacted by demand reduction
- Therefore making it easier for service providers to continue providing the service
- This shifts the risk from user to taxpayer which is arguably fairer for Force Majeure style events. Whereas in COVID-19 style situations taxpayer bail outs are asked for by private providers.
- We expect a future preference for contracted risks as opposed to market demand risks, de-risking from macro economic conditions that private sector cannot manage
- Unless protection is provided against demand risk (e.g. revenue risk sharing, guarantees, regulatory tariff resets, economic rebalance)
- The financial burden on Government-pays PPPs may create affordability pressure especially where Government or related entities revenues / budgets are reduced (e.g. Portuguese roads post-GFC, NHS PFI)

# Fitch are predicting a dent in global construction growth (down from 3.5% to 2.5%)

## Fitch view:

- ❑ Main driver of downward revisions to construction forecasts has been the disruption to normal business activity.
- ❑ Sector has high labour intensity and reliance on complex supply chains and sub-contractor networks – cannot avoid lockdown impact.
- ❑ Expects most construction sectors to avoid a complete collapse in activity. Some projects will see construction activity continue.
- ❑ Government capacity - and in some cases funding - will be directed towards combatting the COVID-19 outbreak, to the detriment of ongoing projects and the project pipeline.
- ❑ Investment into new projects from the private sector will slow due to operational restrictions as well as uncertainty over the strength of the economy which emerges from lockdown.



- ❑ Interestingly Fitch do not expect that the pandemic will lead to a significant reorientation of global construction materials and equipment supply chains.

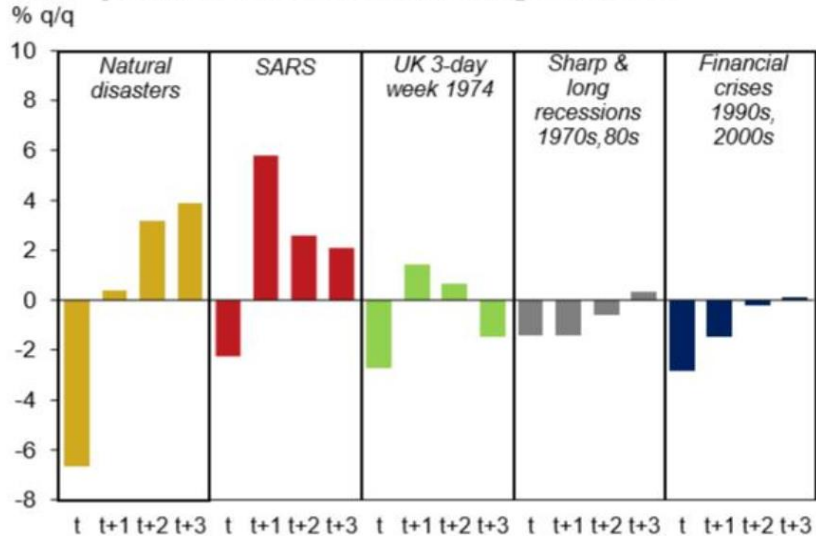


# Dealing with crisis



# Different kinds of negative shocks are followed by varied GDP path

## GDP profiles after different large shocks



Source : Oxford Economics/Haver Analytics

- ❑ Natural disasters / epidemics e.g. SARS have seen strong recoveries after initial declines with lost output regained
- ❑ China is an indicator but they are trying to recover with nowhere to export to.

Oxford Economics predict:

- ❑ World GDP will shrink by about 7% in H1 2020, roughly double the scale of contraction seen during the global financial crisis
- ❑ For economies currently in lockdown expect a sharp resurgence in activity in H2 if lockdown lifted. But despite this rebound, world GDP will shrink by 2.8% in 2020 overall – in 2009, the global GDP fall was 1.1%

# There are some key 'tools' for dealing with a crisis

## Stabilisation

*Preventing or arresting economic free fall and enabling critical elements of the economy to continue to function.*

Focus on job retention, savings protection, business protection.

Includes general measures such as quantitative easing, rate cuts, tax cuts and deferral, extend credit or fiscal resources to businesses and individuals - lending facilities, individual payment (e.g. \$1200 initiated in the US to citizens), furlough support to employees. And other direct bespoke support to industries hard hit by the crisis such as airlines or auto manufacturers, even restaurants.

Heavily used globally during GFC e.g. US \$750bn Troubled Asset Relief Program. Seeing same measures today during COVID-19 – **SEE APPENDIX 2**

## Stimulus

*Designed to inject new money and new demand into the economy / specific industries*

Government spending to drive economic activity. Could be buying up commodities or goods in the market, infrastructure spending on shovel ready projects (e.g. Obama Administration's \$800bn "Stimulus Bill" (which included infrastructure investment) or by creating programmes that stimulate demand by relaxing regulations, providing lower cost finance and directing government resources to specific objectives.

Key assumption on stimulus is that government has the financial capacity to do so through increased borrowing and spending. A challenge for heavily indebted and/or financially weak countries.

A further challenge is the long term affordability of spending. Assumes growth will increase GDP/ income and generate taxes to repay the borrowings.

