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Infrastructure & Project Finance – Global

Defaults & recoveries: Fewer coronavirus-driven downgrades than nonfinancial corporates

» **The coronavirus-induced economic slowdown is weighing on the credit quality of infrastructure and project finance entities.** Defaults will likely increase in 2020 from levels in 2019 but at a lower rate than for nonfinancial corporates. In the three months March-May 2020, 66 corporates defaulted compared to two corporate infrastructure and project finance issuers.

» **Less than 20% of infrastructure and project finance ratings have a negative outlook or are under review for downgrade.** The 12-month trailing downgrade-to-upgrade ratio increased to 2.3x through May 2020 from 1.4x as of May 2019. However, most rating actions since the start of the pandemic were rating affirmations accompanied by outlook changes. More than 80% of infrastructure and project finance issuers are rated investment grade, many benefit from structural protections that support credit quality in this unprecedented downturn.

» **Infrastructure and project finance credits with market risk, reduced demand because of social distancing measures or energy exposure are most vulnerable to a deterioration in credit quality.** These sectors include unregulated utilities and power, ports, privately managed airports and toll roads. Strong liquidity and structural protections can mitigate demand risk exposure. Regulated utilities and availability-based public-private partnerships (PPPs) will be among the most resilient sectors.

» **Historical defaults clustered around industry events and sovereign crisis.** Corporate infrastructure and project finance credits did not see a spike in defaults during the 2009 financial crisis in contrast to nonfinancial corporates. Historical defaults were highest during 2002-03 and often clustered around industry events or a sovereign crisis. Past pandemics such as SARS in 2003 have not been a major cause of default and were more locally contained than the coronavirus.

» **Average ultimate recovery rates in our project finance bank loan default study have shown independence of the incidence of default**. Project finance bank loan recoveries seem less correlated with the default cycle than those of nonfinancial corporates. Entities with weaker capital structures and weaker business prospects after a recovery from the coronavirus pandemic, such as certain merchant power generators or tourism-related sectors, may experience below average recovery rates.

We have revised our GDP forecasts lower following the coronavirus shock

The coronavirus pandemic and restrictions implemented to limit contagion have led to severe economic and financial stress around the world.

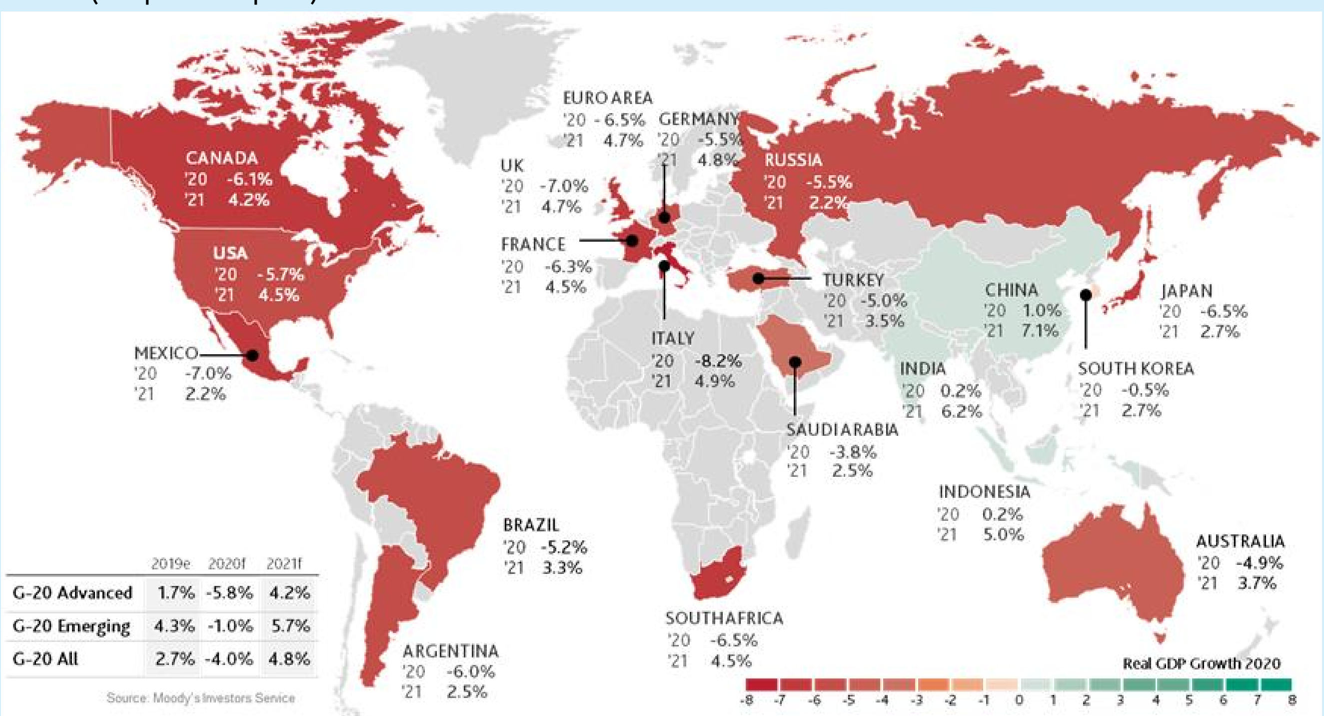
We now expect the G-20 advanced economies as a group to contract by 5.8% in 2020. Even with a gradual recovery, we expect 2021 real GDP in most advanced economies to be below pre-coronavirus levels.[1] Excluding China, we forecast the G-20 emerging market countries to contract 3.5% in 2020, down from our forecast of 3.2% growth before the outbreak. We expect China's economy to grow by 1.0% in 2020.

There are significant downside risks to our forecasts in the event that the world cannot contain the pandemic and governments reinstate lockdowns. Even without longer lockdowns, a self-perpetuating dynamic could take hold. This would result in large-scale destruction of businesses and entire sectors, as well as a structurally high unemployment rate, a permanent loss of human capital and persistent malaise in consumption and investment.

Oil prices will likely remain low. We expect the Brent spot price to average $35 per barrel and West Texas Intermediate (WTI) spot to average $30 per barrel for this year. Oil prices will likely move up in 2021 as demand recovers along with economic growth. For 2021, we forecast Brent to average $45 per barrel and WTI to average $40 per barrel.

