

Article Title: General Criteria: Environmental, Social, And Governance Principles In Credit Ratings Data: (EDITOR'S NOTE: —On Dec. 22, 2022, we republished this criteria article to make nonmaterial changes. See the "Revisions And Updates" section for details.) OVERVIEW AND SCOPE 1. These criteria articulate the principles that S&P; Global Ratings applies to incorporate environmental, social, and governance (ESG) credit factors into its credit ratings analysis. We do this through the application of our sector-specific criteria when we think the ESG factors are, or may be, relevant and material to our credit ratings. The methodology enhances the transparency of how ESG factors can influence creditworthiness. 2. The criteria apply to our ratings on all issuers and issues. METHODOLOGY 3. The methodology is in two sections. The first section describes ESG credit factors and how we capture them in our credit ratings through the application of criteria. It also provides examples of key ESG credit factors. The second section describes general principles related to ESG credit factors: How their influence on creditworthiness can differ by industry, geography, and entity; How the visibility of some ESG factors (i.e., our ability to assess the likelihood or impact) is uncertain and how the influence of ESG credit factors may change as their visibility changes; The potential influence of the ESG credit factors on credit ratings over time; and The relationship between creditworthiness and ESG. 4. The appendix provides examples of how we incorporate relevant and material ESG credit factors (i.e., sizable enough to affect our analytical views on creditworthiness) into sector criteria. Section 1: Credit Ratings And ESG Credit Factors 5. Environmental, social, and governance factors (ESG factors) typically incorporate an entity's effect on and impact from the natural and social environment and the quality of its governance; however, not all ESG factors materially influence creditworthiness and, thus, credit ratings, which measure the capacity and willingness of the entity to meet its financial commitments as they come due (see "S&P; Global Ratings Definitions"). Therefore, we define ESG credit factors as those ESG factors that can materially influence the creditworthiness of a rated entity or issue and for which we have sufficient visibility and certainty to include in our credit rating analysis. Chart 1 6. When sufficiently material to affect our view of creditworthiness, ESG credit factors can influence credit ratings through, for example: A change in the size and relative stability of an obligor's current or projected revenue base, Operating costs and requirements, Risk planning, Governance controls and standards, Profitability or earnings, Cash flows or liquidity, or The size and maturity of its financial commitments. 7. The following are examples of key ESG credit factors that have affected creditworthiness or that, in our opinion, may influence future creditworthiness. Some events may relate to more than one of the ESG credit factors. Chart 2 Examples of key ESG credit factors 8. These credit factors can have a negative or positive impact on creditworthiness, depending on whether they represent a risk or an opportunity. 9. Examples of environmental credit factors include: Climate transition risk factors, including those related to climate policy; legal, technology, and market changes to address mitigation; and adaptation requirements related to climate change; Physical risk factors, including event-driven or longer-term shifts in climate patterns, such as hurricanes or chronic heat waves; Natural capital factors, related to the stock of natural resources, which include plants, animals, soils, minerals, and air; Waste and pollution factors, such as waste products, water pollutants, and air emissions other than greenhouse gas emissions; and Other environmental factors. 10. Examples of social credit factors include: Health and safety factors, such as those related to health regulations that impose direct costs and safety violations that lead to financial and reputational damage; Social capital, including consumer and citizen relationship issues, such as mis-selling of products linked to environmental and social factors, as well as socioeconomic and demographic issues; Human capital factors, such as factors linked to employee disputes, employee productivity, talent attraction and retention, and access to skilled labor; and Other social factors. 11. Examples of governance credit factors include: Governance structure factors, including those linked to the board's composition, independence, turnover, skill sets, and key person risk, as well as the institutional framework or assessment for governments; Risk management, culture, and oversight factors, including cyber risk; Transparency and reporting factors, including factors linked to the quality of information disclosure; and Other governance factors. 12. Climate transition risk and physical risk-related factors may be among the most significant ESG credit factors that affect the creditworthiness of rated entities. This is primarily because of policymakers' efforts to reduce emissions or to ensure that greenhouse emissions reflect their full social costs ("climate transition risk") and climate change, which is leading to more frequent

and severe extreme weather events ("physical risk").

Section 2: General Principles Of How ESG Credit Factors Can Influence Credit Ratings

Chart 3 Principle 1: Our long-term issuer credit ratings do not have a predetermined time horizon.

13. Our credit ratings are informed by an entity's current and past performance, are forward-looking, include both qualitative and quantitative factors, and typically incorporate our quantitative financial forecasts. These financial forecasts are for the period over which we believe we have a sufficiently clear view of an entity's potential financial performance, considering the asset class, capital structure, and the potential impact of relevant credit factors, including ESG credit factors.

14. For instance, an established business' next two years of revenues or an obligor's ability to refinance at a certain cost of funding within the short to medium term carries less uncertainty than longer-term forecast assumptions.

15. The uncertainty about when and how a credit factor can change can be very high. In this case, we would typically continue monitoring that credit factor, but we would not necessarily make specific assumptions about it in our analysis. An example of this would be an unexpected, drastic change in technology or customer behavior or extreme climate or political events that, while plausible, we may not have a view regarding their timing or likelihood. This uncertainty may limit our ability to take the impact into account in advance. However, as the timing and likelihood of these events become clearer, we may incorporate the impact of those risks into our view of creditworthiness.

