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# Credit Worthy: ESG Factors and Sovereign Credit Ratings

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 **WORLD BANK GROUP**

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(FCI) Global Practice (GP) in collaboration with World Bank Treasury (TRE), Development Economics Vice Presidency (DEC), and other GPs. Focusing on ESG issues in sovereign investing the series disseminates practical, evidence-based recommendations for market participants, including institutional investors, sovereign issuers, credit rating agencies, ESG data and service providers, among others.



“[A New Dawn - Rethinking Sovereign ESG](#)” proposes improvements to the sovereign ESG framework and builds on findings and recommendations discussed in other papers in the series.



“[Demystifying Sovereign ESG](#)” focuses on comparing sovereign ESG methodologies of leading sovereign ESG providers and presents structural challenges with the current sovereign ESG framework.



“[Riding the Wave: Navigating the ESG Landscape for Sovereign Debt Managers](#)” provides a thorough discussion of sovereign ESG from a debt management office perspective.



“[Paving the Path: Lessons from Chile's Experiences as a Sovereign Issuer for Sustainable Finance Action](#)” provides a focused study of Chile's ESG focused issuances to date and relevant lessons.



“[Spatial Finance: Challenges and Opportunities in a Changing World](#)” in partnership with WWF discussed challenges with the E data, including at the sovereign level, and explores the use of satellite data to address the quality and availability of E data.



“[Natural Capital and Sovereign Bonds](#)” builds the case that countries' level of development dominates ESG-related metrics. “[1% Growth in Natural Capital: Why It Matters for Sovereign Bonds](#)” quantifies materiality of natural capital and its impact on sovereign bonds by adjusting for ingrained income bias.



The chapter “[Natural Allies: Wealth and Sovereign ESG](#)” from the book “[The Changing Wealth of Nations 2021: Managing Assets for the Future](#)” focuses on challenges in ESG data, and discusses solutions with the application of the World Bank Wealth data.



“[Natural Capital and Sovereign Bonds](#)” introduces the concept of ingrained income bias and presents evidence that sovereign bond yields reflect a country's various types of natural capital.



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# Abbreviations

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<b>CRA</b>	credit rating agency
<b>DMO</b>	debt management office
<b>DOJ</b>	U.S. Department of Justice
<b>EMDE</b>	emerging market and developing economy
<b>ESG</b>	environmental, social, and governance
<b>ESMA</b>	European Securities and Markets Authority
<b>EU</b>	European Union
<b>PRI</b>	Principles for Responsible Investment
<b>SDGs</b>	Sustainable Development Goals
<b>V.E</b>	Vigeo Eiris, a company acquired by Moody's Corporation in 2019
<b>WAVES</b>	Wealth Accounting and the Valuation of Ecosystem Services

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Caption: School girls in Afghanistan | Source: pixabay.com



## Executive Summary

**The increasing role of the financial sector in the move toward a more sustainable economic model continues apace.** The COVID-19 “shock” shone a light on the need for all society to correct course, and the financial sector is responding. The pace of environmental, social, and governance (ESG) integration into investment decisions,<sup>1</sup> which has become the prevalent form of sustainable finance, continues to accelerate.<sup>2</sup> These developments reflect changing societal perspectives that challenge the traditionally ingrained investment approaches that have evolved over many decades. Against this backdrop, various financial sector stakeholders continue to evaluate how their role, products, and tools should adapt to this evolving landscape.

**This report forms part of a broader analytical report series under the auspices of the Global Program on Sustainability,<sup>3</sup> which looks at pertinent ESG issues and how they apply to the sovereign fixed-income asset class.** Our analysis to date highlights the “unique” nature of the sovereign debt asset class from an ESG perspective, largely driven by the complex nature of a sovereign nation, in particular compared to a corporate entity. Our publications are targeted at various financial sector stakeholders, including sovereign and sub-sovereign issuers, investors, credit rating agencies (CRAs), ESG providers, regulators, standard setters, and policy makers, as well as sustainable finance advocates. The series also aims to illuminate issues from various perspectives and to provide evidence to ensure that the market practices that are becoming embedded in the financial system are equitable and transparent to all.

**The increased focus on sustainable finance has resulted in contrasting views and sometimes heated debate<sup>4</sup> between the key protagonists in the financial sector on how sustainability should be assessed and incorporated in financial decision-making.** Investors are increasingly focused on a broader definition of sustainability from a longer-term perspective. For example, a recent survey from J.P. Morgan ([JPM survey](#) in chapter 2, Gratcheva et al. 2021) highlights the belief held by many investors that improving ESG fundamentals leads to lower sovereign credit risk. However, this view challenges traditional perceptions in the market regarding the key factors determining sovereign credit risk, such as debt and fiscal risks. Indeed, empirical evidence showing a causation between ESG factors and sovereign credit risk is mixed. The survey also indicates that many in the industry expect these two approaches to credit risk to converge. However, this expectation may not be well grounded, because an issuer’s creditworthiness and

1 ESG integration is the practice of incorporating ESG-related information into investment decisions to help enhance risk-adjusted returns, regardless of whether a strategy has a sustainable mandate.

2 See <https://www.bloomberg.com/news/articles/2021-08-18/35-trillion-in-sustainability-funds-does-it-do-any-good>.

3 See the Global Program on Sustainability, <https://www.worldbank.org/en/programs/global-program-on-sustainability>.

4 See in particular Tariq Fancy, “Tariq Fancy on the Failure of Green Investing and the Need for State Action,” *The Economist*, November 4, 2021, <https://www.economist.com/by-invitation/2021/11/04/tariq-fancy-on-the-failure-of-green-investing-and-the-need-for-state-action>, and Robert G. Eccles, “A Critique of Tariq Fancy’s Critique of ESG Investing: An Interview with Clara Miller,” *Forbes*, October 1, 2021, <https://www.forbes.com/sites/bobeccles/2021/10/01/a-critique-of-tariq-fancys-critique-of-esg-investing-an-interview-with-clara-miller/?sh=60000c8c390d>, among others.

its ESG standing, or reputation may not be directly linked as an issuer's default risk could be independent of the entity's favorable ESG characteristics (S&P 2021).

**This paper focuses on sovereign credit ratings and empirically assesses how broad sovereign ESG factors—as well as the ESG factors specific to a country's national wealth and management of risks and opportunities**

**related to so-called stranded assets like fossil fuel resources—are manifested in sovereign credit rating assessments.** This analysis is complemented by a network analysis of the publicly available sovereign CRA methodologies, as well as information garnered from the team's discussions with the CRAs.<sup>5</sup>

## A CHANGING FINANCIAL SECTOR ECOSPHERE

**Having evolved over nearly two centuries, CRAs have become a foundational part of the global financial architecture.**<sup>6</sup> CRAs evolved over time to fulfill a specific purpose: to assess the capacity and willingness of an issuer to meet its bond payments on time and in full. In recent years, with the increasing focus on ESG investing in various asset classes, investors have sought a different type of information—one that has a wider conceptual scope and is complementary to financial analysis. This development has resulted in the advent of ESG providers, who aim to give an extra-financial assessment of sustainability (not focused only on debt and fiscal metrics) that is now perceived, by some, to be affecting sovereign creditworthiness. There are notable

differences however, that affect how CRAs and ESG providers have been responding to the demand for more sustainability-based products and services. Specifically, compared with CRA ratings, which are originated and paid for by issuers, ESG scores/ratings/rankings are “unsolicited” as ESG assessments are typically not requested by issuers and are paid for by investors. The ESG provider industry is nascent and is currently not regulated, while CRAs are regulated and have a well-established mandate, methodologies, and terminologies. The age of the ESG industry, combined with access to new technologies and (big) data in contrast to the scarce information during the CRA industry's formation, has led to a marketplace filled with a variety of actors.

## CURRENT SOVEREIGN ESG METHODOLOGIES

**CRAs argue that consideration of ESG credit factors (that is, factors that have a direct impact on an issuer's creditworthiness) should not be conflated with investment strategies that target some positive ESG outcomes (nonfinancial impact as well as a financial return).** The CRA industry underscores that factors that influence a sovereign's creditworthiness over a particular time horizon (typically less than 10 years) and are visible (that is, their likelihood or effect can be assessed) are the only ones that should be included in a sovereign credit rating assessment. Credit factors with historical precedence, such as fiscal/debt dynamics and governance factors, are explicitly included in credit assessments. Environmental (E) and social (S) factors, however, are often not included, given the complexities of evaluating them at a sovereign level. Further, the expected time horizon and greater uncertainty of their associated risks going forward often make them harder to assess. Figure ES.1 provides a network analysis of the key credit factors currently included in sovereign credit rating methodologies. The figure

highlights the fact that E and S factors play a limited role in the quantitative rating methodology of most CRAs. In some cases, CRAs may incorporate E and S factors in the qualitative overlay process, which is also part of the process of deriving a final credit rating for most CRAs, but this process could be deemed as quite subjective.

**Our analysis provides a mixed picture of how ESG factors affect sovereign credit ratings: we show empirically that there is scope to improve the current CRA approach by better reflecting ESG factors in sovereign credit rating methodologies.** Materiality<sup>7</sup> is a key concept in the discussion around including credit-relevant ESG factors. Although on the conceptual basis many ESG factors could affect a country's sustainability profile, the existing methods and/or data are inadequate to properly assess their financial materiality over a particular horizon, and therefore these factors currently do not affect the “headline” credit assessment. However, figure ES.2 highlights the bind that many CRAs face—which is, in

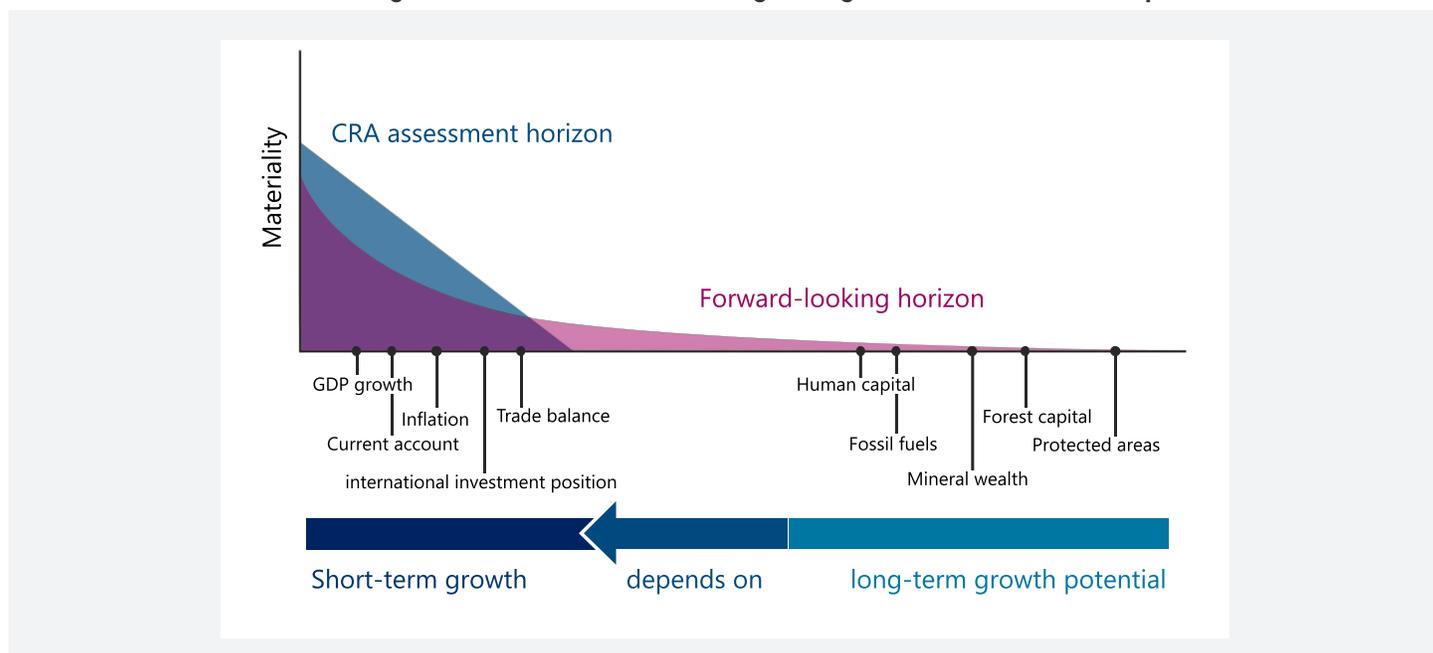
5 We analyzed the methodologies used at the following companies: Fitch Ratings, Moody's Investor Service, S&P Global Ratings, Kroll Bond Rating Agency (KBRA), DBRS Morningstar, Scope Ratings GmbH, and HR Ratings.