Exhibit 1

Global recession is deepening rapidly as restrictions exact high economic cost Real GDP growth forecast (%) for G-20 economies 2020-21 (28 April 2020 update)



Global Macro Outlook 2020-21 (April 2020 Update) Global recession is deepening rapidly as restrictions exact high economic cost, April 2020
Source: Moody's Investors Service

In this report we contrast four different data sets. It is essential to understand the distinction between these subsets to interpret the following exhibits.

Moody's rated data sets:[2]

- **Infrastructure and project finance group: Total infrastructure securities** comprise corporate infrastructure and project finance securities as well as US municipal infrastructure securities. The overwhelming majority of these issuers are “infrastructure and project finance group” ratings. The difference between the total infrastructure securities data set and the infrastructure and project finance group data set does not affect our conclusions.
- **Corporate infrastructure and project finance securities**: Securities issued by either corporate infrastructure issuers or project finance entities.
- **Nonfinancial corporate issuers**: Data set of global rated nonfinancial corporates. We include corporate infrastructure securities in this data set but exclude project finance entities.

Moody's unrated data set:

- **Unrated project finance bank loans**: The project finance bank loan data set comprises 8,583 projects, which represent 67.1% of all project finance transactions originated globally during the 36-year period from 1 January 1983 to 31 December 2018. The Moody’s Analytics Data Alliance Project Finance Data Consortium, a consortium of leading financial institutions, provides the data set for this study.

The coronavirus-induced economic slowdown is weighing on the credit quality of infrastructure and project finance entities

We expect defaults to rise in 2020 as the coronavirus pandemic unleashes economic and financial turmoil around the world. However, we expect that infrastructure and project finance will perform better as an asset class than nonfinancial corporates in this downturn. Actual default rates over the next year will depend on the length and severity of the coronavirus-induced downturn and its impact on specific sectors and projects.

We base our view on default trends during previous recessions across both sectors, the default count since March 2020 and fundamental characteristics of the sector.

We rate 83% of issuers in the infrastructure and project finance group investment-grade, as of 31 May 2020. Many of these entities benefit from structural protections to lenders, contractual revenue streams that are not exposed to market risk and from government support.

There were only five fallen angels, or investment-grade issuers that crossed over to speculative grade, since the coronavirus outbreak in early March. Those rating actions were driven by sovereign downgrades[3].

In the period March to May 2020, 66 corporate issuers defaulted compared to two infrastructure and project finance issuers. The majority of corporate defaults were in the oil & gas and retail sectors. In the last 12 months ending 31 May 2020, five infrastructure and project finance issuers defaulted (see Exhibit 2).

The lower default count year-to-date of infrastructure and project finance issuers highlights the structural considerations and often higher revenue stability that characterize many project finance and infrastructure issuers, which can reduce the probability of default.

However, it also reflects the smaller size of the rated infrastructure and project finance universe compared to our universe of nonfinancial corporates. We rated over 5,000 nonfinancial corporates and around 1,735 issuers in our infrastructure and project finance group at 31 May 2020.

Exhibit 2

Defaults of infrastructure and project finance issuers for the period May 2019 - May 2020

Issuer	Seniority / Security Class	Default Date	Rating at default	Country
Empire Generating CO, LLC	Senior Secured	5/19/2019	Caa3	United States
Concessionaria Rodovias do Tiete S.A.	Senior Secured	11/11/2019	Ca	Brazil
Huachen Energy Co., Ltd.	Senior Unsecured	12/7/2019	Ca	China
Panda Green Energy Group Limited	Senior Unsecured	1/20/2020	Caa2	China
Stoneway Capital Corporation	Senior Secured	3/2/2020	Ca	Argentina
Longview Intermediate Holdings C, LLC	Senior Secured	4/13/2020	Ca	United States

Source: Moody's Investors Service

The two defaults in March and April 2020 were in the unregulated power sector. The defaulted credits were already very weakly positioned at the low end of the rating scale at the onset of the pandemic.

» **Stoneway Capital Corporation**, an operator of four gas-fired plants in Argentina, defaulted on its debt given a missed amortization payment due on March 2, 2020.

» **Longview Intermediate Holdings C, LLC**, a merchant coal-fired power project in West Virginia, made a prepackaged Chapter 11 bankruptcy filing on 13 April 2020 after failing to extend a bank credit agreement.

Project finance structural considerations support credit quality

Project finance refers to the financing of long-term infrastructure, industrial or public assets and services using limited recourse long-term debt raised by an enterprise operating in a focused line of business in accordance with contractual agreements.

A typical project finance structure has many elements including the use of a special or single-purpose entity or project company to raise non-recourse debt. The net cash flows generated by the project service the repayment of this debt. Comprehensive contractual arrangements entered into by the project company lay out the scope of the project, its financing arrangements and the security interests granted to lenders.

These contractual arrangements limit the project's activities so that lenders can assess the project's initial construction and long-term business and operating risks. This assessment is fundamental to each project financing, given that they typically have higher debt levels than other nonfinancial corporates.

Project finance transactions with lower credit risk tend to benefit from long-term contracts providing predictable revenue from creditworthy counterparties and limited competition.

At the other end of the spectrum are projects that have a weak economic or competitive position, face uncertain net cash flow given exposure to market risk, may use complex technologies, and/or may have weak counterparties.

Project finance structures include financial covenants that place controls on the project's operations. These can include for example limitations on permitted business activities, limitations on additional debt issuance, limitations on shareholder distributions, obligations to maintain certain reserves, limitations on asset sales or purchases and limitations over changes in control. Project finance senior debt facilities are typically structured to be robust against potentially severe risks, including significant macroeconomic and performance stresses.

Less than 20% of infrastructure and project finance ratings have a negative outlook or are under review for downgrade

In our infrastructure and project finance group, most rating actions since the start of the pandemic were rating affirmations accompanied by outlook changes. Less than 20% of rated infrastructure and project finance securities have a negative outlook or are under review for downgrade. Most infrastructure and project finance securities are rated investment grade and many benefit from structural protections that support credit quality in this unprecedented downturn.

Nevertheless, downgrades have increased in 2020. The 12-month trailing downgrade-to-upgrade ratio for infrastructure and project finance issuers increased to 2.3x through May 2020 from 1.4x as of May 2019. There were 157 downgrades in the 12-month period through 31 May 2020, of which 88 occurred since March and 36 were coronavirus related.