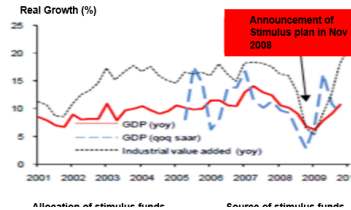
# ...most of which were employed to some extent during the GFC

See Appendices 3-6 for examples of how different governments around the world sought to use infrastructure as part of their recovery efforts from the GFC

## Appendix 3 : Case study: China's infrastructure interventions after GFC

 **China**

- In response to the GFC in 2008, the government announced a stimulus package of US\$586 billion over two years or 13.4% of GDP.
- Government investment was designed to act as "seed funding" to attract further investment, from co-funding from local governments as well as from private investment.
- More than a third of the stimulus was allocated to infrastructure: railways, metro systems, airports, roads and grids.
- Maintained economic growth, although at lower levels of growth than leading up to the crisis
- Notable increase in Debt to GDP – both Gov total debt (inc. state-owned entities) - 310% (2020).
- This constrains the options for the Government's stimulus package for this crisis, despite most
- Details of the Chinese Government's 2020 stimulus be announced, but media speculation is that billion in local government special bonds to stimulate investments (technology focussed).



## Appendix 4 : Case studies: US, UK and EU infrastructure interventions after GFC

Most countries' economic stimulus packages contained a focus on improving the infrastructure. The targeted infrastructure investments planned in stimulus packages were mostly concerned with roads, railroads (including freight networks), public transport, airports, childcare facilities, schools and universities, hospitals, energy networks and security, and digital infrastructure.

COVID-19 - Infrastructure  
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 **US**

- Obama Administration's \$800bn 2009 Stimulus Bill, a key component of which was approx. \$100bn investment in infrastructure.
- The administration focused on "shovel ready" projects, many of which were not significant long-term contributors to economic livelihood but rather road, bridge and rail repairs that put people to work quickly and so helped to restore employment and circulate additional money in the economy - and took longer to implement than expected.
- Debate about how effective it was as a stimulus package.

 **UK**

- Pushed ahead with announcing mega projects e.g. HS2 which were politically exciting but did nothing for immediate stimulus.
- Talk of attracting pension money to infrastructure, although not UK government as had zero levers to achieve this. In the end c£2bn of targeted £20bn raised.
- Construction activity declined rather than grew. Missed opportunity.

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 **EU**

- The EU planned to modernise its infrastructure with a focus on trans-European energy interconnections and broadband projects, mostly through the frontloading of existing budgets.
- Germany announced EUR 18 billion for infrastructure, mostly educational infrastructure (childcare facilities, schools, and universities), hospitals, transport and digital infrastructure.
- The Netherlands announced EUR 1.2 billion in infrastructure and construction investments (e.g. healthcare buildings, schools, bridges, ports).
- Building on its crisis-related EUR 4.7 billion infrastructure spending, Spain announced plans to invigorate merchandise transport by high-speed railway and improvements to the road infrastructures.
- Italy planned railway investments (EUR 960 million), and the quality of the public transport service (about EUR 1.5 billion over the three-year period 2009-2011).
- Slovakia planned highways, new energy infrastructure and speeding up broadband internet access.
- Czech Republic planned CZK 14.4 billion on infrastructure and Estonia EUR 670 million.

# Post-GFC, governments spent several years supporting their economies through fiscal stimuli and bank bailouts



<https://www.pwc.se/sv/offentlig-sektor/assets/infrastructure-investment-in-the-wake-of-crisis.pdf>

Governments face two key constraints when trying to deliver infrastructure:

- ❑ Cashflow constraint – need to save cash to cut deficits
- ❑ Balance sheet constraint – avoid borrowing

Stimulus efforts resulted in reduced decline in GDP but led to burgeoning deficits and borrowings.

Subsequent deficit reduction programmes incorporated both direct and indirect tax increases, and severe spending cuts. The cuts generally focused most heavily on social programmes - medical care, welfare benefits, pensions and capital budgets - soft targets for budget setters.

Whilst some countries' (e.g. Australia) whose economies were not impacted as significantly by the downturn looked to maintain infrastructure investment, others sought to fill this financing 'gap' through:

- ❑ increasing private finance to deliver infrastructure (particularly economic infrastructure paid for by users).
- ❑ placing heavy reliance on structural funding from EU institutions.

# But infrastructure as an economic stimuli is not a quick fix

## Infrastructure considerations

- We know infrastructure is an economic multiplier and useful economic stimuli, but stimulus effect is delayed due to long lead time from concept to construction, complex governance, procurement and financing processes.
- Focus on “shovel ready” projects - push the activity down to the lowest parts of the supply chain - to get the economic output levels raised (repair and maintenance programmes) but not often significant long-term contributors to economic livelihood.
- Outside a handful of markets, large contractors are in a difficult position. They have sized their organisations and risk appetites for lean infrastructure markets. They are unlikely to be able to respond to large stimulus build programmes. Supply vs demand imbalance will cause cost inflation.
- Governments will need to work closely with suppliers to ensure money flows. This should involved de-risked contract structures, lenient payment terms and forcing spending to SMEs.