6 Credit ratings influence capital allocation, investment decisions, regulations, and even monetary policy collateral frameworks, and many investors see them as a precondition to inform the investment process.

7 Materiality is an accounting principle that defines which information is useful to an investor, given specific investment objectives.



**FIGURE ES2 - The “Tragedy of the Horizon” of CRAs: Even though short-term factors are dependent on long-term issues, CRAs almost exclusively focus on the former. Striking the right balance will become paramount for CRAs**



Source: World Bank staff illustration.

Note: CRA = credit rating agency; GDP = gross domestic product.

many ways, a “tragedy of the horizon.”<sup>8</sup> Many factors related to a country’s long-term sustainability, such as mineral wealth, fossil fuels, and forest capital, could be material for a sovereign credit assessment but are currently not included. We argue that, because the ESG “lens” is now increasingly a key part of the investment process, CRAs should also adapt their methodologies to explicitly include ESG factors, which predominantly reflect long-term issues, in their sovereign credit

rating methodologies. Increasing the transparency of factors that are and are not included, as well as their weightings, would benefit the whole financial system. Although most ESG credit factors may not be seen as material now, the dynamic nature of ESG credit factors could make them more important in the future. Currently, only one CRA includes ESG factors as a separate explicit component in its sovereign credit rating methodology (see appendix A).

## SOVEREIGN CREDIT RATINGS AND SOVEREIGN ESG SCORES

**By design sovereign credit ratings and sovereign ESG scores<sup>9</sup> are fundamentally different measures—one focused on an issuer’s creditworthiness and the other on an issuer’s sustainability.** Comparing sovereign ESG scores and sovereign credit ratings is conceptually challenging, although it is practiced by the industry (Bank of America 2021; Goldman Sachs 2020). First, these products were designed to measure different forms of materiality: creditworthiness (or financial) versus some mix of financial and ESG (or nonfinancial) materiality (Gratcheva et al. 2021). Second, there is a fundamental problem with aggregating E, S, and G

factors that come from different disciplines and are measured in different units into a consolidated score.

**We find divergences across country income groups when we investigate the relationship between sovereign credit ratings and sovereign ESG scores.** For high-income countries, ESG factors and credit ratings are highly correlated, which implies that one could question the additionality of sovereign ESG scores to current sovereign credit ratings. For low-income countries, however, we see no clear relationship suggesting that for these countries

<sup>8</sup> Speech by Mark Carney, governor of the Bank of England and chairman of the Financial Stability Board, “Breaking the Tragedy of the Horizon: Climate Change and Financial Stability,” at Lloyd’s of London, London, September 29, 2015, <https://www.bis.org/review/r151009a.pdf>.

<sup>9</sup> Throughout the paper we use “scores” to refer to sovereign ESG assessments by ESG providers to differentiate from “ratings” of sovereign credit rating agencies. For our analysis in this paper, we derive a single sovereign ESG score (per sovereign) across six ESG providers (including MSCI, Robeco, V.E, Sustainalytics, RepRisk, FTSE Russel) using principal components analysis, as these sovereign ESG scores are 90 percent correlated because of the ingrained income bias (Gratcheva, Emery and Wang 2021). Thus, “sovereign ESG scores” used in this paper represents a useful proxy for the sovereign ESG sector as a whole.

other criteria, such as macroeconomic, fiscal or debt factors, generally dictate sovereign creditworthiness. This finding is particularly relevant for lower-income countries, which are often assigned the same credit rating on the sovereign

creditworthiness scale. Introducing a more granular rating scale would allow ESG credit factors, among other credit factors, to be more visible to investors.

## A MORE HOLISTIC VIEW OF A COUNTRY'S LONG-TERM SUSTAINABILITY

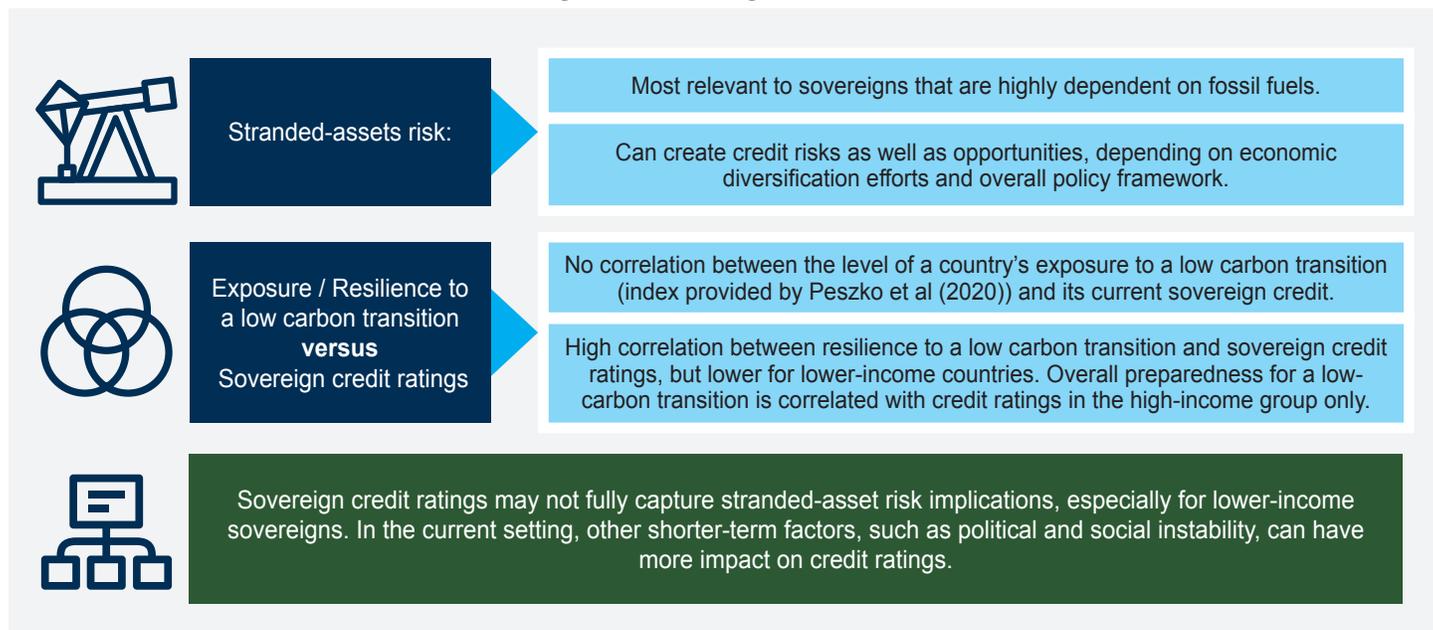
**We find that aspects of a country's wealth—human and produced capital<sup>10</sup>—are generally reflected in sovereign credit rating assessments, but the portion of a country's wealth that focuses on natural capital is generally not.**

Although our finding may not be surprising for higher-income countries, the irrelevance of natural capital for lower-income countries is unexpected, given their stronger reliance on natural resources (World Bank 2021). For this analysis we use the World Bank wealth data set,<sup>11</sup> which is uniquely suited to inform sovereign credit rating assessments because it (a) estimates economic value of underlying factors and expresses them in the same monetary unit, (b) has a forward-looking perspective, and (c) has a long history of curated data that are comparable across 146 countries and over time (annual data

over 1995–2018). We deduce that if a credit assessment were conducted over a longer time horizon, natural capital would be more relevant for a thorough assessment of sovereign creditworthiness.

**Finally, we compare sovereign credit ratings to a measure of sovereign stranded-assets exposure and the country's institutional and economic resilience to a low-carbon transition.<sup>12</sup> This comparison enables us to explore whether risks and opportunities related to stranded assets are captured in current sovereign credit rating assessments.** First, we find that sovereign credit ratings do not necessarily reflect sovereign exposure to a low-carbon transition. Second, we find that institutional and economic

**FIGURE ES3 - Stranded assets and sovereign credit ratings**



Source: World Bank staff illustration.

10 Human capital is computed as the present value of future earnings for the working population over their lifetimes. Produced capital includes the value of machinery, buildings, equipment, and residential and nonresidential urban land. See appendix A, Wealth Data section.

11 The concept of a country's wealth is different from gross domestic product. A country's wealth includes produced capital (buildings, machinery, and infrastructure); natural capital (such as agricultural land, forests, protected areas, minerals, and oil, coal, and gas reserves), human capital (broken down by gender and types of employment), and net foreign assets. Wealth accounting provides an estimate of the total wealth of nations by aggregating values of these different components of wealth. A change in wealth is an indicator that is used to assess a country's potential to grow in the future. A fall in wealth indicates that a country is depleting its assets and may not be able to sustain its future gross domestic product growth.

12 We use sovereign exposure and resilience scores calculated by Peszko et al. (2020) for more than 90 countries. The exposure score consists of four factors that measure how heavily a country is exposed to low-carbon transition risks. The resilience score is a combination of 11 factors that measure a country's ability and flexibility in adapting to structural changes caused by the low-carbon transition.

resilience scores display a high and statistically significant correlation with sovereign credit ratings. The relationship, however, is notably lower for lower-income countries. These findings suggest that a country's preparedness for a low-carbon transition needs to be better reflected in their sovereign

credit assessments. Moreover, better assessing stranded-asset risks and opportunities for lower-income countries in credit rating assessments would allow investors to better differentiate between EM sovereign credit risks (figure ES.3).

## KEY CONCLUSIONS

**This paper contributes to the ongoing debate around the ESG landscape and its evolution at a time when the financial sector's deeply embedded practices and methodologies, are adapting to a changing societal and political context.**

**There is an inherent tension between the CRA industry and the calls of sustainability advocates who are insisting for ESG factors to be further reflected into sovereign credit rating assessments.** The CRA mandate is clearly defined, and it is deeply rooted within the financial sectors architecture: credit factors which are material to a sovereign's creditworthiness are included in credit assessments. However, the time horizon of events such as climate change pose two fundamental challenges to the calls for the greater integration of ESG factors into the investment process. First, limitations around modeling and data are significant and second, the disconnect between the current investment horizon ingrained in the financial industry and the horizon that many ESG factors are expected to be material from a credit worthiness perspective significantly curtails the possibility of integrating these factors into sovereign credit assessments. As a result, unless policy makers and regulators explicitly mandate CRAs to focus on a longer-term horizon, driven by changing societal perspectives on what constitutes investment "return", it's likely that the CRA focus will remain on the current shorter assessment horizon.

**Notwithstanding, the assessment of materiality of ESG factors for sovereign credit risk is evolving.** Transparency around methodology is crucial and many CRAs have already introduced additional insights into their credit assessments to clarify how ESG factors are included in the assessment. Additionally, many CRAs have launched ESG-related products that aim to give investors insight into broader ESG factors of an issuer. This increased transparency is welcome, but there is room for improvement. Still, the current response of CRAs to the evolving market demand has not led to market consensus around how sovereign ESG factors affect sovereign creditworthiness and overall sustainability.

We propose five main policy takeaways to contribute to the current dialogue on this issue:



**1 The CRA and ESG provider mandates need to become clearer and distinguishable.** Both industries have an important role to play. CRAs are focused on their medium-term credit assessment from the credit and financial risk perspective. ESG providers need to focus on the longer-term sustainability measurement—and in particular to respond to the growing market demand to be able to assess the ESG impacts of investments (that is, ESG as an output, versus ESG as an input) (Boitreaud et al. 2020; Gratcheva et al. 2021).



**2 Sovereign CRA methodologies could be strengthened by introducing an ESG pillar which would provide more transparency on the role that ESG factors play in sovereign credit assessments:** Investors are increasingly focused on ESG issues. One view is that the ESG framework has been around for many decades in various other guises and the current framework is a “re-marketing” of an already established tenet of sovereign-debt analysis. We argue that the shift of the financial sector toward explicitly including ESG factors in the investment process requires that investment methodologies and the financial sector architecture shift as well. To this end, CRAs could consider an explicit ESG pillar in their methodology. Although E and S credit factors may not be seen as relevant or material for a sovereign credit rating assessment now, this status is likely to change in the future. Moreover, it’s clear that investors require more transparency on ESG issues.



**3 Current credit rating scales could be made more granular to better reflect how ESG factors impact a credit assessment:** There is room for sovereign CRA rating scales to become more detailed so they could capture differences related to credit-material ESG issues (among other credit factors), whether they be *positive* or *negative*. Although many ESG factors could be financially material, its impact may not be material enough to be captured on current ratings scales. Providing more granularity on the rating scale would allow investors to make more informed decisions and better distinguish between countries that are at the same credit-rating level but that may be performing better on E and S issues. While some CRAs have introduced additional guidance (both in their sovereign credit assessments and via additional products) as to the materiality of ESG factors to their sovereign credit decision, it would be significantly less cumbersome to include such additional ESG information within the existing sovereign credit rating framework.