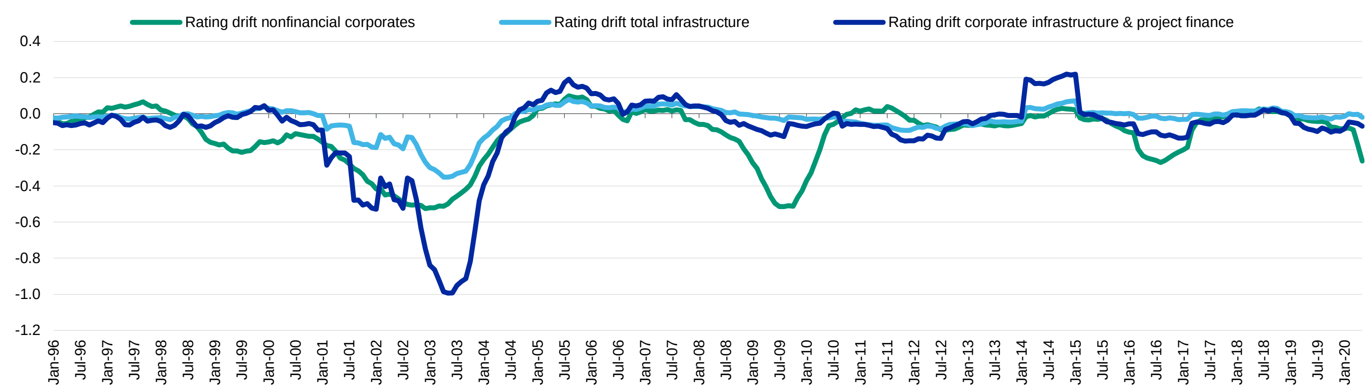
Sovereign rating actions were behind many of the downgrades. Coronavirus-related rating actions were largely in the following sectors: privately managed airports, ports, privately managed toll roads outside the US and unregulated utilities and power. Other sectors include projects exposed to demand risk and at least temporarily severely affected by social distancing measures such as hotels, malls and stadiums.

We expect regulated utilities and availability-based PPPs to be among the most resilient infrastructure and project finance sectors.

We also use rating drift, defined as the average upgraded notches minus the average downgraded notches per issuer over a one-year period, as a measure of change in aggregate credit quality.[4] A negative drift signals more rating downgrades than upgrades.

Exhibit 3 compares the trailing 12-month rating drift for three different rated data sets from January 1996 until May 2020: total infrastructure ratings, corporate infrastructure and project finance ratings and nonfinancial corporates.

Exhibit 3
Trailing 12-month rating drift
January 1996 to May 2020



Source: Moody's Investors Service

The pace of rating downgrades for nonfinancial corporates has accelerated since mid-March and has reached similar levels as in mid-2016, a period of weak commodity prices that primarily affected the oil and gas and metals and mining sectors.

Since January 2019, the 12-month rating drift has trended slightly negative for corporate infrastructure and project finance ratings. However, rating drift analysis shows that most rating actions on infrastructure and project finance entities related to the coronavirus were rating affirmations and outlook changes. The asset class often benefits from contractual agreements that support revenue stability, governmental support, structural protections for bondholders and solid liquidity levels. These characteristics all support credit quality during a temporary downturn.

Total infrastructure securities and corporate infrastructure and project finance securities performed fairly well as an asset class during the 2008-09 financial crisis as well as more recently in mid-2016. Nonfinancial corporates saw the most severe rating movements during the 2002-03 recession and the 2008-09 financial crisis. Rating drift was most negative for corporate infrastructure and project finance issuers in the early 2000s when the western US energy crisis caused an unprecedented rate of downgrades that affected these issuers most severely. Many entities included in the corporate infrastructure and project finance data set include energy-related projects and regulated and unregulated electric and gas (E&G) utilities.

Infrastructure and project finance credits with market risk, reduced demand because of social distancing measures or oil price exposure are most vulnerable to a credit quality deterioration

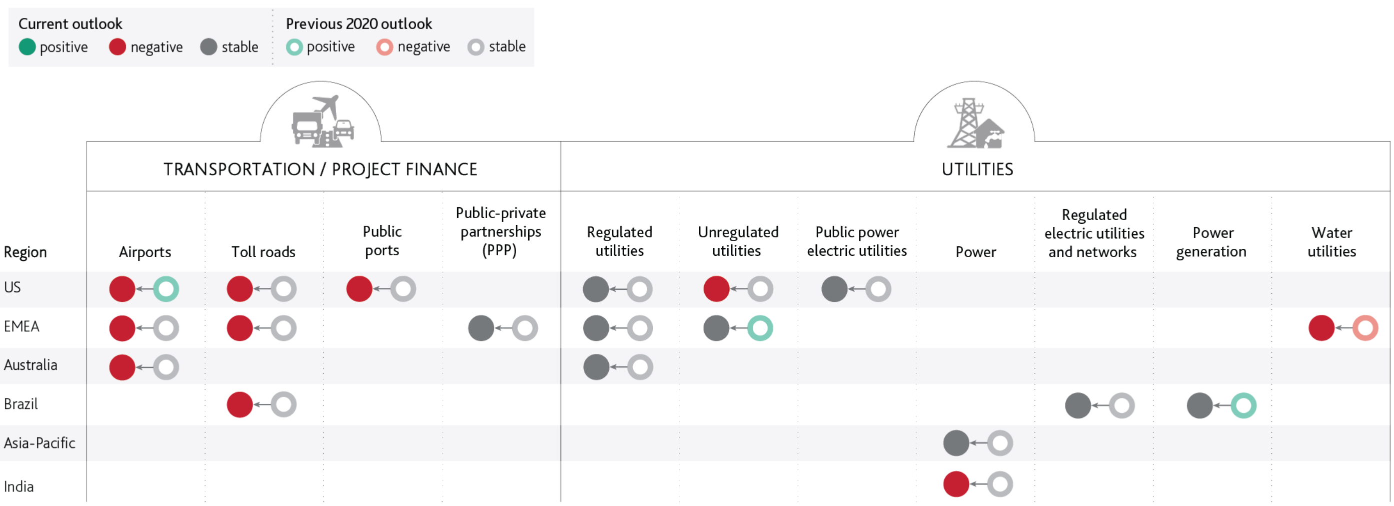
Around 53% of industry outlooks within the infrastructure and project finance group are currently negative, suggesting difficult credit conditions for many sectors in the next 12 months (see Exhibit 4).

The most vulnerable sectors are those with market risk, volatility in demand as a result of social distancing measures or energy exposure. The most vulnerable sectors include unregulated utilities and power, ports, privately managed airports and toll roads.

Other project finance sectors affected by the pandemic include parking, stadiums, malls and student housing. We expect regulated utilities and availability-based public private partnerships to be among the most resilient project finance and infrastructure sectors.