16. Many credit factors that can affect our view of creditworthiness fall between these two extremes.

17. For instance, we include the impact of ESG credit factors, such as climate transition risks related to carbon dioxide and other greenhouse gas emission costs, waste and other pollution costs, or health and safety costs, if we deem these material to our analysis of creditworthiness and if we have sufficient visibility on how those factors will evolve or manifest.

18. An example of a climate transition risk that could be sufficiently visible to incorporate into financial forecasts would be a carbon emissions tax that an entity would have to pay and be unable to pass on the cost to its customers. On the other hand, financial forecasts would not include the potential future cost of an extreme weather event or potential future public policy decisions to levy carbon taxes because the timing and impact of the weather event and the potential public policy decision are not sufficiently visible.

19. Alternatively, if risk factors could be sufficiently visible but are expected to crystallize outside of the financial forecast horizon, we could factor those into our credit ratings in our qualitative considerations. In the case of a corporate entity, we can do this analysis at the industry level, through, for example, the forward-looking element of our industry risk assessment, which is an input to corporate ratings. We could also factor these into our credit ratings at the individual rated entity level, through the qualitative elements of the corporate competitive position analysis or the application of the corporate comparable ratings analysis modifier.

Principle 2: The current and potential future influence of ESG credit factors on creditworthiness can differ by industry, geography, and entity.

20. ESG credit factors may be relevant to our opinion of creditworthiness across sectors and asset classes. However, the materiality and visibility of those factors, as well as the risks and opportunities they bring--and our assessment of the cost and effectiveness of any measures taken to mitigate those risks and to profit from those opportunities--can differ by industry, geography, and entity.

21. A small subset of corporate industries may have greater exposure to climate transition risk than other corporate industries (see note 1). For example, the exposure to climate transition risks due to public policy actions aimed at increasing the cost of carbon dioxide and greenhouse gas emissions may be relatively concentrated in industries like transportation or fossil fuel and basic material production (see note 2).

22. Similarly, certain geographic areas may face greater physical risk exposure than others. A higher exposure to the impact of physical risks through extreme weather events depends on, among other things, geographic location, levels of economic development and vulnerability, and the choices and implementation of climate adaptation and mitigation options. Therefore, rated entities with assets located in certain countries and areas may face greater physical risk exposure too (see note 3).

23. In addition, how ESG risk exposures influence the creditworthiness of individual rated entities will depend on other factors, including how the rated entity is managing the risk exposure and whether the rated entity is implementing, or plans to implement, risk mitigation measures. Put another way, the gross potential exposure to ESG risks can be partially or fully offset if obligors (such as corporate entities, insurance companies, governments, banks, and other financial institutions) decide to eliminate or mitigate risks. They could do this, for example, through insurance or, over time, through business or economic transformation (including, for

instance, investment in a resilient infrastructure capable of withstanding extreme weather events or rising sea levels) and other risk mitigation and adaptation measures. Principle 3: The direction of and visibility into ESG credit factors may be uncertain and can change rapidly. 24. It is typically more difficult to forecast over the long term than it is over the short term. Therefore, how and when factors--including those related to ESG--will affect creditworthiness can be less certain and less visible over longer periods. Furthermore, the influence of many ESG credit factors on creditworthiness is uncertain, given their complex nature and the dynamic effects of public policy decisions. 25. For example, climate change, and extreme weather-related, physical risk factors are highly uncertain in terms of when and where they might occur, as well as their potential severity and impact on assets (see note 4). And, the potential impact of the events at the rated entity level will depend on what counterbalancing measures the entity has taken to mitigate or adapt to the risk. 26. Furthermore, potential public policy decisions will affect how ESG will influence creditworthiness (see note 5). For example, those decisions are often influenced by electoral cycles and may be subject to rapid change in areas such as carbon pricing, ESG disclosure, reporting and transparency requirements, general and ESG-linked governance standards, and social obligations. 27. Finally, feedback loops between certain ESG credit factors heighten future uncertainty. For example, public policy decisions about carbon pricing and emissions reduction targets may influence levels of greenhouse gas emissions, which may affect the frequency and severity of future physical risk beyond those stemming from historical emissions. Similarly, changes in public awareness of social risks may lead to changes in citizen or customer behavior, which may affect a government's or company's creditworthiness. Principle 4: The influence of ESG credit factors may change over time, which is reflected in our dynamic credit ratings. 28. Our credit ratings are dynamic. As part of ratings surveillance, we analyze current and historical data that may be relevant to creditworthiness. If we observe events that are significant to our forward-looking view of relative creditworthiness, we may adjust our ratings accordingly and communicate our updated views to the market so that our ratings continue to appropriately differentiate relative creditworthiness. Our ratings can evolve over time to incorporate changes to market, industry, regulatory, or issuer-specific credit factors. 29. An obligor's exposure to credit factors, including ESG credit factors, and the way in which the exposure is disclosed, managed, and mitigated may evolve over time. A factor may become more visible, for example because of enhanced risk-based disclosures (see note 6). Also, the potential impact could become more certain or material over time--for example, in the case of a new public policy being enacted to increase the known cost of carbon emissions, thereby increasing climate transition risk and costs for entities that emit carbon. The potential net impact of an ESG credit factor may also become more certain over time if the obligor takes effective action to mitigate or eliminate its exposure by, for example, investing in climate adaptation infrastructure to reduce physical risk. 30. We monitor the impact of credit factors, including ESG credit factors, and our view can evolve as new information becomes available, perhaps as a result of new standardized disclosure regulations or as an issuer's fundamentals change. Also, our view can evolve, for example, if changes in public policy influence the economics of a business and its creditworthiness. 31. In some cases, a risk or strength that we currently consider immaterial to creditworthiness can later become material. This could happen, for example, if new information becomes available, or if a policy or legal change imposes new or higher costs, such as carbon dioxide and other greenhouse gas emission costs, on the obligor. Another example would be an asset-heavy business suffering a reduction in the value of its investments in carbon-intensive companies because of the transition to a low-carbon economy. The tipping point for a change that leads to a credit rating or outlook change or a CreditWatch placement may be influenced by the amount of headroom, if any, within the credit ratings on the obligor or issue. This headroom provides capacity for some of the credit factors (that are embedded in the rating) to change without the credit rating or outlook (where applicable) changing. Headroom can change over time. Chart 4 32. A credit rating can include the potential effects of a given policy action when we believe that a policy will be implemented. This makes its potential credit implications more predictable. In some cases, we could also consider the potential credit implications, and possibly take credit rating actions, when a future policy change is agreed and highly certain to be implemented but with a delay. Principle 5: Strong creditworthiness does not necessarily correlate with strong ESG characteristics and vice versa. 33. Creditworthiness measures an obligor's capacity and