**4 World Bank research shows that wealth accounting data related to a country’s natural capital and information on a sovereign’s stranded-asset risks and opportunities** represents additional ESG relevant information that could be better reflected in sovereign credit assessments. The wealth accounting approach is inherently forward-looking and captures determinants for long-term sustainable growth. Additionally transition risks and opportunities related to stranded assets are often not clearly taken into account in current sovereign CRA assessments- and CRAs could improve their analysis of these potentially relevant credit factors, going forward.



**5 Finally, sovereign debt managers and policy makers have an important role to play in the changing financial sector ecosphere as economies transition to more sustainable economic models (Boitreaud et al. 2020).** The debt management office (DMO) of a sovereign can play a key role in engaging with investors on the sovereign’s ESG credentials/climate performance. The provision of such information to market participants aids transparency and will be valued by market participants. This level of engagement is particularly important going forward as investors are increasingly looking to issuer-specific sustainability information beyond limiting their scrutiny to labeled sovereign issues as has been the early practice since the emergence of green and other thematic sovereign bonds.



Caption: Shipping containers in Singapore | Source: Unsplash.com



## A Changing Financial Sector Ecosphere

The COVID-19 pandemic has accelerated the financial sector's embrace of sustainable finance as a key structural tenet of the investment world<sup>13</sup> (figure 1.1). This increased acceptance is epitomized by the commitments of 128 global asset managers with US\$43 trillion in assets under management who support the goal of net zero greenhouse gas emissions by 2050 or sooner,<sup>14</sup> the extraordinary inflows of capital into environmental, social, and governance (ESG-)focused investment funds in the past year,<sup>15</sup> and the seismic increase in thematic bond issuance by various types of issuers since the beginning of 2020.<sup>16</sup> Some issuers, such as the World Bank, have been engaging investors to consider the issuer's activities through a sustainability lens and measure against the progress toward the Sustainable Development Goals (SDGs) rather than limiting the focus to issue-specific considerations.<sup>17</sup> Recent publications from the World Bank, under the auspices of the Global Program on Sustainability, document how the different parts of the financial system are adapting to these developments, the various challenges that are crystalizing, and their implication for emerging market and developing economies (EMDEs) (Boitreaud et al. 2020; Gratcheva, Emery, and Wang 2021; Gratcheva et al. 2021).

**Credit rating agencies (CRAs) have evolved over the past two centuries to become an integral part of the financial sector ecosphere and are seen as being a critical enabler for the transformation of the financial system's architecture toward greater sustainability.** As presented in detail in appendix A, CRAs have a long history, and their agility and ability to adapt to a changing world have been a key reason for their continued relevance in the global financial system architecture. The CRA industry is currently dominated by three large players—Moody's Investor Service, S&P Global Ratings, and Fitch Ratings. The European Securities and Markets Authority (ESMA) estimates that, on a cumulative basis, these three CRAs account for 92.1 percent of the European Union (EU) market (ESMA 2019a).

<sup>13</sup> For example see recent COP26 announcements: <https://ukcop26.org/cop26-goals/finance/> and <https://www.unepfi.org/news/industries/banking/net-zero-banking-alliance-at-cop-26/>.

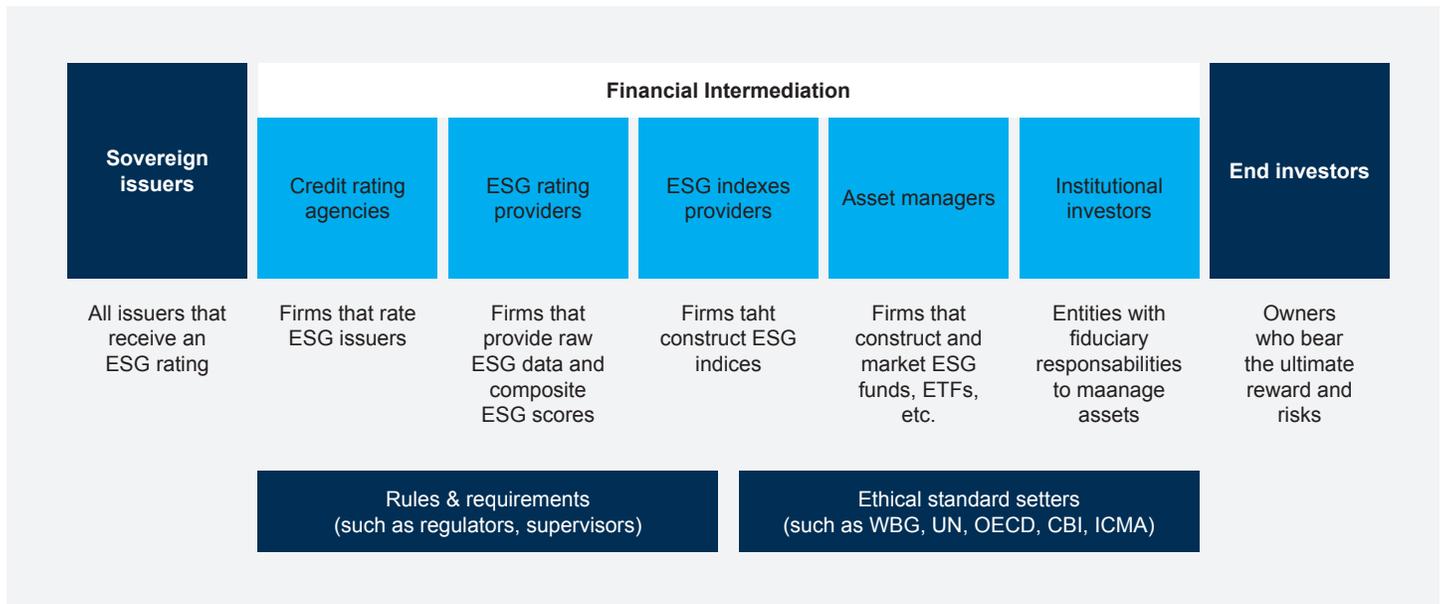
<sup>14</sup> This number represents almost half of all global assets under management. Please see <https://www.netzeroassetmanagers.org/> for more details.

<sup>15</sup> As an example, the following article tells of a jump in fourth-quarter demand: Simon Jessup and Elizabeth Howcroft, "Sustainable Fund Assets Hit Record \$1.7 trln in 2020: Morningstar," Reuters, January 28, 2021, <https://www.reuters.com/article/us-global-funds-sustainable/sustainable-fund-assets-hit-record-1-7-trln-in-2020-morningstar-idUSKBN29X2NM>.

<sup>16</sup> For a 2020 report, see Liam Jones, "Record \$700bn in Green, Social & Sustainability (GSS) Issuance in 2020: Global State of the Market Report," Climate Bonds Initiative, April 23, 2021, <https://www.climatebonds.net/2021/04/record-700bn-green-social-sustainability-gss-issuance-2020-global-state-market-report>.

<sup>17</sup> See the 2020 World Bank (International Bank for Reconstruction and Development) Sustainable Development Bonds & Green Bonds Impact Report: <https://treasury.worldbank.org/en/about/unit/treasury/impact/impact-report>.

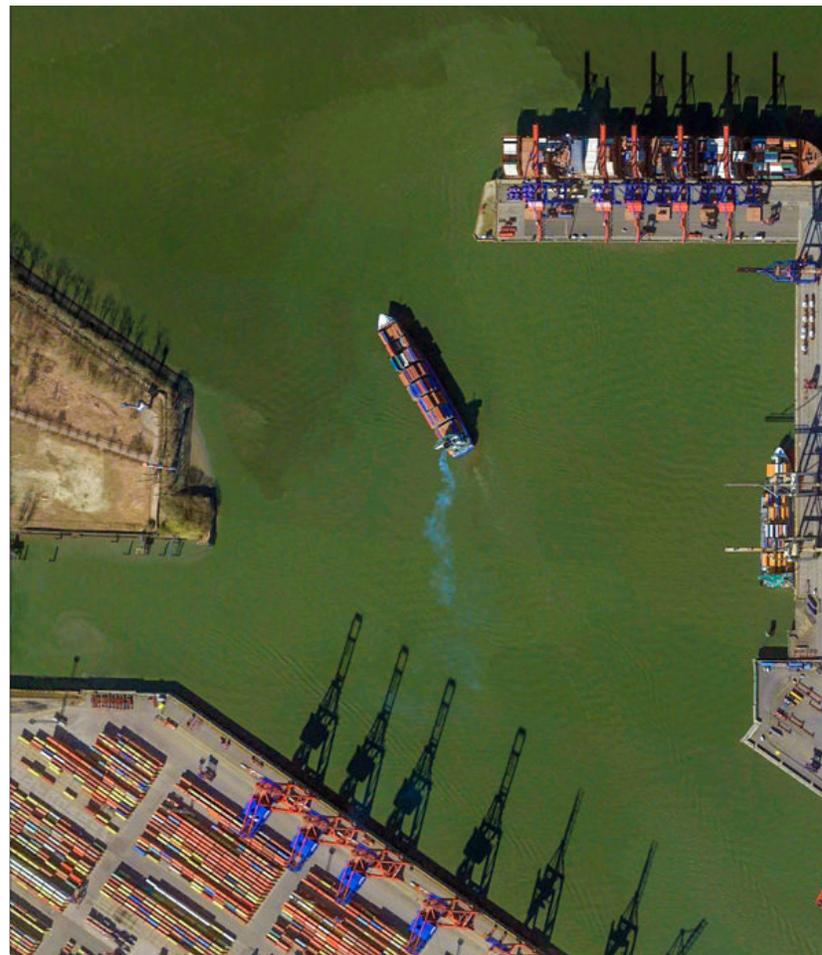
**FIGURE 1.1 - The financial sector continues to adapt as sustainable finance becomes mainstream**



Source: Boitreaud et al. 2020.

Note: CBI = Climate Bonds Initiative; ESG = environmental, social, and governance; ETF = exchange-traded fund; ICMA = International Capital Market Association; OECD = Organisation for Economic Co-operation and Development; UN = United Nations; WBG = World Bank Group.

**The 2008 global financial crisis was a seminal moment for the CRA industry.**<sup>18</sup> Post crisis, the CRA industry came under scrutiny regarding the quality of its credit rating assessments, as well as its rating actions during the crisis, which were viewed as amplifying financial shocks. This view was exacerbated by the perceived role by the industry in the euro-area sovereign debt crisis (2010–12).<sup>19</sup> Against this backdrop, the investment industry looked for better data to inform investment decisions, and a new industry of specialized ESG providers burgeoned (Gratcheva, Emery, and Wang 2021) (see appendix A). The subsequent rise of ESG providers as a prominent information source for the investment community illustrated investors’ appetite for higher-quality information to inform their investment decisions; such information needed to be comparable, transparent, replicable, and thus credible. Since then, CRAs have been seen as playing a catch-up role in the ESG space, as some parts of the financial sector ecosystem were slower to adapt than others (box 1.1). Since 2016, CRAs have joined in the industry’s dialogue on ESG factors and how they could be relevant for credit assessments.



<sup>18</sup> See this background article by the Council on Foreign Relations: <https://www.cfr.org/background/credit-rating-controversy>.

<sup>19</sup> For background, see this 2012 article published by the European Central Bank: <https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1419.pdf>.

**FIGURE 1.2 - Credit rating definitions provided by the three biggest CRAs**

CRA	Rating definition
Fitch	<ul style="list-style-type: none"> <li>▪ Credit ratings relating to issuers are an <b>opinion on the relative ability of an entity to meet financial commitments</b>.</li> <li>▪ <b>Credit ratings express risk in relative rank order</b>, which is to say they are ordinal measures of credit risk and are not predictive of a specific frequency of default or loss.</li> <li>▪ Fitch's <b>opinions are forward looking</b> and include Fitch's views of future performance.</li> </ul>
Moody's	<ul style="list-style-type: none"> <li>▪ Ratings assigned on Moody's global long-term and short-term rating scales are <b>forward-looking opinions of the relative credit risks of financial obligations</b> issued by non-financial corporates, financial institutions, structured finance vehicles, project finance vehicles, and public sector entities.</li> </ul>
S&P	<ul style="list-style-type: none"> <li>▪ Issue credit rating is a <b>forward-looking opinion about the creditworthiness of an obligor</b> with respect to a specific financial obligation, a specific class of financial obligations, or a specific financial program.</li> <li>▪ Issuer credit rating is a <b>forward-looking opinion about an obligor's overall creditworthiness. Sovereign credit ratings are forms of issuer credit ratings.</b></li> </ul>

Source: World Bank staff illustration.