Exhibit 4

Industry outlooks project and infrastructure finance
as of 31 May 2020

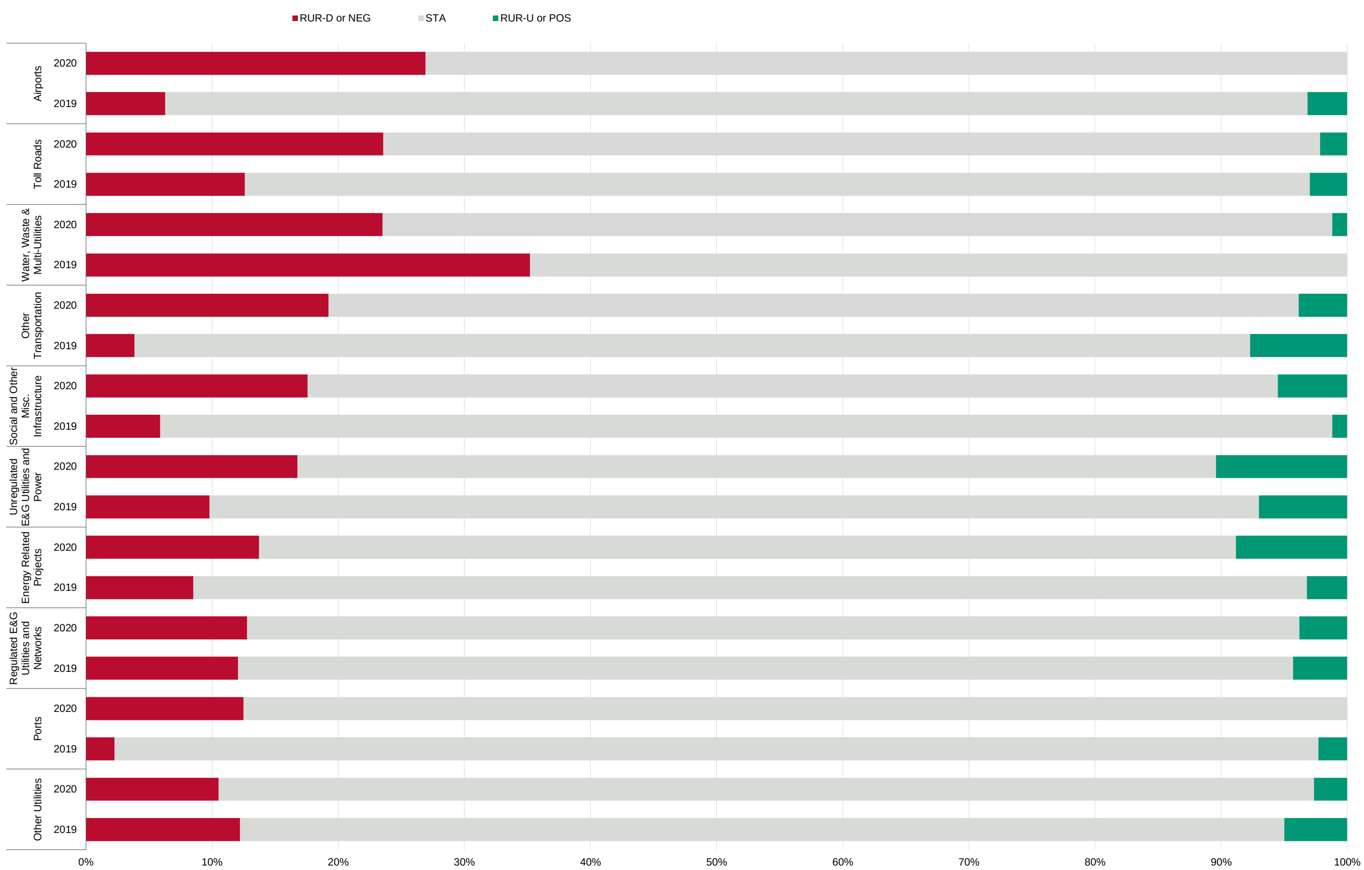


Source: Moody's Investors Service

Sectors with negative outlooks have also seen an increase in issuers with negative outlooks or ratings under review for possible downgrade compared to 2019 (see Exhibit 5).

In 2020, outlooks on 16% of rated infrastructure and project issuers were negative or placed under review for downgrade. In comparison, in 2019 outlooks on only 11% of rated infrastructure and project finance issuers were negative or placed under review for downgrade. Reviews for downgrade in 2020 are concentrated in the airport and regulated utility sectors. Most reviews in the regulated utility sectors are on Oman-based utilities, driven by our rating action on the Government of Oman. Please see Appendix A for a full list.

Exhibit 5
Overview of rating outlooks by sector
31 May 2020 compared to 31 May 2019



Note: RUR-D = rating under review for downgrade, NEG = negative outlook, STA = stable outlook, RUR-U = rating under review for upgrade, POS = positive outlook
Source: Moody's Investors Service

Historical defaults clustered around industry events and sovereign crisis

Historical data is helpful in understanding the default experience of infrastructure and project finance credits during previous recessions and if defaults tend to cluster around specific events and sectors.

We compare the historical incidence of defaults of the rated infrastructure and project finance universe to the historical incidence of defaults for rated corporates and to data from our unrated project finance bank loan default study.

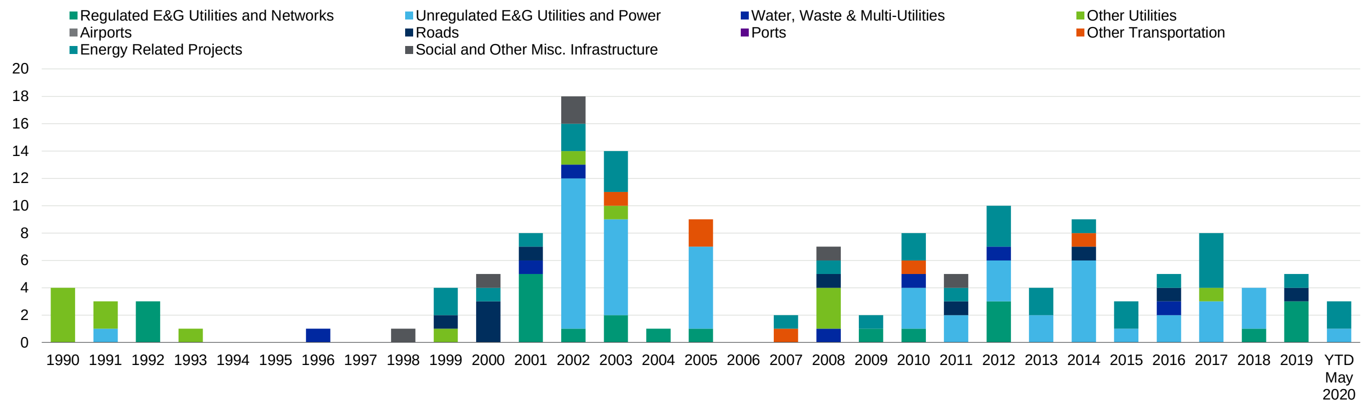
Exhibit 6 shows the incidence of default for rated infrastructure securities since 1990. The average count is around four defaults per year but peaked in 2002-03 at around 16 per year on average. Notably, the rated infrastructure universe did not see a particular spike in defaults during the 2009 financial crisis in contrast to corporates, shown in Exhibit 7.