willingness to meet its financial commitments as they come due. ESG credit factors that may be relevant and material to creditworthiness are a subset of all the factors that could be relevant to creditworthiness (see "Principles Of Credit Ratings"). 34. Given this, entities with strong creditworthiness may not necessarily have strong ESG characteristics. Take, for instance, an entity that has relatively weak environmental characteristics because of its exposure to climate transition risks but strong, relatively stable revenues, earnings, and cash flows, as well as minimal future financial commitments. We could view this entity as relatively creditworthy when we believe there is a strong likelihood that the obligor will continue to have sufficient resources to meet its minimal financial commitments in full and on time. 35. Similarly, we could view an auto company that complies with applicable laws, but whose current product line has relatively high carbon dioxide emissions per kilometer because of its less fuel-efficient cars and small share of hybrid and electric cars, as being creditworthy if we expect its available resources to remain reasonable relative to its financial commitments. 36. On the other hand, an entity that provides a product or service that is viewed as being ESG-friendly and whose social and governance standards are neutral, such as low-emission renewable energy wind turbines, could have relatively weak creditworthiness if its revenues, profitability, and available liquid resources are low and unstable relative to high, fixed future financial commitments. This is because, in this scenario, it's reasonably likely the entity would not have the resources to meet its financial commitments in full and on time and, therefore, could default on those commitments. This default risk would be independent of the entity's favorable ESG characteristics. 37. In addition, decisions that an entity or public policymakers make to balance the competing interests of different stakeholders may have the opposite impact on the entity's creditworthiness and its ESG reputation. For example, a community relations-focused regulation that imposes additional net costs on an entity could improve its ESG reputation but weaken its cash flows and ability to meet its financial commitments. APPENDIX: SECTOR SPECIFIC 38. The credit factors, including ESG credit factors, that we may incorporate into our ratings are described in our criteria for each sector and asset class. 39. ESG credit factors can affect credit ratings through their influence on credit rating components, such as industry risk and country risk, as well as entity-specific factors, such as competitive position and financial performance and leverage. Any future changes in public policy that can materially influence credit risk through, for example, changes in product demand and industry economics, may be captured at the rated entity level in several ways, including through industry risk analytics. Any future structural changes in climate that can materially influence particular regions and countries may be captured at the rated entity level in several ways, including through our assessment of country risk. 40. The following sections provide examples of how we incorporate ESG risks through the application of our sector-specific criteria when we think ESG credit factors are, or may be, relevant and material to our credit ratings. The criteria frameworks identified are not an exhaustive list, but are meant to illustrate our approach. Corporate Criteria Chart 5 Examples of the potential influence of ESG credit factors on the corporate analysis