Note: CRA = credit rating agency.

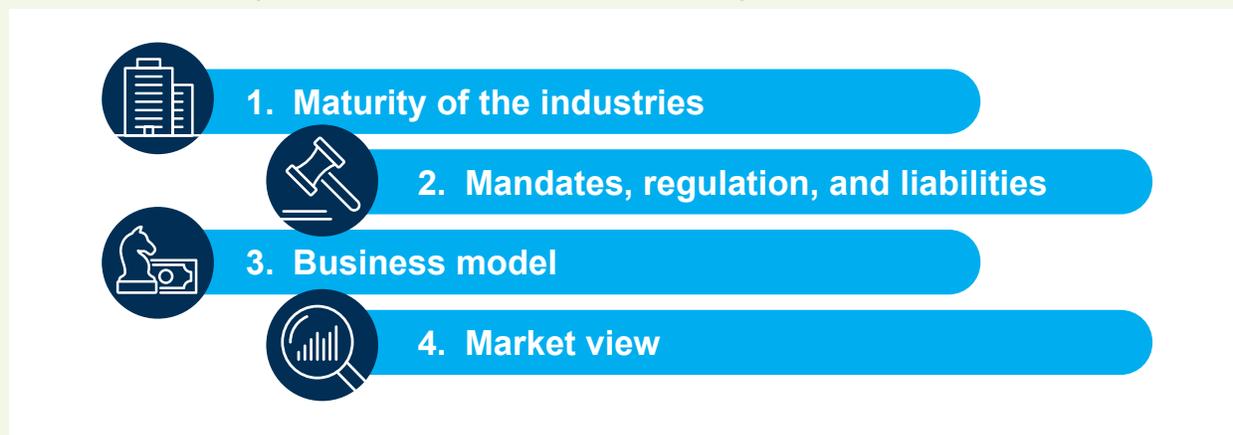


Caption: Port in Germany | Source: earth.google.com

## BOX 1.1 - CRA Industry Compared with ESG Providers Industry

Although coexisting as two separate industries, credit rating agencies (CRAs) and environmental, social, and governance (ESG) providers seem to be on a path of convergence, but the substance of the “final” sustainable finance terrain remains unclear. This convergence is illustrated by the recent acquisition of ESG providers by CRAs and by market expectations that the financial system will be realigned with the mainstreaming of sustainable finance. While this dynamic is playing out, it is important to understand distinct stages of the two industries’ evolution and how various factors influence their respective products and services (figure B1.1.1).

FIGURE B1.1.1 - Key differences between CRAs and ESG providers



Source: World Bank staff.

**Maturity of the industries.** The CRA industry is mature and has evolved over nearly 200 years. Over this period, CRAs have gradually come to play a central role in the financial architecture, and they have well-established mandates, methodologies, and terminologies. Having started with a large number of players, the current CRA industry is dominated by the “Big Three”— S&P Global, Moody’s Investor Service, and Fitch Ratings. The ESG providers’ industry, on the other hand, is young and does not yet have clear terminology associated with it. In their current form, most ESG providers emerged in the 2000s<sup>a</sup> and their sovereign ESG products have been introduced only recently. Although the ESG providers market has been consolidating and is currently dominated by a handful of players, more than 150 ESG heterogeneous data providers currently exist. (See Q 23, the JPM survey, Gratcheva et al. 2021.) The age of the ESG industry, combined with access to new technologies and (big) data in contrast to the scarce information during the CRA industry’s formation, has led to a marketplace filled with a variety of types of actors.

**Mandates, regulation, and liabilities.** CRAs are regulated and mandated by law to publicly detail their methodological processes, while ESG providers are unregulated. CRAs have evolved over time to fulfill a specific purpose: the CRAs’ role is to assess the capacity and willingness of an issuer to meet its bond payments held by investors on time and in full. For investors, the ratings are one indication of how likely they are to receive their investments back on time and in full. The role of ESG providers, however, has been evolving as sustainable finance becomes mainstream. This growth resulted in a variety of product offerings and lack of clarity of what ESG scores are supposed to measure and how. ESG providers’ products include climate data, analytics, advisory services, corporate and country ESG research and scores, ESG portfolio monitoring, second opinions on compliance with bond principles, third-party assurance, certification and verification, and proxy-voting advisory services.

Continue on next page

**Business model: Issuer-paid for CRAs versus investors-paid for ESG providers.** Compared with CRA ratings, which are originated and paid for by issuers, ESG scores/ratings/rankings are “unsolicited.” Assessments are typically not requested by issuers and are paid for by investors. The notable exception is the growth of third-party assessments requested by issuers of green and other labeled bonds. One of the most important differences between CRA ratings and ESG scores is the independence of ESG assessments from their subjects (that is, company, sovereign, and so on). In other words, the data sources used for respective ESG assessments are different—solicited versus unsolicited—ultimately affecting the type and quality of the data used for that purpose. In assessing corporate entities, CRAs use data from audited financial statements, according to internationally agreed accounting standards, but as of now no equivalent exists for ESG disclosures (note the recent formation of the International Financial Reporting Standards (IFRS) foundation for that purpose).<sup>b</sup> Moreover, CRAs have regular discussions with different stakeholders in the country (ministries, private sector, central banks, and so on). As a result, CRAs typically collect information that is not public, and this material often informs the discussions in credit committees and directly contributes to the qualitative adjustments of a credit rating assessment. In the case of ESG providers, the common data source is likely responsible for the high degree of correlation among various ESG providers for G and S scores (Gratcheva, Emery, and Wang 2021).

**Market view on ESG providers versus CRAs.** In the sovereign ESG space, ESG scores are still predominately used to fill the perceived gap left by CRAs of not fully incorporating ESG factors in credit assessments. This fact is illustrated by the J.P. Morgan survey (JPM survey in chapter 2, Gratcheva et al. 2021), in which only 25 percent of survey respondents want sovereign ESG scores to capture the quantification of a country’s sustainability effort and 9 percent want quantification of a country’s sustainability profile, while 64 percent want to see quantification of material credit risks in sovereign ESG scores. Further, 78 percent believe that CRAs will have a larger role in emerging market sovereign ESG ratings compared to ESG providers, while 22 percent disagree. Also, 78 percent believe that improving sovereign ESG fundamentals will lead to lower sovereign credit risk, 16 percent are neutral, and 6 percent disagree somewhat.

- a. Although we settled on using “ESG providers” in our papers, there are many terms used in the industry and in various publications.
- b. The IFRS recently published a revised constitution and a feedback statement. See <https://www.ifrs.org/projects/work-plan/sustainability-reporting/>. In 2015, S&P, as a result of its conduct leading up to the financial crisis, settled with the U.S. Department of Justice (DOJ) for US\$1.4 billion and with California Public Employees’ Retirement System for US\$125 million. In 2017, Moody’s suffered the same fate and settled for US\$864 million with the DOJ, the District of Columbia, and 21 states.



Caption: Village in Niger | Source: Climate Investment Funds

**The Principles for Responsible Investment (PRI) ESG in Credit Risk and Ratings Initiative, launched in 2016, has been important in promoting discussion on the relevance of ESG factors for credit risk assessments.**<sup>20</sup> The initiative has been important in increasing engagement of the CRAs with the industry and investor community, as well as igniting CRA communication and research on ESG issues (box 1.2). For example, the initiative produced four reports, based on investor and CRA roundtables, helping to foster much industry debate.<sup>21</sup> The reports highlighted the complexity of ESG factors in credit risk analysis, the diversity of perspectives prevailing on this issue, and the challenges pertaining to the topic.

**The initiative continues to publish quarterly progress reports on how the CRA industry is integrating ESG factors into its credit risk analysis.**<sup>22</sup> The updates are designed to inform investors on relevant CRA tools that may be useful for their ESG integration process. It also allows CRAs to highlight their transparency on this topic and showcase any new innovations as well as continue the investor-CRA dialogue. Twenty-six CRAs have now signed the UN PRI's ESG in credit risk and ratings statement.<sup>23</sup> This participation shows the industry's commitment to incorporate ESG into credit ratings and analysis in a systematic and transparent way.

**Despite these developments, many financial market participants continue to see CRAs as not adapting fast or deeply enough and have been calling on the CRA industry to do more.** Further, sustainability advocates have

questioned whether CRAs are suitable in the new financial sector architecture that is centered on sustainability and forward-thinking finance. The recent J.P. Morgan survey highlights that the investor community clearly believes that improving ESG fundamentals leads to lower sovereign credit risk, which highlights the potential relevance of these issues for CRAs. Indeed, in another recent joint J.P. Morgan-World Bank survey of EM asset managers ( "the climate strategy survey") on EM sovereign debt climate strategies, over 40 per cent of respondents agreed that climate risk is not adequately reflected in sovereign credit ratings. Of particular relevance for CRAs, respondents also emphasized that their focus is on issuer-level ESG metrics as opposed to specific instrument-level assessments. Among the ESG issues most relevant for EM sovereign debt investors, institutional strength, social cohesion and climate change ranked highest.

**Empirical evidence that demonstrates causation between ESG fundamentals and credit risk is mixed.** The role of governance factors to complement financial and macroeconomic metrics in sovereign credit analysis is better understood. The materiality of environmental and social factors is not as well documented, and the studies are often affected by an ingrained income bias (Gratcheva, Emery, and Wang 2021). Yet events such as climate disasters or the COVID-19 pandemic have underscored that ESG can materially affect the long-term profile of an issuer.



### **BOX 1.2 - Participant Views in United Nations PRI Study**

**These key challenges were identified in the Principles for Responsible Investment (PRI) dialogues and publications:**

**The time horizon that CRAs use for their credit assessments.** CRAs argue that the ESG-related issues are more difficult to capture over longer time horizons.<sup>a</sup> Nevertheless, the dominant view among investors is that ESG-related risks are not adequately captured within CRA ratings and that CRAs should explicitly weight ESG factors in their methodologies. At the same time, a typical horizon for CRAs' credit assessments is about 3–5 years, with 10 years for long-term ratings, while the nature of the investors' portfolios determines the investors' horizon.

*Continue on next page*

20 The UN's Principles for Responsible Investment was launched in 2005. It is supported by, but not a part of, the United Nations. The aim of the initiative is to enhance the transparent and systematic integration of ESG factors into credit assessments.

21 For the June 11, 2018, report, see <https://www.unpri.org/credit-risk-and-ratings/esg-credit-risk-and-ratings-part-2-exploring-the-disconnects/3250.article>.

22 For an example, see <https://www.unpri.org/credit-risk-and-ratings/credit-rating-agency-cra-quarterly-updates/5631.article>.

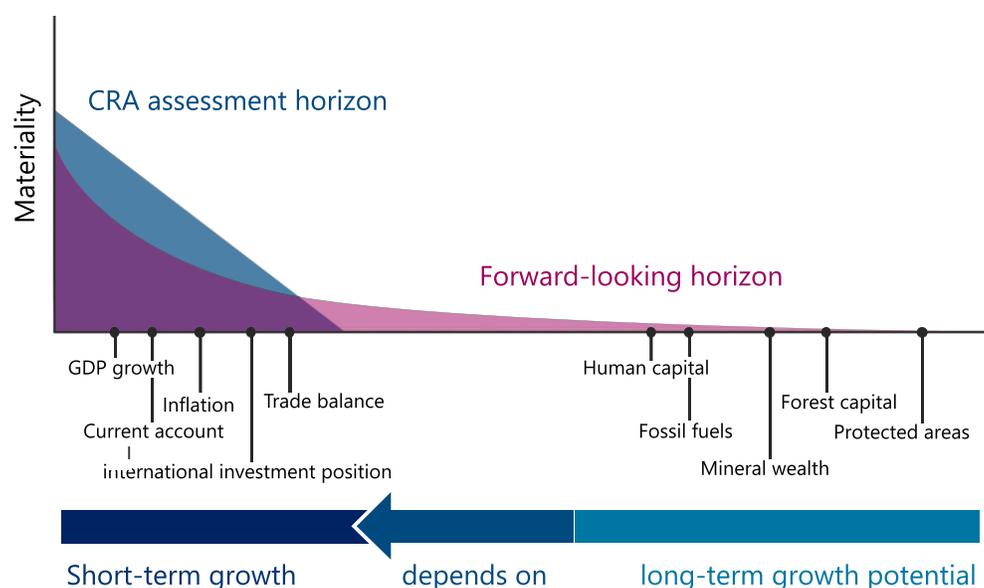
23 See the statement on ESG in credit risk and ratings: <https://www.unpri.org/credit-risk-and-ratings/statement-on-esg-in-credit-risk-and-ratings-available-in-different-languages/77.article>.