We expect the number of defaults in 2020 to be higher than the historical average of four per year, based on historical performance of the asset class during previous recessions and periods of low oil prices. Through 31 May 2020 three defaults have already been recorded.

Unregulated utilities, power and energy-related projects comprised most of the 32 defaults in the 2002-03 period. These defaults coincided with the western US energy crisis[5]. These sectors were also behind most defaults during the years post the financial crisis, likely driven by the higher share of non-investment grade energy issuers and periods of low energy prices.

Exhibit 6

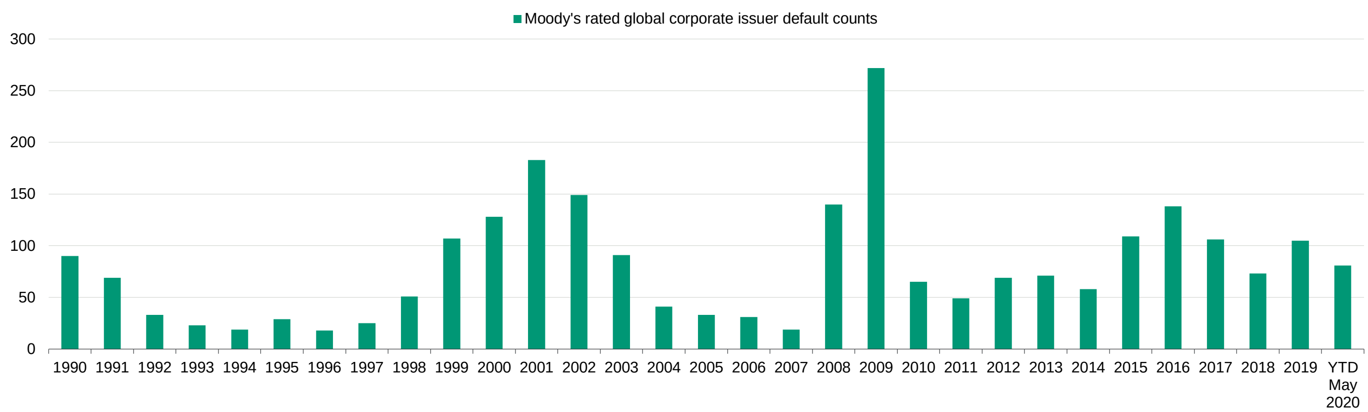
Incidence of default of rated infrastructure securities 1990 - year-to-date (YTD) May 2020



'Other Utilities' includes US Electric Coops, US Municipal Electric and Gas Utilities and Oil and Gas Pipelines. 'Other Transportation' includes, Mass Transit, Parking, Railway Companies, Transport Related Projects and Government Rail Networks. 'Social and Other Misc. Infrastructure' includes Social, Communications and Industrial Infrastructure.
Source: Moody's Investors Service

Exhibit 7

Incidence of defaults global corporates 1990 - YTD May 2020



The universe above includes financial institutions. However, the majority of defaults are defaults of nonfinancial corporates.
Source: Moody's Investors Service

Our unrated project finance bank loan study also provides helpful insight into the credit performance of the infrastructure and project finance sector (see Exhibit 8).

The study data confirms that defaults tend to cluster around events such as industry events, recessions or country risk events in particular in emerging and developing markets. Market risk is the primary cause of default in advanced economies, while country risk is the predominant driver in emerging and developing markets. Defaults often coincided in emerging and developing markets with a sovereign crisis, for instance in Argentina (2001-02), Brazil (1999, 2002), Indonesia (1997-2002) and Thailand (1997-2000).

Similar to the rated total infrastructure and project finance portfolio, Moody's Analytics Data Alliance for project finance bank loans shows a spike in defaults during 2001-03. The increase reflects an increase in defaults of media and telecom projects and US power projects.

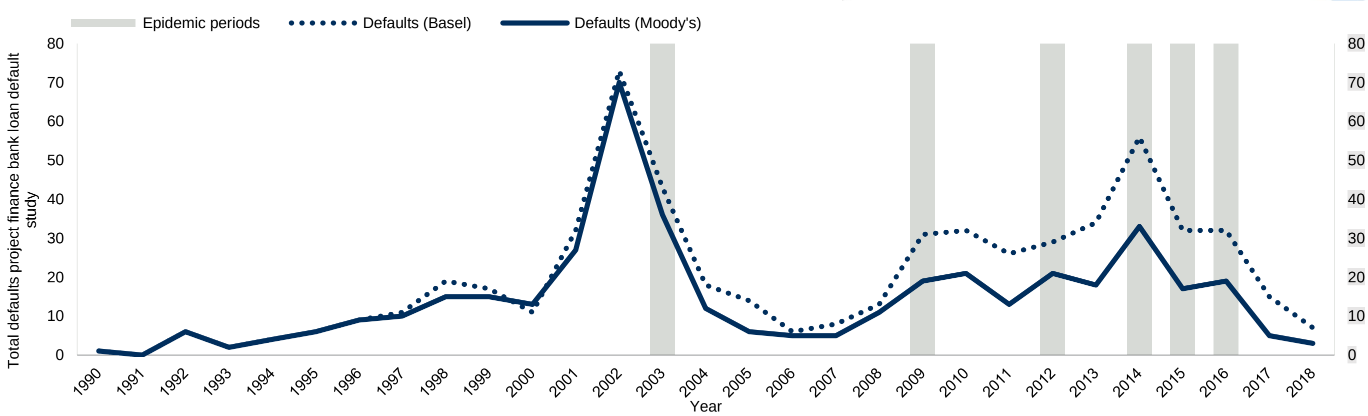
During the period 2009-2016 following the financial crisis, the data set includes a higher number of defaults in the Western European transportation sector. The oil and gas sector saw an increase in defaults during the period of low oil prices in 2014. Renewable defaults increased in 2013-14 and in 2016.