# How is COVID-19 different from the GFC?

Crude oil \$ / per barrel (2007 – 2020)



**Global Financial Crisis (GFC) was a liquidity crisis, this is a real economy (income and health) crisis**

- GFC led to extensive quantitative easing, low growth, low inflation, low interest rates, low employment income growth and ultimately low growth.
- Private consumption which had sustained growth in many countries will be hurt by the preventive measures and declining incomes.

**Coinciding with a drop in oil price....**

- Initially related to the outbreak and expectations of falling demand for commodities in China.
- Emerging and developing economies (EMDEs) particularly hard hit - Nigeria's budget based on \$57 p/b price. Algeria - oil and gas account for 85% of export revenue. Russia breakeven is c\$42 p/b.

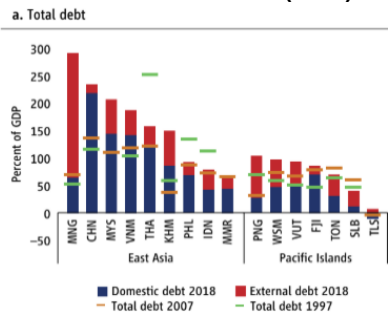
**And higher levels of indebtedness....**

- Higher levels of borrowing for governments, companies and private household globally compared to GFC. Ironically PE less geared. But debt service lower due to lower interest rates.
- Debt in EMDEs climbed to a record US\$55 trillion in 2018 (World Bank, 2019)

**Taking lessons from the past crises depends on:**

- Extent of economic damage and shape of recovery – V-shape, hockey stick etc (more next slide)
- Stabilisation vs Stimulus
- Debt as a bailout tool is a double edged sword.
- **New Deal (US Great Depression)** - designed to get people back to work by building federally funded infrastructure projects – dams, roads, airports and schools were constructed.
- **Marshall Plan (post World War 2 recovery)** –\$13 billion of assistance from US to Western European countries. Capital programmes to physically rebuild as a necessity.

Total Debt as % of GDP in East Asia and Pacific Islands (2018)



# Only 18% of Global CFOs are concerned about funding

## PwC's Covid-19 CFO Pulse survey

Question: What are your top three concerns with respect to COVID-19?

Potential global recession



Financial impact (effects on results of operations, future periods, liquidity and capital resources)



Decrease in consumer confidence reducing consumption



Supply chain issues



Effects on our workforce or reduction in productivity



Difficulties with funding



Insufficient information to make good decisions



## Other key findings:

- **Nearly three-quarters** (73%) of respondents are greatly concerned about the effects of COVID-19 on their operations.
- **45%** of CFOs plan to **take advantage of government support programmes**. The most common types of support they are considering are tax payment deferral and extension of tax deadlines.
- **More than half** (56%) of respondents **believe their company could return to 'business as usual' within three months** if the crisis were to end today — a view more prevalent in countries where leaders report lower levels of concern.

Source: PwC Covid-19 CFO pulse survey: <https://www.pwc.com/gx/en/issues/crisis-solutions/covid-19/global-cfo-pulse.html>