**For long-term investors, their respective horizons are longer than CRAs' horizons, and those investors view themselves as more exposed to ESG risks than is measured in credit assessments.** The position of CRAs is that their appropriate time horizon is shorter than the materialization horizon of many ESG factors. They also argue that the incorporation of ESG factors is already implicit within other included credit factors and that they do not ignore ESG issues altogether as some market participants perceive.<sup>b</sup>

**The visibility of material ESG risks (figure B1.2.1).** Participants mentioned the lower visibility of material ESG risks as a major challenge with various views expressed on this matter. Some investors expressed the opinion that CRAs should leverage the issuer-pays CRA model to increase the amount of ESG-related information that is available to the financial system. Several investors also argued that CRAs should highlight the ESG issues that affect an issuer irrespective of whether the materialization of those issues would be later than the time horizon of the credit rating assessment. This suggestion could prove difficult from a regulatory viewpoint.

**Conflicting objectives for incorporating ESG into investment decisions—credit risk or sustainability.** In the CRAs' view, investors need to better understand the objectives behind their ESG considerations and not to confuse risk management with impact investing.<sup>c</sup> In addition, CRAs suggest that investors need to engage more with the rating industry on how ESG factors are integrated into credit assessments.

**FIGURE B1.2.1 - CRA assessments are generally shorter term, but many longer-term issues are material to the assessment of sovereign credit risks**



Source: World Bank staff illustration.

Note: CRA = credit rating agency; GDP = gross domestic product.

- This point of view continues to be the key issue that CRAs articulated during the authors' discussions with them for this paper in the latter part of 2020.
- In the authors' discussion with CRAs, this point of view was still held by the three leading CRAs, while the smaller CRAs acknowledged the possibility that, going forward, ESG risks are likely to materialize sooner and have a greater effect than in the past. Although the Big Three did mention that climate, environmental, and social risks will become more material in the coming years, they noted that the data and methodologies to capture these effects are not readily available.
- The authors address investors' conflation of the use of ESG factors for risk management versus sustainability in "A New Dawn: Rethinking Sovereign ESG" (Gratcheva et al. 2021).



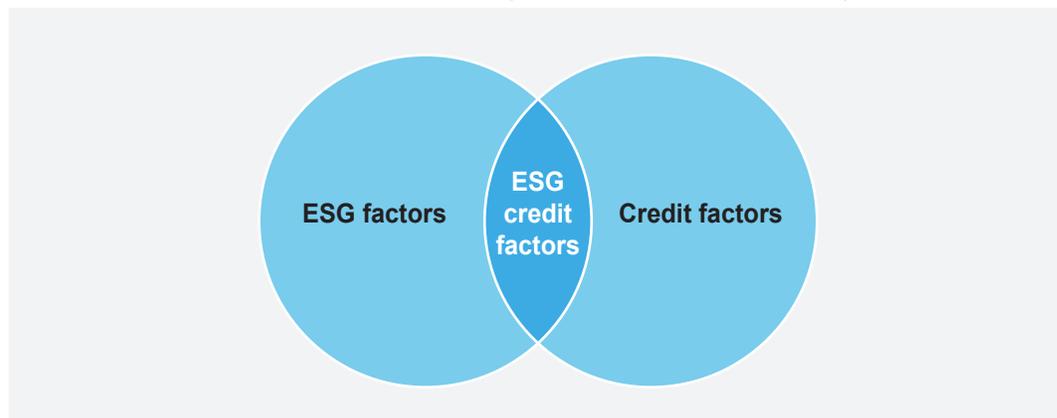
Caption: King penguins in South Georgia and the South Sandwich Islands | Source: Unsplash.com



## ESG Factors and Sovereign Credit Ratings

The CRA industry emphasizes that only ESG *credit* factors (that is, ESG factors that affect creditworthiness of an issuer) should be included in a sovereign credit assessment and that these factors should not be conflated with other ESG factors that do not affect the ability of a sovereign issuer to repay its debt obligations (see figure 2.1). CRAs argue that sovereign ESG credit factors that can be modeled on the basis of current data and existing analytical methods already in sovereign credit assessments. Although governance factors have historically been a key part of the sovereign credit risk assessment, environmental and social factors have not. Furthermore, on the environmental side, the inclusion of low-probability, high-impact events is analytically challenging. Nevertheless, contingent liabilities are often a driver of sovereign credit ratings, and most CRAs attempt to capture such risks in their sovereign credit assessments. In a similar way, many environmental risks, when considered via the spectra of climate tipping points,<sup>24</sup> could be thought of as credit-relevant contingent liabilities.

**FIGURE 2.1** - The intersection of sovereign ESG factors and sovereign credit factors



Source: Adapted from S&P 2021.

<sup>24</sup> A climate tipping point is a threshold that, when exceeded, leads to large and often irreversible changes in the state of the system (Hoegh-Guldberg et al. 2018).

Figure 2.2 is based on a keyword search of CRA methodological documents<sup>25</sup> and highlights the limited focus on E and S factors in sovereign credit rating assessments' methodologies. Although some CRAs may argue that these factors are included outside their quantitative assessment, the lack of clarity for investors on their inclusion makes the investment process more cumbersome and less transparent.

**The concept of materiality is fundamental to the discussion around ESG credit factors.** Materiality<sup>26</sup> is a principle that defines which information is useful to an investor given specific investment objectives, such as using ESG factors as an input or output in the investment process.<sup>27</sup> Materiality can be transitory in nature, can be important from both a financial and impact perspective (for example, double materiality<sup>28</sup>),

and can affect asset classes and countries in different ways, all of which make it a difficult concept to formalize. Although much of the discussion around materiality focuses on the corporate sector, we argue that it is particularly relevant in the context of sovereign ESG. Certain E or S factors may not be material from a credit factor perspective (for example, they would not result in a change to a sovereign credit assessment), but they could still be material from a financial viewpoint<sup>29</sup> (for example, they would result in an asset repricing<sup>30</sup>). The persistence of this asset repricing would depend on the materiality of the credit factors. Moreover, sustainability topics that are considered immaterial to financial value creation today may become material over time, either gradually or suddenly because of catalyst events, policy, or regulatory reaction as well as innovation.<sup>31</sup>



Caption: Building climate resilience of watersheds | Source: Climate Investment Funds

25 Based on the authors' judgment.

26 See <https://www.sasb.org/blog/double-and-dynamic-understanding-the-changing-perspectives-on-materiality/>.

27 "ESG as input" and "ESG as output" are two mutually nonexclusive approaches to ESG investing: (a) ESG integration or a purpose-neutral approach using ESG factors as an input into the investment process to manage ESG-related risks that affect the financial risk of the investment portfolio and (b) a purposeful approach using ESG factors as an output of the investment process to achieve measurable, sustainable results.

28 As stated in European Commission, "Guidelines on Non-financial Reporting: Supplement on Reporting Climate-Related Information," June 20, 2019.

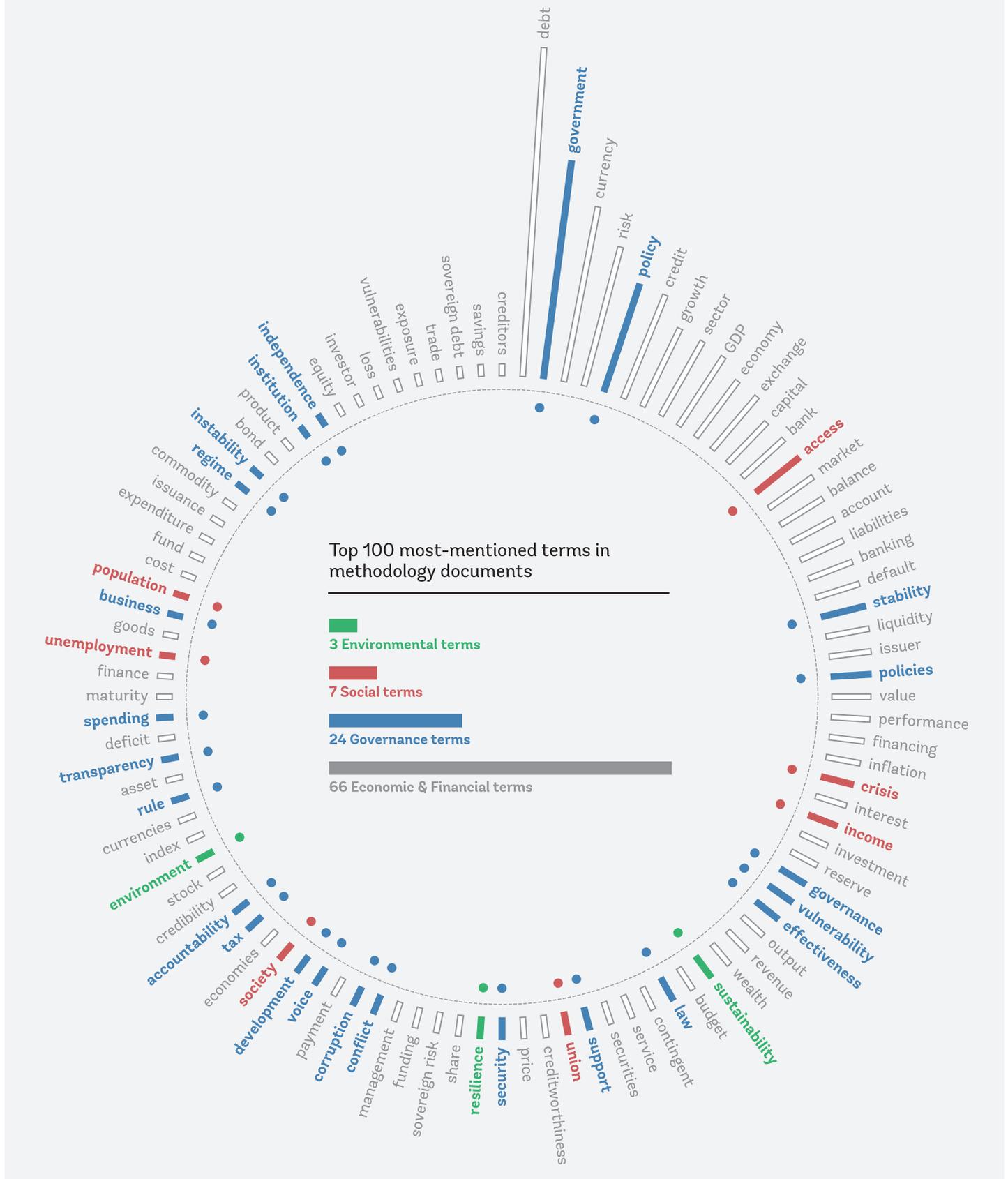
29 Certain E or S factors could be more relevant from an economic viewpoint and be reflected in various economic variables. These factors may or may not implicitly affect financial market price action.

30 A natural disaster is unlikely to result in most sovereigns defaulting on their debt obligations, but it could be reflected in financial market price action and result in market volatility. Nevertheless, such natural disasters may be more material for lower-income countries that rely heavily on a certain industry.

31 See [http://eifrs.ifrs.org/eifrs/comment\\_letters/570/570\\_27198\\_SonalDalalSustainabilityAccountingStandardsBoard\\_0\\_SASBResponseToIFRSConsultation11Dec2020.pdf](http://eifrs.ifrs.org/eifrs/comment_letters/570/570_27198_SonalDalalSustainabilityAccountingStandardsBoard_0_SASBResponseToIFRSConsultation11Dec2020.pdf).

**FIGURE 2.2 - ESG factors and sovereign credit rating methodologies**

The figure shows the 100 most-mentioned terms in the methodology documents of the seven CRAs. As in Figure ES1, environmental and social terms appear to play a very limited role.



Source: World Bank staff illustration. Data from sovereign credit rating methodology by Fitch Ratings, Moody's Investor Service, S&P Global Ratings, Kroll Bond Rating Agency KBRA, DBRS Morningstar, Scope Ratings GmbH, and HR Ratings



Caption: Aerial view | Source: Unsplash.com

**Sovereign credit ratings directly influence a country's cost of capital (that is, a lower rating implies a higher cost of capital), while there is no clear link between sovereign ESG scores influencing sovereign borrowing costs.** Lower-rated sovereigns generally pay a higher interest rate because of perceived higher credit risk. The higher cost of capital can also affect market access and therefore significantly limit sovereign financing options. A sovereign's credit rating generally represents the highest rating attainable by most issuers domiciled within the country. On the other hand, the effect of a change in a sovereign's ESG score on the sovereign's cost of capital is much more ambiguous. Although a less positive ESG score could affect some investor allocations over time, such effects are currently much more difficult to pinpoint. As a result, most countries are less incentivized to improve their sustainability performance.