Environmental	Climate transition risk: Higher carbon dioxide emission costs leading to weaker profitability--reflected in the competitive position category of the corporate criteria (see chart 5)--and debt service coverage ratios (cash flow leverage analysis)
Waste and pollution	Fines imposed due to breach of pollution regulations leading to weaker profitability and liquidity
Other environmental factors	Increasingly stringent and expensive regulatory requirements that can create prohibitively high barriers to entry in certain industries (reflected in industry risk)
Social	Health and safety: Entities that suffer a drop in demand and revenues because of social distancing rules, including travel restrictions to stop the spread of virus, resulting in lower profitability
Social capital	Aging population trends in advanced economies leading to sustainable positive growth in certain sectors (such as old age homes and health care and pharmaceutical companies), which is reflected in industry risk
Governance	Risk management, culture, and oversight: Material deficiencies in governance and risk management leading to brand and reputation damage and financial losses (considered in the competitive position and management/governance categories)
Risk management, culture, and oversight	A history of regulatory, tax, or legal infractions beyond an isolated episode or outside industry norms, creating liability risk that can affect a company's balance sheet (as part of the cash flow leverage analysis) or liquidity

Hypothetical corporate environmental (climate transition risk) example 41. The company emits significant greenhouse gases from its production process and, as a result, is

exposed to climate transition risk. 42. The company's posttax profitability declined last year and is forecast to fall further because of levied carbon taxes, which has weakened the debt service ratios, reflected in cash flow leverage. We think the company is vulnerable to even more profitability declines because of possible carbon tax rate increases. 43. Several lenders, insurers, and investors have stated their intention to reduce lending, investment, and provision of insurance coverage to the industry by 2030. 44. We apply a negative comparable ratings analysis adjustment to capture the carbon profitability risk beyond the financial forecast period and the risk of reduced access to debt, equity, and insurance. As a result, our ratings on the company are one notch lower than they otherwise would have been. 45. The ratings surveillance of the company continues to focus on the public policy debate regarding whether and when carbon tax rates could increase, and the exposure of lenders, investors, and insurers to the industry and the company, which will influence liquidity risk and risk mitigation (through insurance). Financial Institutions Criteria (Banks And Nonbank Financial Institutions) Chart 6 Examples of the potential influence of ESG credit factors on the financial institutions analysis

Environmental Climate transition risk: A financial institution's (FI) risk position--which is one of the sector-specific factors in the financial institutions criteria (see chart 6)--may be affected if we anticipate the FI will suffer material charges due to the impact of climate transition risk on its loan and investment portfolios. Physical risk: Business position could come under pressure because of weakening asset quality amid more extreme climate conditions. Social Social capital: Lending activities that may be socially sensitive, such as high interest payday loans, can lead to reputation and regulatory risk (which we consider in our business position assessment) Governance Governance structure: Strategic execution risks that could lead to sustained lower absolute earnings (part of the capital and earnings assessment) and relative to peers Risk management, culture, and oversight: Litigation due to weaknesses in governance, risk appetite, or the control framework leading to new risks not related to the credit quality of loans and investments, including, for example, money laundering or cyber risk (reflected in business position) Hypothetical bank governance (risk management, culture, and oversight) example 46. Governance and risk management failures mean that the bank fails to prevent significant money-laundering activities at some of its branches. 47. An investigation into these activities highlights material control and governance deficiencies, which causes us to revise down the bank's risk position assessment. 48. We also revise down the capital and earnings assessment since we expect the bank to incur significant regulatory fines or legal costs because of the money laundering and potential for earnings to fall materially due to reputational damage or the closure of business lines. 49. As a consequence, we lower the stand-alone credit profile (SACP). 50. If these events lead to changes in the bank's business model, we could also change the business position assessment. 51. If money-laundering activities are also material for other banks in the same jurisdiction, this could weaken the industry risk score and the BICRA for that jurisdiction, which could lower the anchor for banks operating there. 52. Ratings surveillance continues to focus on how the bank changes its control and governance frameworks, how it rebuilds its capital and reputation, and the impact of changes to the business model. Insurance Criteria Chart 7 Examples of the potential influence of ESG credit factors on the insurance analysis

Environmental Climate transition risk: Insurers' risk exposure assessments--in the insurance criteria (see chart 7)--could weaken if they hold significant concentrations in assets with return characteristics that could be adversely affected by a change in investor appetite in response to shifts in policy or consumer demand. Physical risk: If exposure to the impact of extreme weather events is material and may contribute to above-average volatility in prospective capital adequacy, we may revise down our risk exposure assessment. Social Social capital: An insurer's competitive position may be affected by the way it treats its customers. For example, mis-selling policies or regularly avoiding legitimate claims could affect the strength of the insurer's brand and potentially its profitability if it incurs significant fines. Governance Risk management, culture, and oversight: Material deficiencies in governance and risk management (including cyber security failures) that damage an insurer's brand and reputation, and possibly lead to financial losses, can hurt its competitive position or financial risk profile (through, for example, capital and earnings). Transparency and reporting: The suitability and transparency, or lack thereof, of an insurer's accounting policies can influence our assessment of the insurer's governance. Hypothetical insurance environmental (physical risk) example 53. A non-life property/casualty insurer writes a large amount of property insurance in a region particularly prone to

physical risk associated with potentially increased frequency and severity of extreme weather events as a result of climate change. 54. Windstorms in that region are occurring more often compared with historical trends, and the losses incurred are rising as the cost to replace damaged buildings has increased in order to meet new building codes. As a result, reinsurers are limiting their capacity to the region and charging a higher rate for coverage. 55. The insurance company is largely forgoing reinsurance and retaining much of its exposure on its own balance sheet to try to retain margins on the business. 56. The reduction in reinsurance protection and lack of other mitigating actions result in an increase in the company's 1-in-250 net probable maximum loss, which weakens our assessment of its capital position. 57. At the same time, our earnings forecasts are weaker because of the margin compression resulting from the increased losses and potential for more volatile earnings. 58. As a result, we revise down our capital and earnings assessment--an element of the financial risk profile analysis--for this insurance company and, consequently, revise our rating outlook to negative.