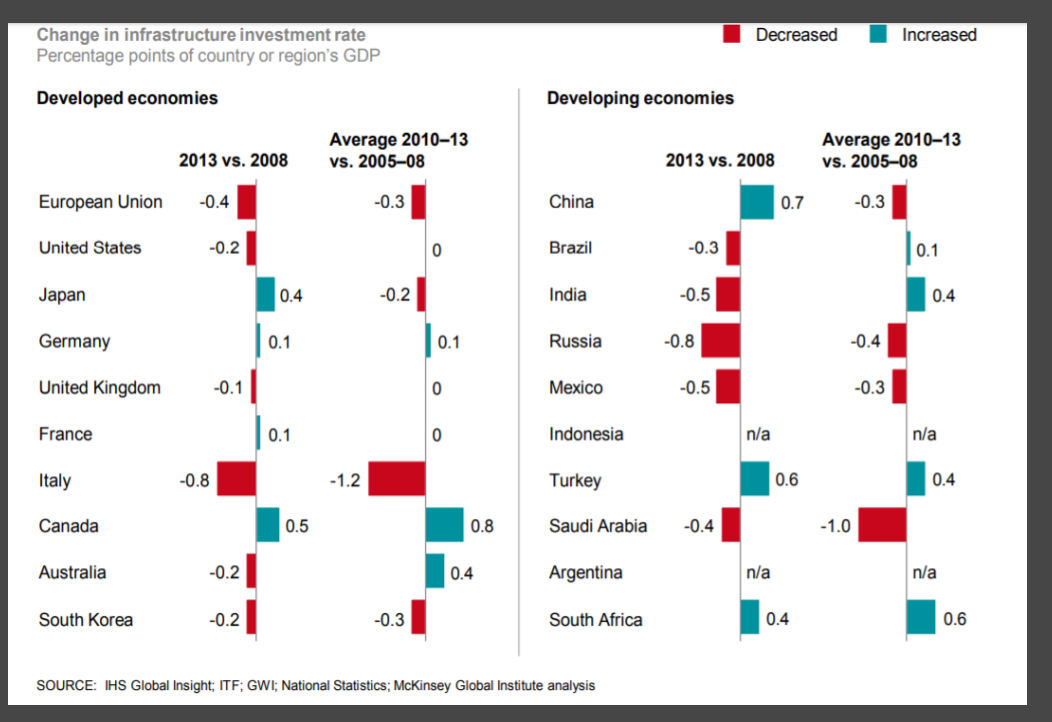


# Challenges



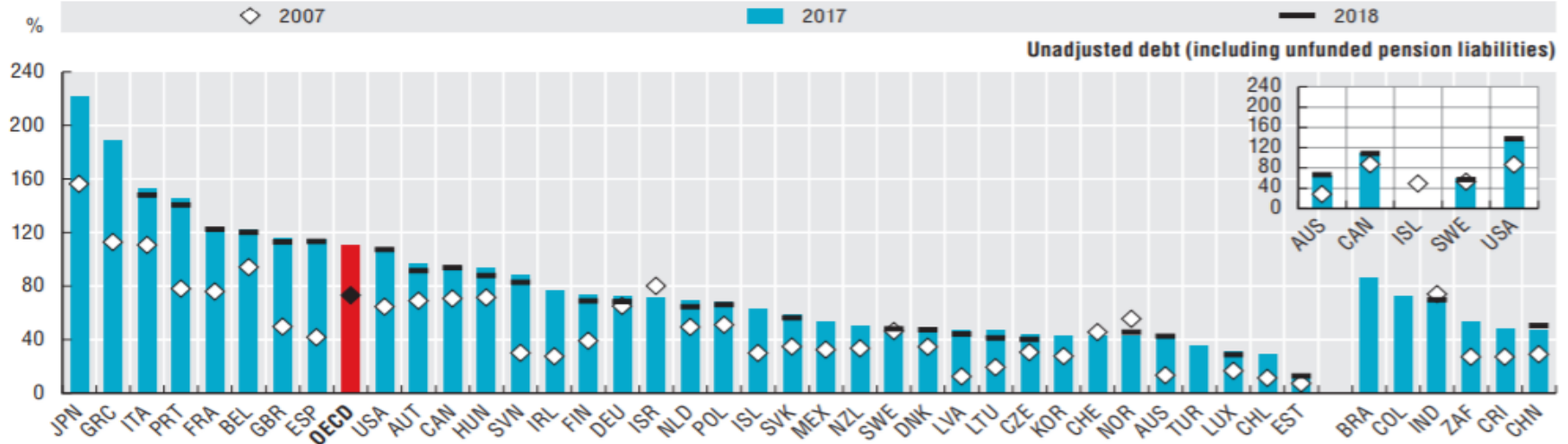
# Infrastructure gap was already widening

- ➔ Economies, especially developing economies, already face significant infrastructure gaps (the difference between investment needs and current investment levels) - c. \$15bn p.a. globally according to Global Infrastructure Hub.
- ➔ ADB in 2006 estimated a financing gap in economic infrastructure of \$750bn per year for Asia. This is now estimated to be \$1.2trn.
- ➔ Past experience indicates that when economic growth declined so did public investments.
- ➔ In many G20 economies, infrastructure investment rates have declined since the global financial crisis.



# Debt was already increasing

General government gross debt as a percentage of GDP, 2007, 2017 and 2018



Source: OECD National Accounts Statistics (database); Eurostat Government Finance Statistics (database). Data for the other major economies (apart from Brazil) and for Costa Rica are from the IMF Economic Outlook (April 2019).

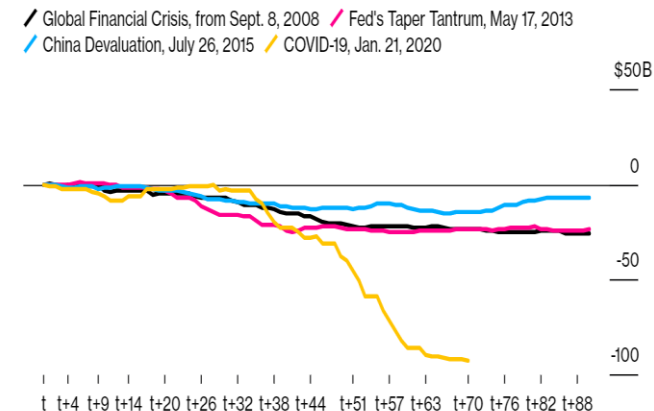
## Affordability

- Right now the world feels over borrowed and over taxed.
- The challenge is not the availability of private money but rather the ability to repay it.