The data provides no clear indication that previous pandemics have been a major cause of default. The Severe Acute Respiratory Syndrome (SARS) (February 2003) and the Swine Flu Virus (H1N1) (April 2009) coincided with periods of lower global economic growth. However, these pandemics were much more locally contained than the spread of the coronavirus and not necessarily present in those countries where most defaults occurred.

Exhibit 8

Incidence of defaults unrated project finance bank loans 1990-2018

Moody's and Basel definition of default



Epidemic periods include SARS (February 2003), H1N1 (April 2009), Middle East respiratory syndrome (MERS) (September 2012), Ebola (2014-2016)

Source: Moody's Analytics Data Alliance Project Finance Data Consortium

Average ultimate recovery rates in our project finance bank loan study have shown independence of the incidence of default

Historical data of recoveries of infrastructure and project finance credits is very limited, constraining our ability to predict future recovery rates with the same degree of confidence as for nonfinancial corporates.

Nevertheless, a spike in defaults across several sectors or an erosion in debt cushions and financial covenants in certain sectors could negatively affect infrastructure and project finance recoveries during this downturn.

We expect that issuers with weaker capital structures and weaker business prospects post a recovery from the coronavirus pandemic, such as certain merchant power generators or tourism related sectors, might experience lower than average recovery rates.

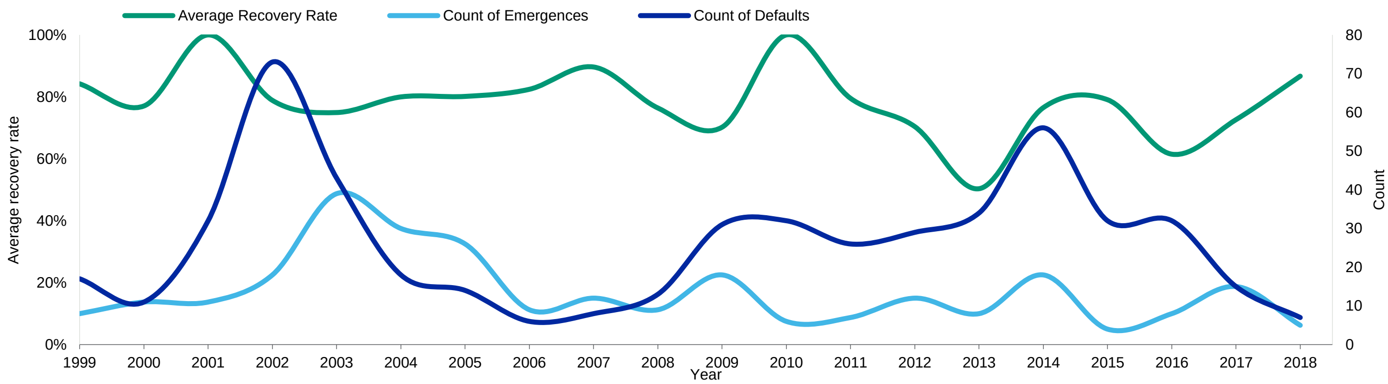
Our May 2020 report on US corporate defaults and recoveries "Recoveries in a pandemic-driven default cycle" estimates that family recoveries will be lower during this default cycle than during the last downturn. This expectation is based on a potentially longer default cycle duration and default spikes across various sectors. Higher defaults of nonfinancial corporates have historically translated into lower recoveries (or higher losses-given-default (LGD)) at the corporate family level.

Infrastructure and project finance recoveries have shown greater independence from the incidence of default compared to nonfinancial corporates based on our March 2020 study on unrated project finance bank loans (see Exhibit 10). Therefore, project finance defaults may be less correlated with the default cycle than nonfinancial corporates. Project and infrastructure finance credits often benefit from characteristics which mitigate LGD, including the structural features which characterize the project finance asset class.

Exhibit 9

Project finance bank loan default study March 2020

Average recovery rates for ultimate recoveries (Basel) by year of emergence



The exhibit is based on the Basel definition of default. Based on Moody's definition of default average recovery rates show a modestly higher volatility in recent years, which is also driven by a lower count of default and lower count of recoveries based on Moody's definition of default compared to the wider Basel definition of default.

Source: Moody's Analytics Data Alliance

For project finance bank loans, very low ultimate recovery rates might also be indicative of project abandonment or the occurrence of extreme loss scenarios originally assessed as low probability.

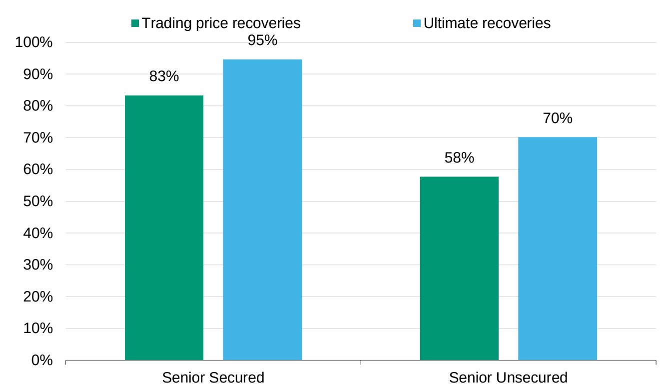
Exhibit 10 shows average recovery rates for rated defaulted corporate infrastructure and project finance debt securities. Average recovery rates have been high but are based on a very limited number of counts that constrain the statistical robustness of the data.

Most recovery counts of defaulted corporate infrastructure and project finance debt securities occurred in the regulated and unregulated electric and gas utility sectors as well as in energy-related projects.

Exhibit 10

Average recovery rates for defaulted corporate infrastructure and project finance debt securities, 1983-2019

Trading price recoveries vs. ultimate recoveries



Source: Moody's Investors Service

Exhibit 11

Average recovery rates for defaulted corporate infrastructure and project finance debt securities, 1983-2019

Trading price recoveries vs. ultimate recoveries

Average recoveries	Senior secured	Senior unsecured	Subordinated
Trading price recoveries	83%	58%	28%
Ultimate recoveries	95%	70%	67%
Default counts	Senior secured	Senior unsecured	Subordinated
Matched sample	8	13	3

Source: Moody's Investors Service

The findings from our study on default and recovery rates for project finance bank loans, 1983-2018 are based on 289 ultimate recoveries (Basel definition of default) [6]and 252 ultimate recoveries (Moody's definition of default). This is a substantially larger data set than the default and recovery data for the rated corporate infrastructure and project finance portfolio. But it is still small compared to our Default and Recovery Analytics Database, which contains information on nearly 5,700 defaulted loans and bonds taken from nearly 1,200 nonfinancial US corporations that initially defaulted since 1987.