**Sovereign Criteria Chart 8 Examples of the potential influence of ESG credit factors on the sovereign analysis**

**Environmental** Climate transition risk: Quality and adequacy of planning for climate transition risks, including environmentally friendly policies and infrastructure (included in the institutional and fiscal assessments of the sovereign criteria, see chart 8) Physical risk: Exposure to acute climate-related natural disasters exacerbated by the size of the economy (reflected in the economic, external, and fiscal assessments) Climate transition risk: Impact of global emissions reduction objectives and, more broadly, energy transition risks on external accounts, economic prospects, and structure (considered in the economic and external assessments) Social Social capital: Cohesiveness of civil society, including social mobility, social inclusion, the prevalence of civic organizations, degree of social order, and the capacity of political institutions to respond to societal priorities (reflected in the institutional assessment) Social capital: Growing social problems, including inequality, could undermine social cohesion. If unaddressed, this could lead to political deadlock, protests, and even civil strife. This could limit the government's ability to make timely and difficult decisions during periods of economic stress to avoid weakening creditworthiness. We could reflect these trends by worsening our institutional assessment, which could result in a sovereign downgrade. Health and safety: Impact of health and safety risks on economic, external, and fiscal performance and prospects (included in the economic, external, and fiscal assessments) Governance Transparency and reporting: Governance risks include freedom of the press, accountability, and the quality of information disclosure (included in the institutional, economic, and external assessments) Other governance factors: Opinion on policy credibility, including the independence of the central bank, policymaking tools and effectiveness, track record on price stability, and role as lender of last resort (may be reflected in the institutional assessment) Hypothetical sovereign (governance and social risks) example 59. The economic shock from a pandemic and a fall in oil prices affect the fiscal assessment and weaken the external assessment (due to rising financing requirements). 60. Historically weak political institutions and rising political uncertainty related to the upcoming election will likely reduce the effectiveness of policy responses (reflected in the institutional assessment) to the economic and fiscal issues the country faces. Legal challenges--faced by the executive and the ruling party's slim majority--complicate the situation. 61. The resulting risk-averse stance of investors further elevates external financing risks. These stresses significantly undermine the government's willingness and ability to service its debt in full and on time. 62. We lower the sovereign rating based on the aforementioned risks, including those related to governance (specifically, in the area of strategy, execution, and monitoring) and social (health and safety risks, such as the pandemic impact) credit factors.

**Non-U.S. Local And Regional Governments (LRG) Criteria Chart 9 Examples of the potential influence of ESG credit factors on the non-U.S. LRG analysis**

**Environmental** Physical risk: Impact of natural disasters (especially if exacerbated by a small and concentrated economy), rising sea levels, or pressure to reduce emissions on fiscal and economic profiles (considered in the economy and budgetary performance analysis of the non-U.S. LRG criteria, see chart 9); assessment of policies and infrastructure spending to mitigate those risks Climate transition risk: Impact on economic growth expectations and financial performance of concentration of economic activity in sectors that are vulnerable to climate change (reflected in the economy analysis) Physical risk: Strong management and proactive planning for resiliency that could mitigate the impact of physical risks, such as those related to rising sea levels (included in the financial