# Emerging markets are facing additional challenges

- ➔ **High vulnerabilities** due to trade links, geographic locations and dropping revenues - less fiscal room to respond - central banks may not be able to do bailouts - supply chains, contractors.
- ➔ **Risk of downgrades** — Mexico and South Africa have already seen debt-rating downgrade and Colombia's credit rating is now just one notch above junk.
- ➔ **Currency risk** - many non-financial corporates under significant duress as debt service costs increase due to **strengthening USD**.
- ➔ **Inflation risk**. Some countries have nascent capital markets; and others may face a liquidity squeeze resulting in a potential USD shortage.
- ➔ Risks a wave of **forced debt restructuring** unless agreements can be reached on debt holidays and waivers. **Debt relief will be essential** so critical resources can be focused on managing the economic and health impacts of the pandemic.
- ➔ **Loans vs grants** - loans will have limited impact when so much uncertainty around extent and duration of crisis.
- ➔ **Privatisation programmes** – impact of delays. E.g. France delayed ADP privatisation whereas Brazil pushing forward with their airport programme.
- ➔ **Proactive policymakers** are looking to innovate – e.g. Malaysia looking to auction solar projects in order to create jobs and delaying taxation payments in tourism.

## IIF data shows capital outflows dwarf previous crises



Source: Institute of International Finance

Note: Accumulated non-resident portfolio flows as of 30 Mar 2020

EMs have suffered severe capital outflows in Q1. **\$92.5bn** of investments held by non-residents flew out of EM's within 70 days. Outflows in each of the previous three disruptions totalled less than \$25bn over the equivalent period. It has been fast and less manageable compared to the outflows during the GFC

**Flight to quality - cyclical and capital will typically find its way back as market confidence returns**

# Beyond COVID-19



# Shifting demand and a broadening definition of resilience

## Infrastructure demand

- ❑ Lockdown measures have resulted in a sudden decline in public transport and road infrastructure usage, causing formerly stable demand and revenues to diminish overnight. Transport assets owners will be wondering whether forced remote working will lead to a **permanent shift in working patterns, with consequent impacts on other industries, such as real estate.**
- ❑ Equally, the nature of shutdown could also lead to a **shift from mass transit to micro-mobility options**, which would affect future infrastructure planning.
- ❑ Questions are also arising about the air travel and freight industries. If usage of air transport declines significantly, **would the aviation sector need to consider fundamental changes in their business and operating models**, consider how airports are designed and built?
- ❑ And what would a shift to more **“resilient” global supply chains** (with less dependence on singular suppliers -be they countries or companies) do to volumes and demand for ports owners and operators?

## Infrastructure investment

- ❑ Resilience is broader than climate change – it **includes pandemic response** and a **sharper focus on operational resilience including supply chains, workforce** etc. It will now be part of how we structure many aspects of life - office space, public transport etc
- ❑ **Sustainability will remain a key focus** - how to retain financing support for key projects, especially those mitigating climate change in order to not put long term economic or environmental sustainability at risk
- ❑ need for **greater digital connectivity** to both facilitate connectivity and apply digital tools to address societal problems (e.g. use of satellite technology to connect remote locations) and investments in utility infrastructure (e.g. access to power and electricity).
- ❑ **increasing focus on healthcare investment** particularly for EM's against backdrop of megatrends (urbanisation etc) and how to invest in adequate infrastructure to prevent and mitigate the impact of future outbreaks.

# The impacts of COVID-19 are likely to sharpen the focus on key infrastructure trends

The infrastructure sector will continue to be impacted by disruptive global trends, including shifts in capital availability, evolving social and environmental priorities, and rapid urbanisation. Three overarching global forces will continue to shape the sector.

**1 Affordability and need for innovative financing** – The pressing need for substantial delivery of infrastructure globally is widely recognised. The challenge isn't just to fund the massive investment required and target it at the right infrastructure projects. It's also to provide the required infrastructure on an affordable, socially equitable and environmentally sustainable basis. As just discussed, the consequences of COVID-19 will put even more strain on the affordability of infrastructure, and stakeholders across the industry will need to continue to work together to innovate and scale investment.

**2 Adoption of technology** - Technology is disrupting the way we use infrastructure and the way capital projects are delivered and will be a big part of the solution to the world's infrastructure challenges. Infrastructure is relatively underinvested in technologies compared to other capital-intensive industries. Pressure from reductions in capacity and rising costs may encourage asset owners and project managers to accelerate the adoption of technologies such as AI and robotics, to help lower their operating costs.

**3 Resilience and sustainability** – The impacts of climate change and urbanisation continue to mount, and still pose significant challenges to which governments and the infrastructure community will need to respond. People now have had a taste of life without carbon intensive activities. BlackRock's Anne Valentine Andrews recently said: "***What we've tended to see is that global economic crises do have an impact, and global emissions do go down. But then, for example in the global financial crisis, they bounce back up again, so any savings are wiped out. So, while governments are stimulating their economies, it is a watershed moment to make sure they don't do that in a carbon-intensive way.***"