Ultimate recovery rates for project finance bank loans included in this year's project finance bank loan default study averaged 77.9% (Basel definition of default) and 75.8% (Moody's definition). The most likely ultimate recovery rate was 100% (Basel and Moody's) –

in other words, no economic loss – which was seen in 58.1% of cases. The distribution of recovery rates for ultimate recoveries shows a higher proportion of transactions at either end of the recovery spectrum, which is consistent with our observations of ultimate recovery rates for corporate loans.

Average ultimate recovery rates realized through workouts exceed average recovery rates achieved through distressed sale exits. Ultimate recovery rates do not include average recovery rates achieved through distressed sale exits. Ultimate recovery rates of 77.9% (Basel) and 75.8% (Moody's) achieved through a workout process, substantially exceed average recovery rates achieved through distressed sale exits of 49.5% (Basel) and 47.5% (Moody's).

Ultimate recovery rates for project finance bank loans are similar to ultimate recovery rates for senior secured corporate bank loans and overall corporate bank loans. The corporate bank loans within our Corporate Bank Loan Data Set averaged a recovery of 80% between 1987 and 2019.[7]

Appendix A

Exhibit 12

Infrastructure and project finance group — issuers under review as of 5 June 2020

Organization Name	Reference rating	Review status	Review date	Region	Sector
Northumbrian Water Ltd.	Baa1	Rating under review for downgrade	12/20/2019	EMEA	Water, Waste & Multi-Utilities
Northumbrian Water Finance Plc	Baa1	Rating under review for downgrade	12/20/2019	EMEA	Water, Waste & Multi-Utilities
Aeroports de la Cote d'Azur	Baa2	Rating under review for downgrade	1/10/2020	EMEA	Airports
Azzurra Aeroporti S.p.A.	Baa3	Rating under review for downgrade	1/10/2020	EMEA	Airports
Abu Dhabi National Energy Company	A3	Rating under review for upgrade	2/12/2020	EMEA	Unregulated E&G Utilities
JFK Terminal One Group, The	Baa2	Rating under review for downgrade	3/19/2020	US	Airports
JFK International Air Terminal, LLC	Baa1	Rating under review for downgrade	3/19/2020	US	Airports
GMR Hyderabad International Airport Limited	Ba1	Rating under review for downgrade	3/25/2020	Asia-Pacific	Airports
Delhi International Airport Limited	Ba3	Rating under review for downgrade	3/25/2020	Asia-Pacific	Airports
Canaveral Port Authority, FL	A2	Rating under review for downgrade	3/26/2020	US	Ports
St. John's International Airport Authority	A1	Rating under review for downgrade	3/30/2020	Canada	Airports
Milione S.p.A.	Baa3	Rating under review for downgrade	3/31/2020	EMEA	Airports
Avinor AS	A1	Rating under review for downgrade	3/31/2020	EMEA	Airports
Airports Company South Africa SOC Ltd	Ba1	Rating under review for downgrade	3/31/2020	EMEA	Airports
Gatwick Funding Limited	Baa1	Rating under review for downgrade	3/31/2020	EMEA	Airports
Manchester Airport Group Funding Plc	Baa1	Rating under review for downgrade	3/31/2020	EMEA	Airports
Copenhagen Airports A/S	Baa2	Rating under review for downgrade	3/31/2020	EMEA	Airports
Copenhagen Airports Denmark ApS	Baa3	Rating under review for downgrade	3/31/2020	EMEA	Airports
Lamar Funding Limited	Ba2	Rating under review for downgrade	4/1/2020	EMEA	Regulated E&G Utilities
OmGrid Funding Limited	Ba2	Rating under review for downgrade	4/1/2020	EMEA	Regulated E&G Utilities
Mazoon Electricity Company SAOC	Ba2	Rating under review for downgrade	4/1/2020	EMEA	Regulated E&G Utilities
Oman Electricity Transmission Company SAOC	Ba2	Rating under review for downgrade	4/1/2020	EMEA	Regulated E&G Utilities
Mazoon Assets Company S.A.O.C	Ba2	Rating under review for downgrade	4/1/2020	EMEA	Regulated E&G Utilities
Muscat Electricity Distribution Company SAOC	Ba2	Rating under review for downgrade	4/2/2020	EMEA	Regulated E&G Utilities
Rural Areas Electricity Company SAOC	Ba2	Rating under review for downgrade	4/2/2020	EMEA	Regulated E&G Utilities
Majan Electricity Company SAOC	Ba2	Rating under review for downgrade	4/2/2020	EMEA	Regulated E&G Utilities
Oman Power and Water Procurement Company SAOC	Ba2	Rating under review for downgrade	4/2/2020	EMEA	Regulated E&G Utilities
Dhofar Power Company SAOC	Ba2	Rating under review for downgrade	4/2/2020	EMEA	Regulated E&G Utilities
DME Limited (Moscow Domodedovo Airport)	Ba1	Rating under review for downgrade	4/3/2020	EMEA	Airports
DME Airport DAC	Ba1	Rating under review for downgrade	4/3/2020	EMEA	Airports
Transnet SOC Ltd.	Ba1	Rating under review for downgrade	4/4/2020	EMEA	Transportation services - Railroad
KAPKOWSKI ROAD LANDFILL RECLAMATION IMPROVEMENT DISTRICT, NJ	Ba2	Rating under review for downgrade	4/7/2020	US	Park/recreation district
Concessao Metroviaria do Rio de Janeiro S/A	Caa1	Rating under review for downgrade	4/8/2020	Latin America	Transportation services - passenger railway
Linha Amarela S.A.	B3	Rating under review for downgrade	4/8/2020	Latin America	Toll Roads
Heldrich Center Hotel/Conference	Caa2	Rating under review for downgrade	4/14/2020	US	Project finance: hotel, parking, and convention centers
Sempra Energy	Baa1	Rating under review for downgrade	4/15/2020	US	Regulated E&G Utilities
Carousel Center Project, NY	Ba3	Rating under review for downgrade	4/17/2020	US	Project finance: hotel, parking, and convention centers
Provident Group - EMU Properties LLC	Baa2	Rating under review for downgrade	5/19/2020	US	Project finance: hotel, parking, and convention centers
UPP Bond 1 Issuer PLC	Baa1	Rating under review for downgrade	5/22/2020	EMEA	Project finance: housing and accomodation
Zheneng Jinjiang Environment Holding Co Ltd	Ba3	Rating under review for downgrade	5/28/2020	Asia-Pacific	Unregulated E&G Utilities