management analysis) Social Social capital:Impact of demographic and income factors on the need for services, economic growth prospects, budgetary balance, or provision of basic infrastructure (considered in the economy and budgetary performance analysis) Social capital:Impact of social unrest, safety and security, or low social cohesion on economic growth prospects, budgetary balance, or provision of basic infrastructure (reflected in the economy and budgetary performance analysis) Governance Risk management, culture, and oversight:Impact of failure to manage pensions and other postemployment benefit obligations on financial performance (reflected in the financial management, budgetary performance, and debt burden analysis) Other governance factors:Amount of government control over government-related entities, which could expose an LRG to additional ESG-related challenges (part of the financial management analysis) Hypothetical non-U.S. LRG environmental (climate transition risk) example 63. A regional government with an economic base heavily concentrated in petroleum has had historically volatile revenues that fluctuate with the price of oil and natural gas. 64. Efforts to diversify and stimulate the economy have had limited success outside the petrochemical and commodities sectors and have weighed heavily on the province's budgetary performance and debt burden. 65. As oil price fluctuations and the transition to renewables threaten the oil and gas sector, major taxpayers and employers in the region face heightened financial pressure, which carries over to the province's projected budgetary performance. 66. A severe shock to oil prices causes a single-year drop in revenues, which is reflected in the budgetary performance, and the government struggles to recover its financial strength, resulting in a downgrade. U.S. General Obligation Criteria (States And Local Governments) Chart 10 Chart 11 Examples of the potential influence of ESG credit factors on the U.S. states and local governments analysis Environmental Physical risk:Exposure to weather events, rising sea levels, and other environmental and climate-related risks and evaluation of their potential impact in the context of management's long-term planning and preparation, risk assessments, and insurance coverage, as well as operational assessments (reflected in the financial management, budgetary performance, and debt and liability profile categories of the U.S. states criteria, and in the management, budgetary flexibility, budgetary performance, and debt and contingent liabilities categories of the U.S. local governments criteria, see charts 10 and 11) Physical risk:Unmitigated variations in the local economy affecting budgetary performance as a result of changes in climate Climate transition risk:Limitations on development and economic activity stemming from concentration in carbon emission-intensive industries, which may affect our view of the economy Social Social capital:Impact of demographic and income factors on the need for services (reflected in budgetary performance), and economic growth prospects and income distribution (reflected in our view of the economy) Human capital:Exposure to labor unrest, which may be reflected in budgetary performance as well as financial management for states and budgetary flexibility and management for local governments Health and safety and other social factors:Exposure to health and safety issues, political unrest, and terrorism, which may be incorporated in our view of the economy and budgetary performance as well as financial management for states and budgetary flexibility and management for local governments Governance Risk management, culture, and oversight:Pension plan pressures stemming from funding discipline or assumptions governing the plan (included in the debt and liability profile for states and debt and contingent liabilities for local governments) Governance structure:Oversight and board structure, including state funding for school districts, institutional framework for local governments, and government framework for states Transparency and reporting:Transparency and disclosure (considered in the institutional framework for local governments and financial management for states) Hypothetical U.S. local governments environmental (physical risk) example 67. Hurricanes are prevalent in the region, and physical risk is meaningful. A major hurricane devastates the city, with about 80% of structures sustaining damage and more than half of the city's residents displaced. This displacement creates significant near-term uncertainty for the local economy. If redevelopment is slow, market value and income levels could decline. Conversely, if redevelopment is robust, the economy could bounce back quickly. 68. With many local businesses closed, the city's revenues are likely to see at least near-term declines. Along with uncertainty around the city's recovery costs, this could affect its budgetary performance. 69. Although the city is vulnerable to significant weather events, such as hurricanes, its substantial budgetary flexibility enables it to address unexpected expenditures or revenue declines. However, that

flexibility could decrease if the city taps reserves to address its hurricane-related capital needs, or to offset revenue declines. Additionally, debt and contingent liabilities could increase to fund projects protecting the city against future hurricanes. 70. We revise the rating outlook to negative from stable based on our view that we could lower the rating if redevelopment is slow and the economy weakens, weighing on the city's financial position (as part of budgetary flexibility and budgetary performance) and debt levels (as part of debt and contingent liabilities). U.S. Municipal Water, Sewer, And Solid Waste Utilities Criteria Chart 12 Examples of the potential influence of ESG credit factors on the U.S. municipal water, sewer, and solid waste utilities analysis

**Environmental** Physical risk: Exposure to weather events, rising sea levels, and other environmental and climate-related risks and evaluation of their potential impact in the context of management's long-term planning and preparation, risk assessments, and insurance coverage, as well as operational assessments (reflected in the financial management and operational management assessments of the U.S. municipal water, sewer, and solid waste utilities criteria, see chart 12)

**Physical risk:** Changes in the local economic fundamentals of the service area as a result of changes in climate, and climate change-driven impacts on natural capital stock affecting water quality and quantity that adversely affect the utility

**Social** Social capital: Impact of demographic and income factors on the affordability of services (reflected in market position), economic growth prospects (considered in economic fundamentals), and income distribution (part of market position)

**Human capital:** Organizational continuity and succession planning (included in the operational management assessment)

**Governance** Governance structure: Compliance with environmental regulatory requirements (reflected in the operational management assessment)

**Risk management, culture, and oversight:** Risk management, including capital expenditure planning and the magnitude of deferred maintenance, in the context of environmental regulation (incorporated in the financial management and operational management assessments)

Hypothetical U.S. municipal water, sewer, and solid waste utilities governance (risk management, culture, and oversight) example 71. The city served by this utility has lingering effects from exposure to severe weather events, such as population declines and economic stagnation to a service area that already suffers from a poverty rate well above the national average. 72. Because of both the sensitivities to high poverty rates and decades of deferred maintenance, much-needed rate increases either never happened or were scaled back in magnitude. Therefore, the system is in disrepair and remains in a state of noncompliance with environmental regulations. 73. We lower the rating as a result of the large unaddressed capital expenditures that reflect governance weaknesses (reflected in the financial management assessment), which have resulted in violations of environmental regulations and lowered the operational management assessment. An additional reason for the rating action--reflected in the market position assessment--is the system's uncertain path to increase utility rates given a customer base that suffers from appreciable poverty levels.

Project Finance Criteria Chart 13 Examples of the potential influence of ESG credit factors on the project finance analysis

**Environmental** Climate transition risk: A project with refinancing risk whose product is greenhouse gas emissions-intensive could lead us to adjust interest rate and credit margin assumptions, which is included in the refinancing risk analysis in the project finance operations phase analysis (see chart 13).