# Thank you



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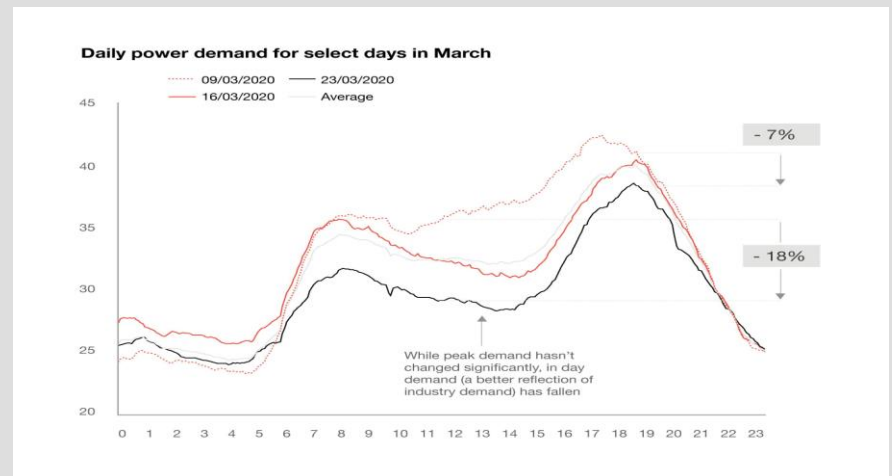
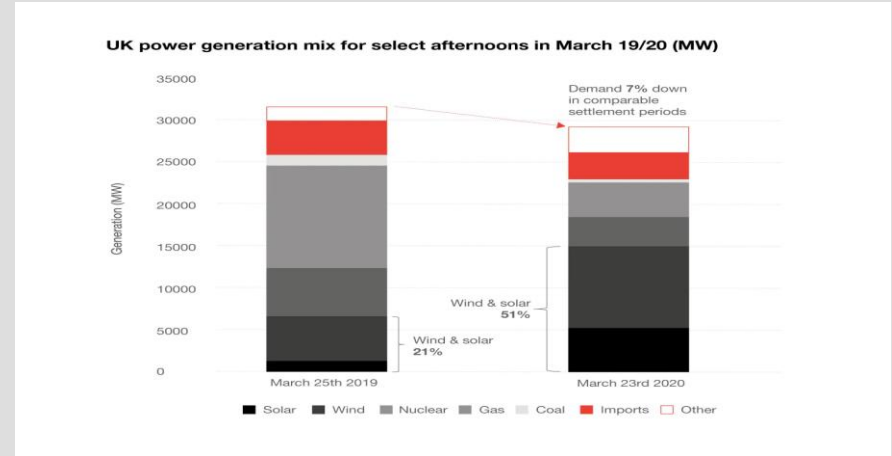
# Appendices



# Appendix 1:

## Case study: UK's energy system

- ❑ COVID-19 related changes to consumer behaviour have introduced significant shocks to the UK's energy system.
- ❑ An 11% decrease in total power demand so far in this crisis, with changing peaks during the day.
- ❑ Home energy use up to +30% around midday; 20% less at 7.30am as people sleep in; overall domestic use is only up 3%-6% (per BBC article)
- ❑ The temporary changes in demand and good weather have allowed wind and solar to increase - providing 51% of power need.
- ❑ National Grid responded to the increased proportion of uncertain and intermittent supply by sourcing power from traditional thermal plants to protect system stability, relying on fast response units (batteries and small generators), as well as sourcing power imports (due to lower demand in a locked down continent).
- ❑ COVID-19 protective measures have provided a real world 'lab' for National Grid to learn how the system reacts to operating with high renewable load, albeit in the less pressured environment of a lower overall demand.



# Appendix 2: Examples of stabilisation intervention in transport sector during COVID-19

In several countries specific interventions to cover damages suffered in this period, both on revenues and cost sides, have been designed or under development, such as:



UK: transfer all revenue and cost risk to the Government for a limited period for the railway franchises, with operators keeping running the services for a small management fee;



Ireland: conversion of the net cost contracts to gross cost contracts, i.e. remuneration of the operators according to the costs + fixed fee, in order to minimize the impact of traffic reduction;



US: specific public funding to cover exceptional expenditure for safety equipment and vehicle & station sanitizing activities



Switzerland: special funding measures ensuring that operators of subsidized transport services remain financially solvent, taking the form of advance payments or temporarily increased compensation fees;



Italy: activation of social safety nets, to protect transport personnel that is laid-off due to the service reduction e.g. for motorway and some public transport operators;



Norway, Australia and Brazil: suspension of specific taxes (or postponement of payment) for the aviation sector.