**CRAs have devised other ways to illustrate the extent to which ESG factors are material in their sovereign credit rating decisions.** Some CRAs have published research that highlights the materiality of ESG factors in rating assessments, and republished their rating methodologies to clarify more explicitly the role that ESG factors may play in a credit assessment. CRAs have also started to provide clarifications in their formal rating assessments on the credit relevancy of ESG factors in the rating decision. In many instances, CRAs assess E and S risks outside of a rating methodology

scorecard in a qualitative way, if viewed as relevant for sovereign creditworthiness.<sup>32</sup> Currently, only one CRA—Scope Ratings GmbH—explicitly includes ESG credit factors in its sovereign credit rating methodology (see appendix A).<sup>33</sup> Figure 2.3 shows examples from S&P and Moody's research publications that illustrate the materiality of ESG factors in credit ratings. For sovereigns, governance factors dominated while social and environmental factors were less material.

**CRAs have recently been launching additional products designed to show how ESG factors are relevant in their credit assessments and products similar to scores by ESG providers that assess countries on a broad set of ESG factors.** For example, in 2020 Moody's introduced E, S, and G issuer profile scores and credit impact scores<sup>34</sup> designed to provide the market with more granularity on how ESG risks influence the rating process while Fitch launched its ESG relevance scores<sup>35</sup> for sovereigns to show how ESG risks affect sovereign rating decisions. In 2021, S&P Global has also begun issuing ESG credit-related indicators reflecting a qualitative assessment—determined typically by a rating committee—of whether ESG factors have a neutral, positive, or negative influence on the key components of a credit rating assessment.<sup>36</sup> Other CRAs indicated in discussions with the team that they are also working on introducing similar new products.

32 Qualitative analysis requires the ratings analyst to exercise judgment. Rating assessments are also based on scorecards, a component of which is qualitative, and these scorecards serve as guides for discussion in rating committees.

33 See the Scope Ratings publication "Sovereign Rating Methodology: Sovereign and Public Sector," October 8, 2019, <https://www.scooperatings.com/ScopeRatingsApi/api/downloadmethodology?id=01508950-119c-4ab5-9182-54ffdc1003f>.

34 See [https://www.moody.com/research/Moodys-updates-its-methodology-for-assessing-environmental-social-and-governance--PBC\\_1254678?showPdf=true](https://www.moody.com/research/Moodys-updates-its-methodology-for-assessing-environmental-social-and-governance--PBC_1254678?showPdf=true).

35 The scores are subjective judgments on the extent to which E, S, and G risks elements influence credit rating decisions.

36 See <https://sustainableinvest.com/sp-global-ratings-to-issue-esg-credit-related-indicators/>.



**FIGURE 2.3 - Materiality of ESG Factors on Credit Ratings**

**a. Breakdown of S&P credit rating actions (2021) affected by ESG factors**

ESG-Related Credit Rating Actions Including Structured Finance (January–October 2021)

	SOVEREIGNS	INTERNATIONAL PUBLIC FINANCE	U.S. PUBLIC FINANCE	CORPORATES AND INFRASTRUCTURE	STRUCTURED FINANCE	FI AND INSURANCE	TOTAL
Downgrade	10	10	67	52	122	4	265
CreditWatch negative	0	0	44	16	15	0	75
Downward outlook revision	6	1	40	19	0		66
Upgrade/Upward outlook revision	5	2	9	53	11	2	82
Total ESG-related rating actions	21	13	160	140	148	6	488
Of which social	13	11	33	97	131	2	287
Of which governance	12	2	75	17	8	6	120
Of which environmental	0	0	70	30	9		109

**a. Breakdown of S&P credit rating actions (2021) affected by ESG factors**



Source: Panel a, Copyright 2021, Standard & Poor's Financial Services LLC. All rights reserved. Panel b, Moody's Investor Service. Sample includes the 42 sovereign bond defaults from 1997 to July 2020.

Note: Panel a, FI = financial institutions; SovIPF = sovereigns and international public finance.

3



Caption: Pollinating bee | Source: Pexels.com



## Sovereign Credit Ratings and Sovereign ESG Scores

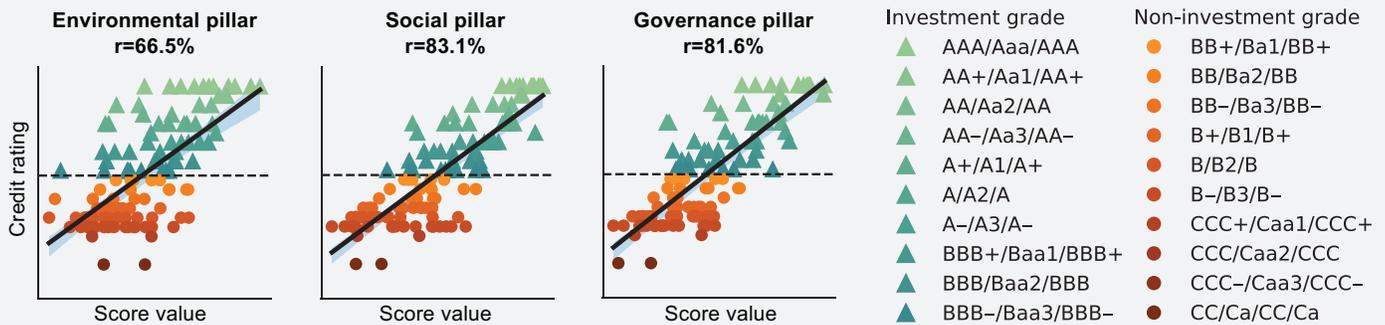
**In this section we empirically analyze how sovereign ESG scores are manifested in sovereign credit ratings.** For the subsequent analysis, we use the average credit ratings from the three largest CRAs—Fitch, Moody’s, and S&P—and relate them to the average sovereign ESG scores from leading ESG providers (Gratcheva, Emery and Wang 2021). We use the average of the three CRAs to proxy a country’s creditworthiness, given the highly concentrated nature of the credit rating industry and because they rarely assign fundamentally different ratings. For sovereign ESG scores, however, it is not always clear what constitutes good ESG performance (Gratcheva, Emery and Wang 2021). This disagreement mostly affects the environmental pillar and less the social or governance pillars. Nonetheless, taking the average over six leading ESG providers should yield a useful proxy of the countries’ ESG profiles. Thus, the term “sovereign ESG scores” used in this paper represents a useful proxy for the sovereign ESG sector as a whole.<sup>37</sup>

**We find that on average, sovereign credit ratings and sovereign ESG scores are highly correlated—especially for governance and social scores—which is likely explained by the predominant role of the ingrained income bias (Gratcheva, Emery and Wang, 2021).** Figure 3.1 shows that the aggregated S and G scores are highly correlated with credit ratings, 83.1 percent and 81.6 percent, respectively, while the E score is correlated to a lesser degree, with 66.5 percent. The correlation of credit ratings and ESG scores is consistent with our previous findings about the predominant role of the country’s level of income—or development, in general—in current industry measures of sustainability (Gratcheva, Emery, and Wang 2021; Gratcheva et al. 2021). These sustainability metrics include sovereign ESG scores and other measures such as the SDG index and environmental indices such as the Notre Dame Global Adaptation Initiative (ND-GAIN) Country Index, ND-GAIN adjusted for gross domestic product (GDP), and Environmental Performance Index (EPI). As we will see next, in order to understand the materiality of ESG factors for sovereign credit ratings, it is important to account for the predominant role of income.

<sup>37</sup> In the following, we only compare the average credit rating and the average ESG scores with each other. Thus, we only mention the term “average” when necessary.

**FIGURE 3.1 - Do better ESG scores equal better credit ratings?**

Correlating scores of each ESG pillar with the credit ratings of 115 countries reveals a strong positive correlation. Countries with better ratings also tend to have better ESG scores. This correlation is particularly true for social and governance scores and less so for environmental scores.



Source: World Bank staff calculations.

Note: The vertical axes depict the rating scale, where higher is better, and the horizontal axes measure the aggregated E, S, and G scores, averaged over six leading ESG providers. The dashed line distinguishes between investment-grade ratings (above) and non-investment-grade ratings (below).

Analyzed for each World Bank income group, the materiality of ESG scores for the credit rating gradually breaks down as we move lower down the country income spectrum. Figure 3.2 repeats the correlation analysis and accounts for the different income levels by grouping countries according to their income classification. We see that, for high-income countries only, ESG factors are strongly aligned with sovereign credit ratings. As we consider upper-middle income and lower-middle income groups, we find that the alignment between sovereign credit ratings and ESG factors slowly breaks down until we reach low-income countries, where the correlation vanishes almost entirely. This trend is clearly visible in figure 3.2, where the black regression line starts off with a clear upward slope but flattens as we traverse along the income categories. In other words, ESG factors and credit ratings are strongly correlated with each other for high-income countries, but for low-income countries, the exact opposite holds. No matter whether low-income countries score high on E, S, or G, they all share a similar credit rating.<sup>38</sup> For example, Burkina Faso, Mozambique, Rwanda and Tajikistan are rated B or lower by the main CRAs but display high ESG scores.<sup>39</sup>

**Our findings raise two questions: (a) what additional information do ESG scores as currently produced by the ESG providers convey about high-income countries**

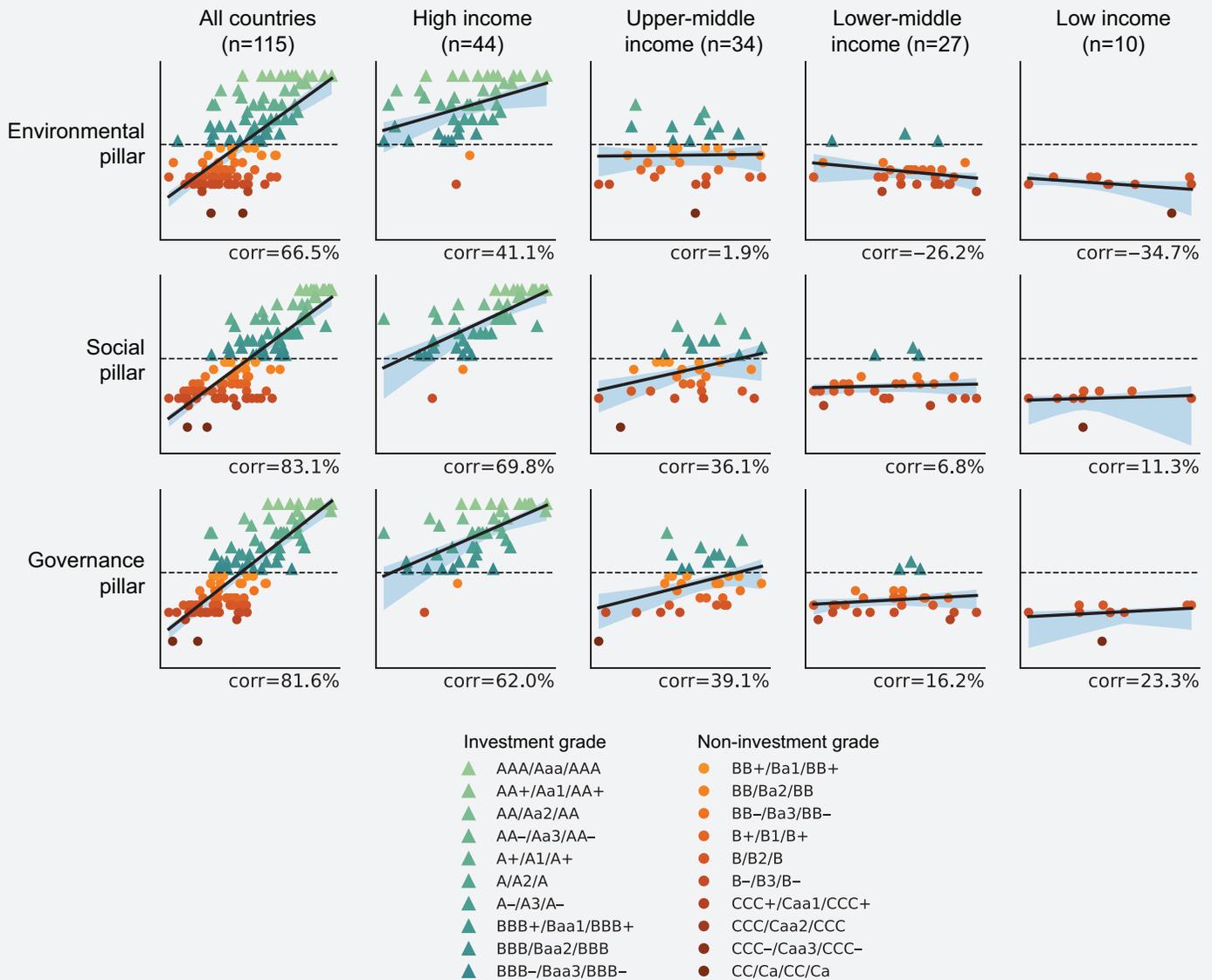
**compared to their credit ratings? and (b) why are ESG scores almost entirely uninformative about low-income country's credit ratings?** It is worth recalling that different income levels also reflect different stages of development. Thus, how informative a sovereign ESG score is depends on how developed a nation is. For instance, research and development (R&D) expenditure in the governance pillar is a more useful indicator for high-income countries, whose economies strongly depend on human capital. For low-income countries—assuming the values are not missing—the same indicator is less relevant because human capital makes up a comparatively smaller share of a country's growth. At the same time, social indicators such as infant mortality or undernourishment metrics are arguably more informative for lower-income countries and are important drivers of these countries' development in the long term. However, from the perspective of CRAs, the importance of social indicators for creditworthiness over a shorter time horizon likely pales in comparison with traditional macroeconomic, geopolitical, or fiscal variables. Box 3.1 takes a more robust statistical approach to understanding the relationship between sovereign credit ratings and sovereign ESG scores, and this approach also confirms our initial analysis.