**Physical risk:** If weather events delay project construction or lead to unmitigated damages, this can weaken the construction phase creditworthiness, which could be reflected in the progress score within the construction phase business assessment or by assuming the total cost of construction has increased within the construction financial analysis.

**Social** Social capital: Toll roads facing opposition to tariff increases from toll road users could lead us to lower tariff rate assumptions in our cash flow assumptions, which we include in our DSCR forecast within the financial assessment for the operations phase.

**Governance** Governance structure: We may assign a positive risk allocation score within the construction phase business assessment if the concession contract clearly allocates construction tasks between the contractors, concession provider, and project entity, with each task allocated to the entity best able to complete that task, and the contract includes a strong dispute resolution process.

**Risk management, culture, and oversight:** If a project has relatively weak restrictions on additional debt and a management team that has historically tended to increase the asset's leverage after periods of overperformance, we may reflect this in the management and governance score or structural protection score within the operations phase business assessment.

Hypothetical project finance environmental (climate transition risk) example 74. A project-financed port



built to enable coal exports is exposed to climate transition risk. The project has refinancing risk because it is structured with several bullet tranches of debt. 75. The project has long-term take-or-pay contracts with the mines, ensuring that revenues are predictable and stable through the term of the contracts. The mines have long-term sale contracts, minimizing the risk that they may be unable to meet their obligations. 76. Some lenders have announced plans to halt lending to the coal industry, including coal ports. This raises questions about the ability of the project to refinance, the cost of refinancing, and potentially the long-term viability of the mines and the port. 77. We incorporate this risk in the refinancing risk analysis by assuming a higher spread on refinancing and reducing the remaining useful life of the port at refinancing. 78. This has an impact on the debt service coverage ratio (DSCR) post-refinancing, which leads to a downgrade because we rate to minimum DSCR, which is reflected in the DSCR forecast analysis. The reduced useful life lowered recovery prospects and the project life coverage ratio (PLCR), which we assess in the refinancing analysis. A low PLCR caps the rating on the project. Structured Finance Criteria Chart 14 Examples of the potential influence of ESG credit factors on the structured finance analysis

**Environmental** Climate transition risk: Exposure to vehicles not meeting the latest emissions standards could result in lower recovery rates or higher residual value losses, which is reflected in the credit quality of the securitized assets analysis of the structured finance analytical framework (see chart 14). Physical risk: Concentrations by obligor, industry, or geography may increase exposure to potential natural disasters or other physical climate-related risks, such as hurricanes and flooding, which we would consider when analyzing the credit quality of the securitized assets. Social Social capital: Interest rates deemed excessive could result in reduced yield or could challenge the validity of the loans in securitized pools, which would be part of the payment structure and cash flow mechanics and legal and regulatory risk analysis. Health and safety: Social distancing restrictions implemented to control a pandemic could result in cash flow declines that affect required credit enhancement levels and increase liquidity risks, which we would incorporate in the credit quality of the securitized assets and payment structure and cash flow mechanics analysis. Governance Governance structure: Aggressive growth in originations may be accompanied by a weak internal control framework and looser underwriting, resulting in higher defaults, which is reflected in the credit quality of the securitized assets and payment structure and cash flow mechanics analysis. Risk management, culture, and oversight: A successful cyber attack on the servicer could disrupt collections or result in a loss of borrower data that exposes the issuer to legal or regulatory risks, which we would factor into the legal and regulatory risk analysis. Hypothetical structured finance social (health and safety) example 79. The outbreak of a pandemic results in unprecedented disruptions beyond more traditional risk. Activities viewed as potentially contributing to the spread of the virus, thereby posing health risks to stakeholders beyond direct employees, are more at risk. 80. These would typically include sectors reliant on social gathering, such as lodging. For some properties backing commercial mortgage-backed securities transactions, demand falls as potential customers' health and safety concerns cause a decline in the revenue per available room (RevPAR). This may ultimately impair loan credit quality, absent further liquidity support, if the property cash flows become insufficient to service the debt. 81. In addition, the ability to refinance certain of these loans becomes constrained, given significant uncertainty regarding the duration of the pandemic and the time needed for lodging demand to return to normal levels. 82. In such instances, we may decide to apply our lower net cash flow or decide to apply our higher capitalization rate on some properties to account for the increased volatility risks from the pandemic, which is reflected in the credit quality of the securitized assets and payment structure and cash flow mechanics analysis. Absent any mitigating factors, the changes in our stress assumptions could result in negative rating actions.