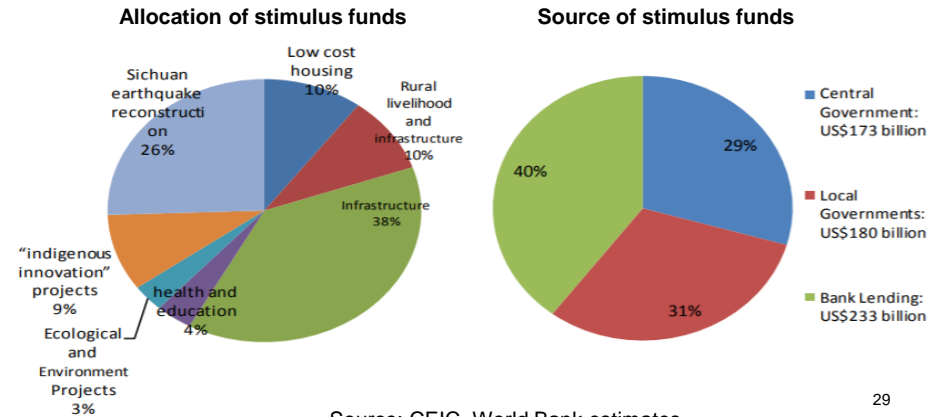
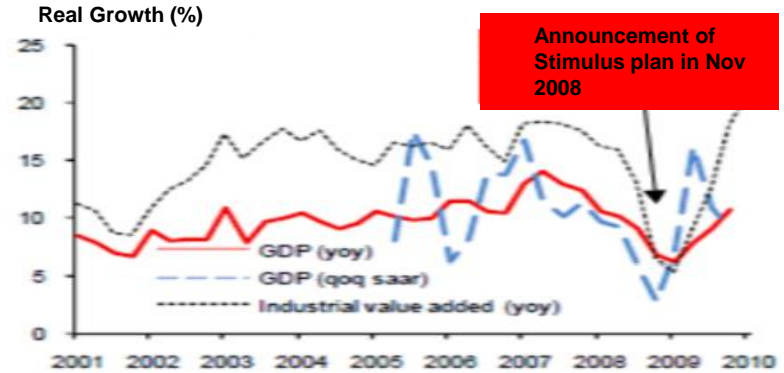
Too early to assess the effectiveness of such measures. A timely and frictionless implementation is critical in allowing the transport system to remain operational and facilitating a quick resumption of service post-crisis.

# Appendix 3 : Case study: China's infrastructure interventions after GFC



## China

- ❑ In response to the GFC in 2008, the government announced a stimulus package of US\$586 billion over two years or 13.4% of GDP.
- ❑ Government investment was designed to act as “seed funding” to attract further investment, from co-funding from local governments as well as from private investment.
- ❑ More than a third of the stimulus was allocated to infrastructure: railways, metro systems, airports, roads and grids.
- ❑ Maintained economic growth, although at lower levels of growth than leading up to the crisis
- ❑ Notable increase in Debt to GDP – both Government debt - c.55% -and total debt (inc. state-owned entities) - 310% - according to the IIF- Jan 2020).
- ❑ This constrains the options for the Government when designing a stimulus package for this crisis, despite most debt sovereign backed.
- ❑ Details of the Chinese Government's 2020 stimulus package have yet to be announced, but media speculation is that it will include US\$394 billion in local government special bonds to spur ‘new-infrastructure’ investments (technology focussed).



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## US

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- ❑ The administration focused on "shovel ready" projects, many of which were not significant long-term contributors to economic livelihood but rather road, bridge and rail repairs that put people to work quickly and so helped to restore employment and circulate additional money in the economy - and took longer to implement than expected.
- ❑ Debate about how effective it was as a stimulus package.



## UK

- ❑ Pushed ahead with announcing mega projects e.g. HS2 which were politically exciting but did nothing for immediate stimulus.
- ❑ Talk of attracting pension money to infrastructure, although not UK government as had zero levers to achieve this. In the end c£2bn of targeted £20bn raised.
- ❑ Construction activity declined rather than grew. Missed opportunity.



## EU

- ❑ The EU planned to modernise its infrastructure with a focus on trans-European energy interconnections and broadband projects, mostly through the frontloading of existing budgets.
- ❑ Germany announced EUR 18 billion for infrastructure, mostly educational infrastructure (childcare facilities, schools, and universities), hospitals, transport and digital infrastructure.
- ❑ The Netherlands announced EUR 1.2 billion in infrastructure and construction investments (e.g. healthcare buildings, schools, bridges, ports).
- ❑ Building on its crisis-related EUR 4.7 billion infrastructure spending, Spain announced plans to invigorate merchandise transport by high-speed railway and improvements to the road infrastructures.
- ❑ Italy planned railway investments (EUR 960 million), and the quality of the public transport service (about EUR 1.5 billion over the three-year period 2009-2011).
- ❑ Slovakia planned highways, new energy infrastructure and speeding up broadband Internet access.
- ❑ Czech Republic planned CZK 14.4 billion on infrastructure and Estonia EUR 670 million.

# Appendix 5a : Global examples – GFC Infrastructure interventions

Country	Rail	Roads	Schools	Housing	Fiscal measures
<b>Australia</b> AUD10bn Nation Building Package for housing, hospitals, transport and comms.	1.2bn	711m	1.6bn - universities	6.6bn	20% cut in tax for 1.3m SME's ; 1.5bn to first time home buyers
<b>France</b>	300m	400m	731m universities	340m social	50m to first time home buyers, 0% loans for energy efficient housing
<b>Italy</b>	960m				55% income tax reduction for renovation of buildings in 2009
<b>Norway</b>	1.3bn		470m universities / colleges		
<b>Sweden</b>					Tax deduction for home owners taking energy efficient measures
<b>Canada</b> CAD6.4bn to renew infrastructure with provinces and municipalities and CAD 515m to accelerate projects such as school construction, water and wastewater projects and critical community services infrastructure.	480m	100m	2bn post secondary	4bn rehabilitation projects	2bn direct in low cost loans to municipalities to invest in housing