<sup>38</sup> Low-income countries are clustered between B and CC ratings, which impedes their analysis. The 10 low-income countries studied here are all non-investment-grade level and already in an elevated default risk state. This situation presents a challenge for our analysis of materiality of ESG to credit ratings. Furthermore, because our sample comprises only 10 low-income countries, results may be driven by a very few outlier countries.

<sup>39</sup> For example, Burkina Faso and Rwanda have standardized governance scores of 40.6 and 39.6, respectively (the country with the highest governance score in the sample receives a score of 100). As a reference, the average governance score of lower and upper middle income countries are 20.0 and 37.7, respectively. Similarly, Tajikistan has a social score of 40.8 while the average social score of lower and upper middle income countries are 36.7 and 50.4, respectively.

**FIGURE 3.2 - The lower the income group, the less the ESG scores and ratings are correlated**

Rather than taking a global view of all 115 countries together (as in figure 3.1), we examine the relationship between ESG scores and credit ratings for each income group. Interestingly, the relationship is strongest for high-income countries as reflected by the steep regression line. As we consider upper-middle, lower-middle, and low-income groups, the line flattens more and more. For low-income countries, ESG scores appear to be almost immaterial.



Source: World Bank staff calculations.

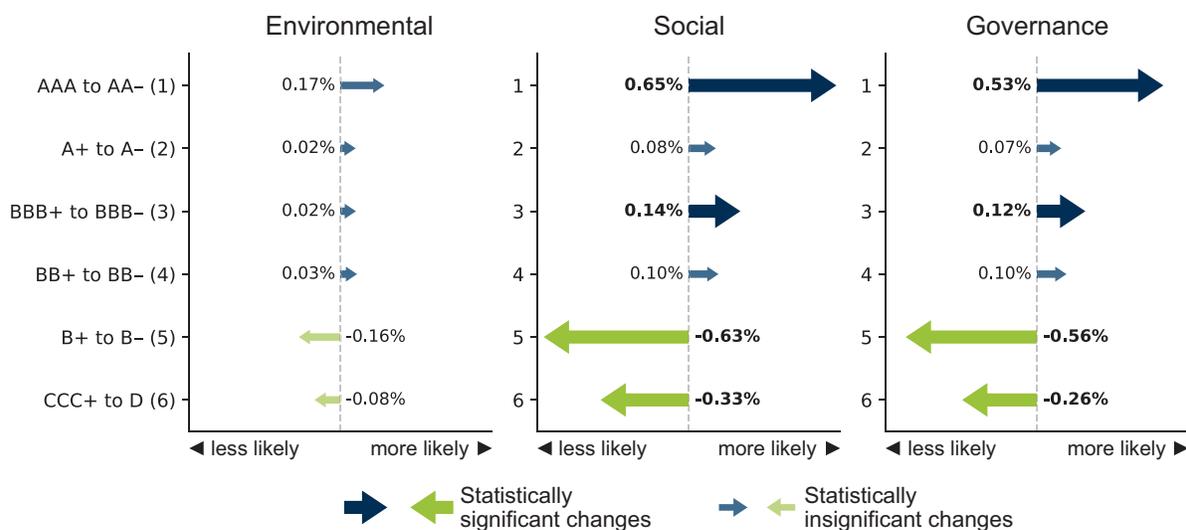
Note: The vertical axes depict the rating scale, where higher is better, and the horizontal axes measure the aggregated E, S, and G scores, averaged over six leading ESG providers. The dashed line distinguishes between investment-grade ratings (above) and non-investment-grade ratings (below).

### BOX 3.1 - Another Approach to Assessing the Materiality of Sovereign ESG Credit Factors

A more rigorous statistical model reveals that only **S** and **G** scores are material to a country’s sovereign credit ratings, while **E** scores are largely irrelevant. Figure B3.1.1 displays the results of a probability regression model for each individual ESG pillar. The results show how the likelihood of a country’s credit rating’s belonging in one of the six credit quality scores (CQS) would change if that country were to improve its E, S, or G score. Countries with higher social and governance scores are more likely to have a higher credit rating, while countries’ E scores are not statistically material to sovereign credit ratings. The probability or likelihood of the ESG factors being credit material is depicted by the length and color of the arrow. These findings corroborate our previous findings that sovereign credit ratings incorporate S and G factors but not necessarily E factors.

**FIGURE B3.1.1 - Are countries with better ESG scores more likely to belong to a better rating group? A probabilistic approach**

If we consider a hypothetical “average” country from the sample of 115 countries (such as a middle-income country with a BBB– credit rating), what would happen if the country then had a higher E, S, or G score? Would it remain in the BBB+ to BBB– rating group, or would it be more likely to be part of the AAA to AA– group? The arrows show how this change would play out for each ESG pillar. Better S or G scores are more likely associated with ratings of BB– or better and less likely with ratings below B+. For the E scores, no such statements can be made.



Source: World Bank staff calculations

Note: We use an ordered probit model for panel data with income-group fixed effects. It estimates the probability of belonging into one of the six rating groups (credit quality steps; see table B.1) on the vertical axes, based on higher E, S, and G scores. The effect sizes reported are the marginal effects for the average observation. The green and red arrows show how such a change would increase or decrease the probability of being in the respective CQS group. Transparent arrows indicate that the effects are not significant on the 5 percent significance level. The sum of all arrows, or the net change of probability, is zero. For regression details, see table B.2, in annex.



Caption: Schoolboys in Mogadishu, Somalia | Source: Unsplash.com



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Caption: Bird migration | Source: Unsplash.com



## Sovereign Creditworthiness and a Country's Wealth

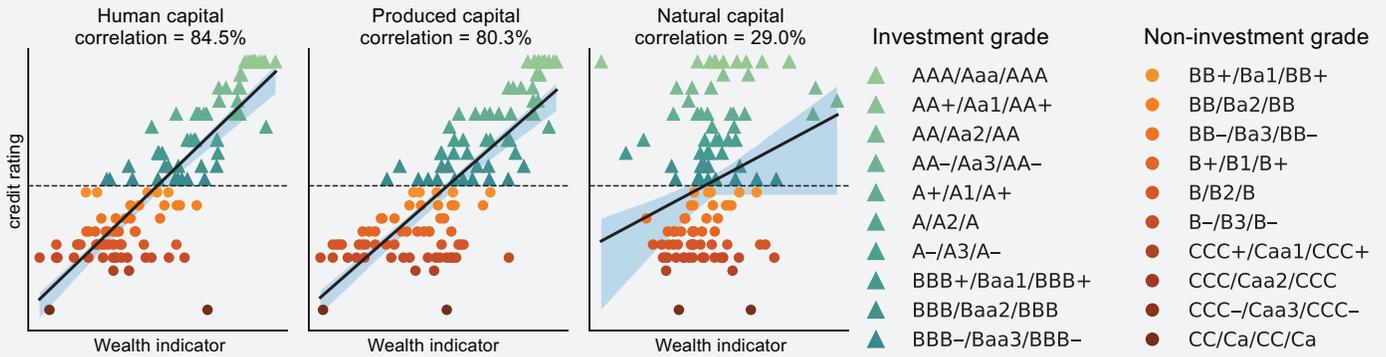
This section introduces the World Bank country wealth data set (World Bank 2021) and empirically examines its usefulness to CRA and ESG providers in their respective sovereign assessments. A country's wealth is a record of its natural, produced, and human capital, and a fall in wealth indicates that a country is depleting its assets and may not be able to sustain its future GDP growth and vice versa. The data set expresses a country's wealth in terms of economic or monetary value, which allows for better comparability across scores and countries. The data are relevant for CRAs and investors alike, both of whom acknowledge the need to also take a longer-term perspective on a country's sustainability to inform a more holistic credit assessment, beyond current credit rating horizons. This data set is also relevant for ESG providers who want to measure a country's sustainability metrics in an economically meaningful way.

**We find that sovereign credit ratings are strongly correlated with human and produced capital while natural capital exhibits a much less clear-cut relationship (figure 4.1).** Human and produced capital<sup>40</sup> are measurements of a country's prosperity and therefore relevant to its ability to service its debt obligations. Natural capital, in contrast, exhibits a much less clear-cut relationship with of sovereign credit ratings as currently measured. Although figure 4.1 illustrates an overall positive correlation, the wide confidence intervals prevent us from drawing any definite conclusions. As in section 3, examining the relationship from high-income groups to low-income groups reveals a similar flattening effect. Figure 4.2 illustrates that the strength of this relationship drops as we move from higher-income to lower-income countries.

<sup>40</sup> Human capital is computed as the present value of future earnings for the working population over their lifetimes. Produced capital includes the value of machinery, buildings, equipment, and residential and nonresidential urban land. See appendix A, Wealth Data section.

**FIGURE 4.1 - More wealth = better credit ratings?**

Correlating the wealth accounts for human, produced, and natural capital with the credit ratings of 115 countries reveals a positive correlation. Countries with more human and produced capital also tend to have better credit ratings. However, this tendency is not the case for natural capital.



Source: World Bank staff calculations.

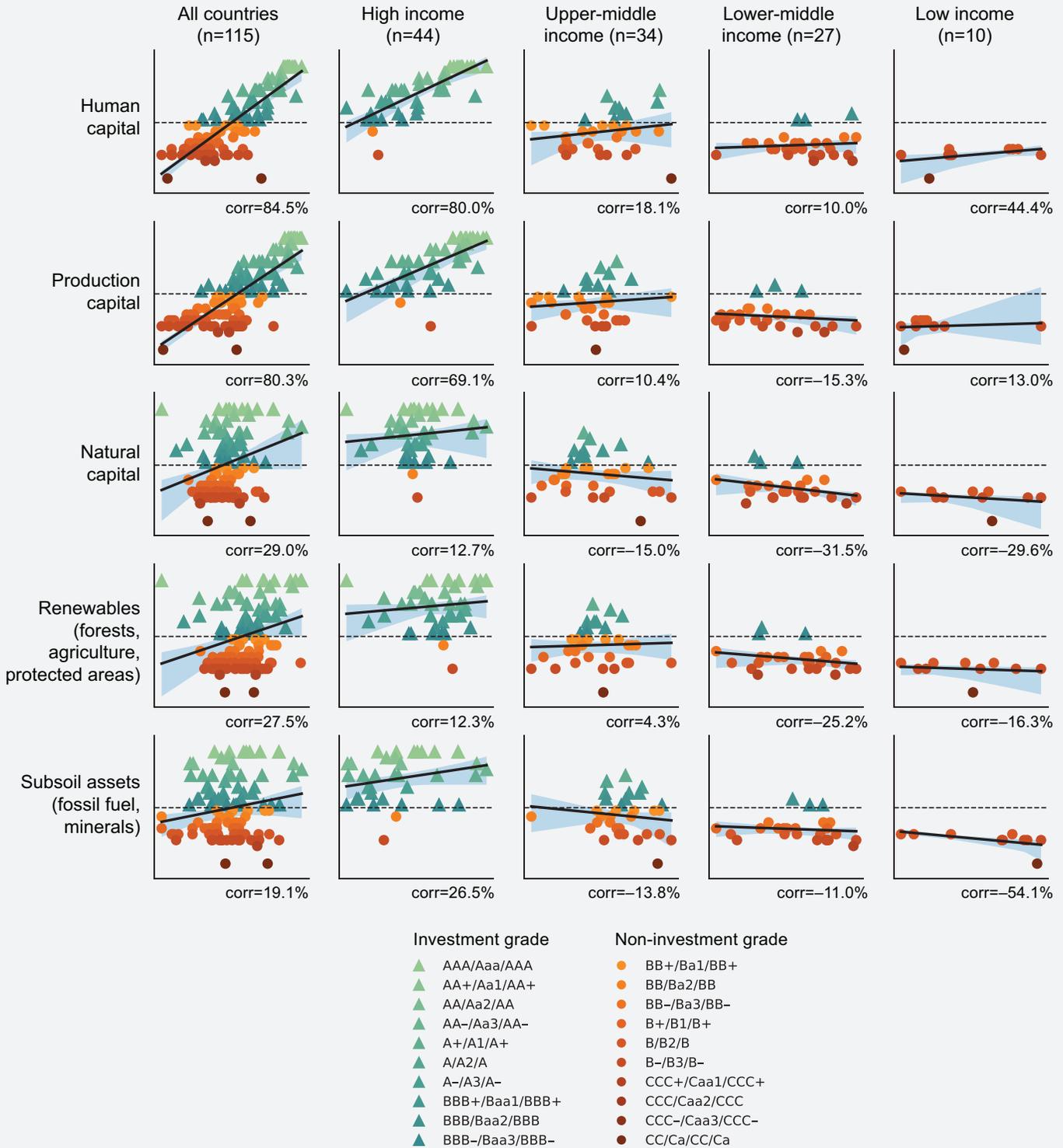
Note: The vertical axes depict the rating scale, where higher is better, and the horizontal axes measure the corresponding wealth indicators (World Bank 2021). The dashed line distinguishes between investment-grade ratings (above) and non-investment-grade ratings (below).