**REVISIONS AND UPDATES** This article was originally published on Oct. 10, 2021. Changes introduced after the original publication: On March 9, 2022, we republished this criteria article to make nonmaterial changes. We updated outdated references in Chart 6 of the "Appendix" following the revision of our criteria for rating financial institutions on Dec. 9, 2021. We also updated the "Related Criteria" section and contacts. On Dec. 22, 2022, we republished this criteria article to make nonmaterial changes. We removed the Key Publication Information and Impact On Outstanding Ratings sections that related to the original publication of the criteria. We also updated outdated references in Charts 12 and 13 of the Appendix following the revision of our criteria for U.S. municipal water, sewer, and solid waste utilities and project

finance. In addition, we updated examples of the potential influence of ESG credit factors in the U.S. municipal water, sewer, and solid waste utilities and project finance text boxes to reflect new criteria. We also updated the Related Criteria and Related Research sections. RELATED PUBLICATIONS

Related Criteria Note: The methodology relates to all foundational criteria articles used to assign credit ratings because they apply to our ratings on all issuers and issues where we believe ESG credit factors may be relevant. The related criteria list below includes the articles specifically referenced in the methodology. General Project Finance Rating Methodology, Dec. 14, 2022 U.S. Municipal Water, Sewer, And Solid Waste Utilities: Methodology And Assumptions, April 14, 2022 Financial Institutions Rating Methodology, Dec. 9, 2021 Methodology For Rating Local And Regional Governments Outside Of The U.S., July 15, 2019 Insurers Rating Methodology, July 1, 2019 Sovereign Rating Methodology, Dec. 18, 2017 U.S. State Ratings Methodology, Oct. 17, 2016 Corporate Methodology, Nov. 19, 2013 U.S. Local Governments General Obligation Ratings: Methodology And Assumptions, Sept. 12, 2013 Principles Of Credit Ratings, Feb. 16, 2011 Related Research S&P; Global Ratings' research S&P; Global Ratings Definitions, Nov. 10, 2021 The Role Of Environmental, Social, And Governance Credit Factors In Our Ratings Analysis, Sept. 12, 2019 Credit FAQ: How Does S&P; Global Ratings Incorporate Environmental, Social, And Governance Risks Into Its Ratings Analysis, Nov. 21, 2017 Other research Managing Climate Risk in the U.S. Financial System Report of the Climate-Related Market Risk Subcommittee, Market Risk Advisory Committee of the U.S. Commodity Futures Trading Commission, Sept. 9, 2020 Integrating political and technological uncertainty into robust climate policy, Leslie Paul Thiele, Sept. 5, 2020 IPCC, 2018: Global Warming of 1.5°C. Uncertainty and Ambiguity in Environmental Economics: Conceptual Issues, Geoffrey Heal and Antony Millner, September 2017 CDP Carbon Majors Report 2017, July 2017 Notes 1) Research published in the "Carbon Majors Report" written by the CDP and Climate Accountability Institute in 2017 posited that just 100 companies have been the source of more than 70% of the world's greenhouse gas emissions since 1988. 2) Many scientists believe that the release of greenhouse gases into the atmosphere from human activity--such as the burning of fossil fuels--is a significant cause of climate change. According to the report "Global Warming of 1.5°C" (IPCC 2018), the IPCC believes with "high confidence" that "pathways limiting global warming to 1.5°C ...require rapid and far-reaching transitions in energy, land, urban and infrastructure...and industrial systems." The IPCC further believes with "medium confidence" that "transitions ... imply deep emissions reductions in all sectors." 3) Again, according to the report "Global Warming of 1.5°C" (IPCC 2018), the IPCC believes with "high confidence" that regions at disproportionately higher climate-related risk include Arctic ecosystems, dryland regions, small island developing states, and least developed countries. 4) Heal and Milner describe in their paper "Uncertainty and Ambiguity in Environmental Economics: Conceptual Issues" (Heal and Milner, September 2017) that "the scientific community understands some aspects of the behavior of the climate system well, but others poorly." They further state that "We are certainly no better, and often worse off, when it comes to our understanding of economic systems," concluding that "we are... particularly weak on the interactions between the two." The Financial Stability Board (FSB) noted in its report "The Implications of Climate Change for Financial Stability" that "Risks to the financial system from climate change tend to be particularly uncertain in both their severity and the time horizon over which they might crystallise. They may also be more dependent on measures taken by policymakers." The FSB further notes that "It is difficult to quantify risks to financial stability from climate change precisely. The future path of climate change and its impact on the financial system are highly uncertain and could be nonlinear over time." In its September 2020 report "Managing Climate Risk in the U.S. Financial System," the U.S. Commodity Futures Trading Commission noted that "A major concern for regulators is what we don't know. While understanding about particular kinds of climate risk is advancing quickly, understanding about how different types of climate risk could interact remains in an incipient stage. Physical and transition risks may well unfold in parallel, compounding the challenge." 5) The paper "Integrating political and technological uncertainty into robust climate policy" (Thiele, Sept. 5, 2020) describes that as "climate change is unlikely to follow a linear path, climate policies should anticipate varied outcomes and be flexibly responsive. The case for such 'robust policy' is compelling. However, advocates of robust approaches to policymaking often understate the challenge, as the variability of climate is just one of at least three interactive arenas of uncertainty that require attention.

Emerging technologies will have a significant but indeterminate impact on climate adaptation and mitigation efforts. Uncertainty is also heightened because politics is an arena of disruptive change." 6) According to the TCFD 2020 Status Report, "companies' disclosure of the potential financial impact of climate change on their businesses and strategies remains low. The Task Force recognizes the challenges associated with making such disclosures but encourages continued efforts and faster progress."