# Appendix 5b : Global examples – GFC Infrastructure interventions (cont'd)

Country	Measures
<b>New Zealand</b>	US\$100m on roads, US\$87m on housing, with a focus on c.US\$70m worth of fast-tracked projects before July 2009.
<b>Korea</b>	Establish a green transport network, a green information infrastructure, secure alternative water sources and build eco-friendly mid-sized dams
<b>South Africa</b>	Committed to maintaining the planned high levels of investment in public sector infrastructure (mainly transport, energy, water and sanitation infrastructure, housing construction, ICT infrastructure, as well as education and health infrastructure).
<b>Chile</b>	Special infrastructure plan US\$700m focused on housing investment, road construction maintenance and health-related investments, schools and stadiums.
<b>Indonesia</b>	Infrastructure (mainly roads); education spending; and support to affected industries
<b>Mexico</b>	Transport infrastructure programme: rebuild the nation's highways, bridges and other public-use facilities (USD 42 billion). Temporary Employment Programme and the Programme to Preserve Employment; protection of family incomes (extending the social health care coverage, freeze on energy prices; supporting SMEs by reducing electricity prices, increasing credit availability and using government procurement targeted at SMEs.
<b>Israel</b>	Infrastructure investments (desalination plants, railways); tax reductions; credit lines for business (especially SMEs) and export credits; funds to hire workers and retraining; and support to R&D.

# Appendix 6 : The Infrastructure Recovery and Assets Platform (INFRA)

## INFRA:

INFRA was launched during the Spring Meetings in April 2009 to support adequate infrastructure provision in IDA and IBRD countries during and after the crisis, and:

- ❑ Scale up the World Bank's infrastructure lending during GFC;
- ❑ Coordinate the response among IFI's and donors to bridge gaps in infrastructure financing and capacity, and
- ❑ Raise awareness on the need to continue financing infrastructure to provide the foundation for rapid recovery and job creation and to promote long term growth.

A specific Africa INFRA Program was developed to finance a package of high priority, high return infrastructure investments.

With fewer funds at their disposal, Governments faced a twofold challenge in the infrastructure sector:

- (i) how to ensure its population, and especially the vulnerable groups, continue to have access to critical basic services; and
- (ii) how to continue financing infrastructure investments.

The objectives of the 3 year INFRA Platform were to:

- a. assist partner country governments respond to the negative effects of the global crisis on their infrastructure services and investment programs;
- b. provide them with customised policy options to minimise the impact of the crisis, while limiting market distortions; and
- c. provide technical and financial support for continued private sector activity and for public investment projects in infrastructure.

IFC launched the Infrastructure Crisis Facility in December 2008 to help ensure that viable, privately-funded infrastructure projects in emerging markets have access to the funding during the financial crisis.

## INFRA objectives:

- **Stabilise existing infrastructure assets** by providing funding to those infrastructure projects which are facing temporary liquidity problems; ensuring continued preparation of investment projects with updated project designs; restructuring ongoing projects to ensure sufficient counterpart funding; supporting government efforts to cover the costs of maintenance and protect countries' existing infrastructure assets; providing safety nets to protect the poor's continued access to services; and advising governments and utilities to efficiently manage currency, interest rate, and commodity risks;
- **Ensure delivery of projects that remain government priority** by providing additional financing for infrastructure investments, sub national lending and technical assistance; and advancing the low carbon agenda through climate finance instruments;
- **Support Public Private Partnerships (PPPs) in infrastructure** by bridging the current gap of government commitment to private or PPP infrastructure projects in emerging markets. Help stabilise viable infrastructure projects with private participation which are facing temporary liquidity problems in light of changed market realities and enable the continuation of some new private project development.; and
- **Support new infrastructure project development and implementation** by providing financing and advice to those governments that intend to launch growth and job enhancing infrastructure programs and projects and by supporting investment planning and management by creditworthy sub-sovereign municipalities and utilities.



# Appendix 7 : Infrastructure megatrends to 2050 (Fitch)

Source: Fitch Solutions, Infrastructure Megatrends report 2020

Key trend	Winners	Losers
<b>Climate change projects</b>	Large scale contractors capable of delivering high-spec projects	Co's less able to track and monitor environmental impact – exclusion from bid
<b>Alternative transportation</b>	Construction firms specialising in rail infra; rolling stock providers; alternative mobility companies	Companies producing vehicles running on ICE
<b>Water provision</b>	Desalination and water conservation; smart metering and tech firms	Agricultural extractive and manufacturing methods the require lots of water
<b>Green construction</b>	Contractors specialising in this space Banking / FS firms offering green options Architecture firms, green building material producers, energy efficiency companies	Those unable to invest in new materials
<b>Smart cities</b>	Cos facilitating data collection for infra-tech Major Real Estate developers, tech companies and consultants	Smaller scale EPC firms without inhouse tech capabilities
<b>New building methods</b>	Early movers	Construction firms unable to adapt quickly
<b>Modular construction</b>	Construction firms that adopt and can offer cheaper, efficient options	Traditional home builders and real estate developers
<b>Cybersecurity</b>	Cybersecurity leaders	Threats posed to infra. Increased costs to prevent attacks as well as threat of attacks causing outage