The rating review of seven regulated utilities and three related subsidiaries that are based in Oman followed the placement of the Government of Oman's Ba2 rating under review for downgrade on 30 March 2020. On 8 June 2020, JFK International Air Terminal, LLC was confirmed at Baa1 negative.
Source: Moody's Investors Service

Appendix B

Exhibit 13
Glossary

Term	Defintion
Basel Framework	The Basel III reforms have now been integrated into the consolidated Basel Framework.
Default (Basel)	A default based on the Basel definition of default. We include below relevant extracts from the Basel Framework (paragraph 36.69 and 36.70): “A default is considered to have occurred with regard to a particular obligor when either or both of the two following events have taken place. (1) The bank considers that the obligor is unlikely to pay its credit obligations to the banking group in full, without recourse by the bank to actions such as realising security (if held). (2) The obligor is past due more than 90 days on any material credit obligation to the banking group. Overdrafts will be considered as being past due once the customer has breached an advised limit or been advised of a limit smaller than current outstandings. The elements to be taken as indications of unlikeliness to pay include: (1) The bank puts the credit obligation on non-accrued status. (2) The bank makes a charge-off or account-specific provision resulting from a significant perceived decline in credit quality subsequent to the bank taking on the exposure. (3) The bank sells the credit obligation at a material credit-related economic loss. (4) The bank consents to a distressed restructuring of the credit obligation where this is likely to result in a diminished financial obligation caused by the material forgiveness, or postponement, of principal, interest or (where relevant) fees. (5) The bank has filed for the obligor’s bankruptcy or a similar order in respect of the obligor’s credit obligation to the banking group. (6) The obligor has sought or has been placed in bankruptcy or similar protection where this would avoid or delay repayment of the credit obligation to the banking group." This definition of default is the same as that published by the Basel Committee on Banking Supervision in its previous Basel III and Basel II Frameworks.
Default (Moody’s)	A default based on Moody’s definition of default. Moody’s definition of default is applicable only to debt or debt-like obligations (e.g., swap agreements). For details, please refer to Moody's Rating Symbols and Definitions.
Moody’s Default & Recovery Analytics Database	Moody’s proprietary database, which contains information on nearly 5,700 defaulted loans and bonds taken from nearly 1,200 non-financial US corporations that initially defaulted since 1987. Please see Moody’s Default & Recovery Analytics.
Project Finance Bank Loan Default Study data set	A consortium of leading project finance lenders and investors that provide historical portfolio and credit loss data to Moody's Analytics for the purpose of creating an aggregate data set. The aggregated data set for the study, based on data provided by the Data Consortium. The study data set includes 8,583 projects, which account for 67.1% of all project finance bank loans originated globally during a period from 1 January 1983 to 31 December 2018.
Rating drift	The average upgraded notches minus the average downgraded notches per issuer over a one-year period, as a measure of change in aggregate credit quality.
Rating Reviews	A review indicates that a rating is under consideration for a change in the near term. A rating can be placed on review for upgrade (UPG), downgrade (DNG), or more rarely with direction uncertain (UNC). A review may end with a rating being upgraded, downgraded, or confirmed without a change to the rating. Please see Moody's Rating Symbols and Definitions. We have abbreviated rating under review as RUR in this report.
Ultimate Recovery (Moody’s)	A default (Moody’s) for which recoveries have been realized following emergence from default, as defined above.

Source: Moody's Investors Service

About the Moody's Analytics Data Alliance

The Moody's Analytics Data Alliance is one of the world's largest and most comprehensive data consortia covering Commercial and Industrial, Commercial Real Estate, Project and Infrastructure Finance, Asset Finance and Agriculture. Built in partnership with over 120 leading global financial institutions, the Data Alliance database contains private firm financial statement, loan, default and other key financial information.

For more information please send an email to DataAlliance@moodys.com or to Kevin Kelhoffer, Moody's Analytics, Director – Enterprise Risk Solutions.

The project finance bank loan data cited in this report is sourced from the Moody's Analytics Data Alliance. All analytics and statistics are compiled by Moody's Analytics; all market and industry commentary has been prepared by Moody's Investors Service.

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» Default and recovery rates for project finance bank loans, 1983-2018, March 2020

» Default and recovery rates for project finance bank loans, 1983-2018, March 2020 (presentation)

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» Infrastructure & Project Finance Infrastructure default and recovery rates, 1983-2018, August 2019

» Infrastructure & Project Finance Global – Ratings Review Summary, May 2020

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» Recoveries in a pandemic-driven default cycle, May 2020

» Compendium of 2019 Corporate Defaults, May 2020

» Default Trends – Global: April 2020 Default Report, May 2020

» Annual default study: Defaults will edge higher in 2020, January 2020

» Annual default study: Defaults will rise modestly in 2019 amid higher volatility, February 2019

Other research

» Growing interest in project finance underlines its recovery characteristics, March 2020

Endnotes

1 For details, please see the latest update to our Global Macro Outlook, published 28 April 2020.

2 See Infrastructure default and recovery rates, 1983-2018 for detailed definitions of the data set and the various infrastructure sectors studied.

3 Two were South African issuers that we downgraded following our 27 March downgrade of the Government of South Africa (Ba1 negative). The other three followed the downgrade of India's sovereign rating to Baa3 negative, which affected 11 Indian infrastructure companies. Please see the press release from 2 June 2020.

4 For a detailed explanation of how ratings drift, upgrade and downgrade rates are calculated, see the Glossary of Moody's Ratings Performance Metrics.

5 The California electricity crisis or the western US energy crisis of 2000 and 2001, was a situation in which the state of California had a shortage of electricity supply caused by market manipulations and capped retail electricity prices.

6 See Basel Framework published by the Basel Committee on Banking Supervision. The Basel III reforms have now been integrated into the consolidated Basel Framework. The Basel definition of default has not changed since our March 2019 study. Moody's definition of default is a narrower definition of default than the Basel definition of default and applicable only to debt or debtlike obligations (for example, swap agreements). For details, please refer to Moody's Rating Symbols and Definitions.

7 Moody's proprietary database, which contains information on nearly 5,700 defaulted loans and bonds taken from nearly 1,200 nonfinancial US corporations that initially defaulted since 1987. Please see Moody's Default and Recovery Analytics.

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