Caption: Lao girls | Source: Climate Investment Funds

**FIGURE 4.2 - The lower the income group, the less the correlation between wealth and ratings**

Rather than taking a global view of all 115 countries together (figure 4.1), we examine the relationship between wealth and ratings for each income group. The relationship is strongest for human and produced capital in high-income countries, as reflected by the steep regression line. As we consider upper-middle-, lower-middle, and low-income groups, the line flattens more and more. For natural capital and its components, the line is flat for all income categories, indicating that natural capital does not manifest itself in credit ratings. In low-income countries, the line is even downward sloping.



Source: WB staff calculations

Note: The vertical axes depict the rating scale, where higher is better, and the horizontal axes measure the corresponding wealth indicators (World Bank 2021). The dashed line distinguishes between investment-grade ratings (above) and non-investment-grade ratings (below).

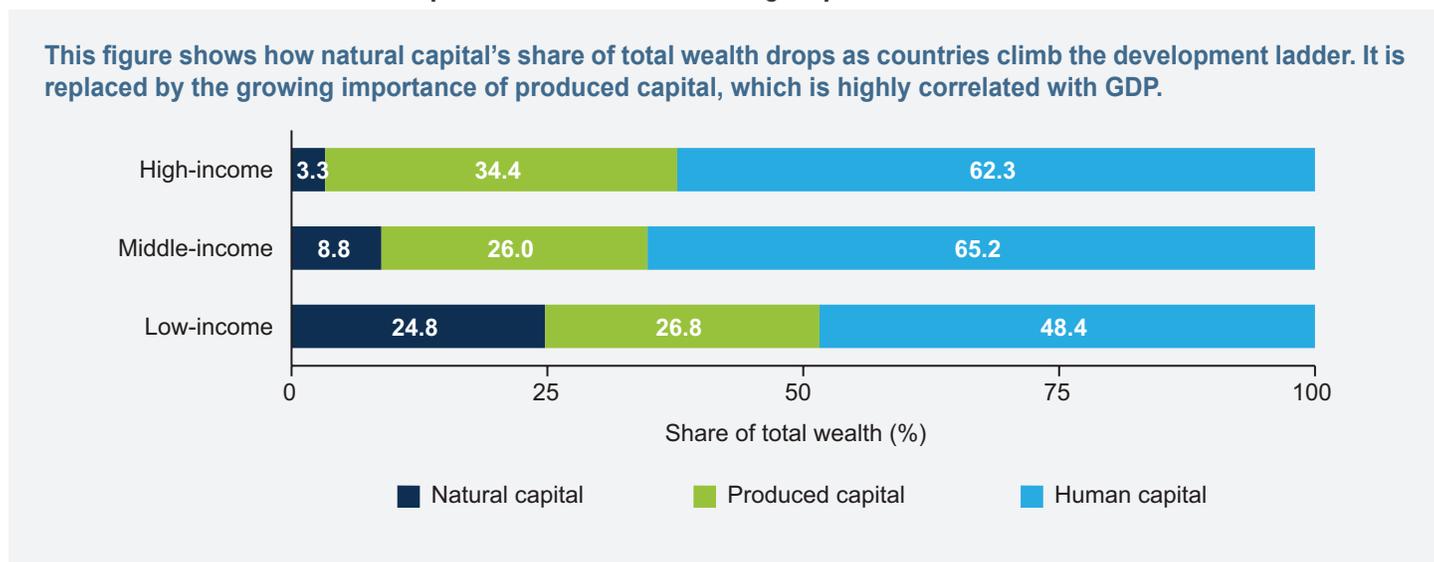
**We find that a country's natural capital is not a strong credit factor in sovereign credit assessments for all income levels.** This finding is not surprising for higher-income countries, which enjoy better credit ratings and whose economies are less dependent on natural wealth. However, the low relevance of natural capital for lower-income countries is unexpected because natural resources are the primary driver for early economic development, fueling the transition into an economy that is less reliant on rents from natural resources. Moreover, natural capital, such as sustainably managed protected areas, is important for industries such as tourism. For countries with a significant tourism industry, it is particularly important that CRAs account for the potential of natural capital in their credit rating assessment. As economies grow in prosperity, the share of natural wealth of their total wealth continuously drops while produced capital and human capital gain in importance (figure 4.3). This effect is also reflected in the drop of natural resource rents as part of GDP as countries grow richer.<sup>41</sup>

**We dig deeper into the natural capital pillar and find that both renewable (ecosystems) and nonrenewable (fossil fuels) natural capital appear to have only a weak, negative association with credit ratings, if at all.** If we focus on lower-middle-income and low-income countries, we do find a

consistently negative but weak relationship between natural capital components and sovereign credit ratings. This finding might be supported by the “natural resource curse,” whereby countries rich in natural capital but weak in governance are prone to corruption or rent-seeking behavior. Those harmful types of activities jeopardize a country's economic outlook and, therefore, its ability to service debt obligations. We add a caveat for these results because the number of low-income countries included in our study is low. In section 5, we find an additional explanation for the irrelevance of natural capital: nonrenewable resources also constitute part of natural wealth and, in the context of the low-carbon transition, subsoil assets can have both positive (resource blessing) and negative (resource curse) effects on sovereign credit risk.

**We extend our investigation of the relationship between wealth variables and sovereign credit ratings by using a more rigorous statistical approach.** By employing an ordered probit model with income-group fixed effects, we can estimate how a hypothetical change in a country's wealth account affects its likelihood to belong to a specific rating category.<sup>42</sup> More concretely, consider a middle-income country with a credit rating of BBB– and a wealth profile as depicted in figure 4.3.<sup>43</sup> Given what we know about the wealth profiles of all other countries and their corresponding ratings, what would

**FIGURE 4.3 - Share of natural capital for different income groups**



Source: World Bank (2021).

41 For high-income countries, the total natural resource rents as share of GDP in the observation period (1996–2018) was 4.00 percent, for upper- and lower-middle-income countries—7.02 percent and 7.44 percent, respectively, and 12.62 percent for low-income countries.

42 The ordered probit model is a static model. Thus, changes in probabilities of belonging to one of the six credit quality steps (CQS) groups are calculated on the basis of cross-sectional variation among the 115 countries in 2017.

43 The results of the ordered probit model hold for a hypothetical average representative country of the sample that contains 133 countries. In our case, such a country would be a middle-income country with a BBB– rating.

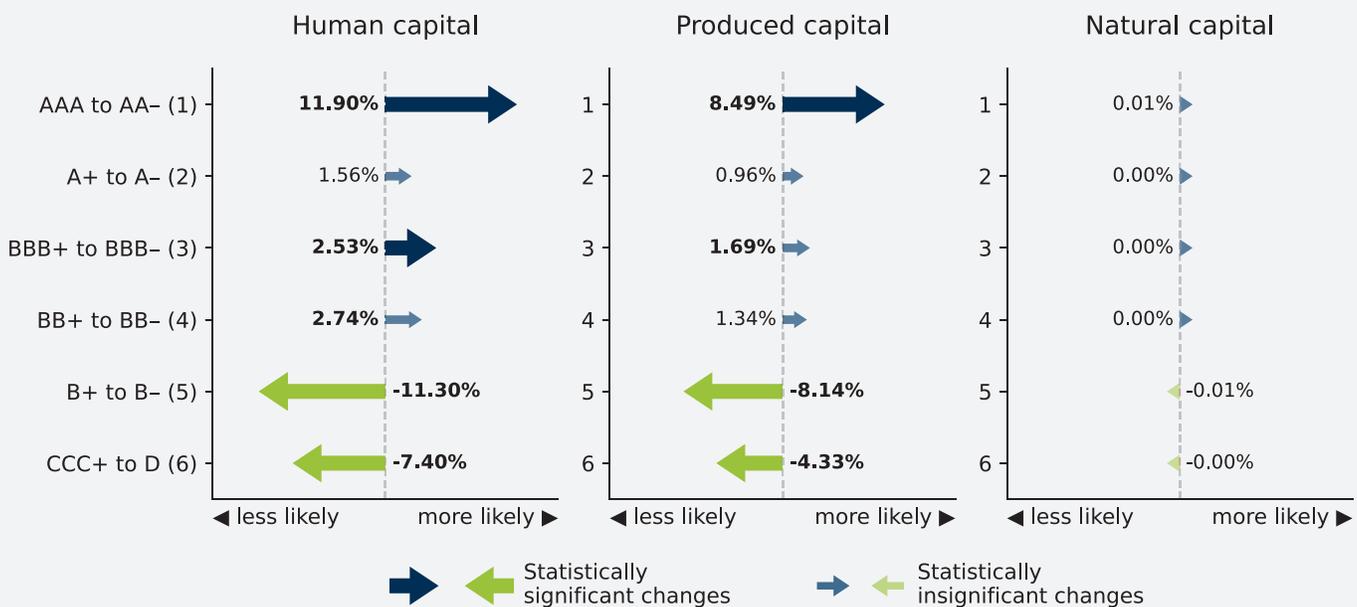
happen if the BBB-rated country had more human capital while everything else stays equal? Figure 4.4 shows us that countries with above-average human capital are more likely to have an AA- rating or better (11.9 percent and less likely to be rated between B+ and B- (11.3 percent). A similar result is found if the middle-income country with BBB- rating has more produced capital, but natural capital remains the exception.

**Our findings suggest that natural capital could be an important input into credit rating assessments of lower-income countries.** Although macroeconomic and debt credit

metrics are likely to be the key driver of credit assessments, the inclusion of data on natural capital could be an important insight on a country's longer-term growth model and thus be relevant for a sovereign credit assessment. Natural capital is also relevant for the ESG provider industry. Box 4.1 provides an overview of the relationship between these two measures. Given the strong conceptual foundation of natural capital wealth data, the data set could be highly relevant for assessing a country's sustainability profile.

**FIGURE 4.4 - Are countries with higher wealth accounts more likely to belong to a better rating group? A probabilistic approach**

If we consider a hypothetical “average” country from the sample of 115 countries (such as a middle-income country with a BBB- credit rating), what would happen if such a country had more human, produced, or natural capital? Would it remain in the BBB+ to BBB- rating group, or would it be more likely to be part of the AAA to AA- group? The arrows show how this scenario would play out for each ESG pillar. Countries richer in human or produced capital are more likely associated with ratings of BB- or better and less likely with ratings below B+. For natural capital, no such statements can be made.



Source: World Bank staff calculations.

Note: We use an ordered probit model for panel data with income group fixed effects. It estimates the probability of belonging into one of the six rating groups (credit quality steps; see table B.1) on the vertical axes, based on higher E, S, and G scores. The effect sizes reported are the marginal effects for the average observation. The green and red arrows show how such a change would increase or decrease the probability of being in the respective CQS group. Transparent arrows indicate that the effects are not significant on the 5 percent significance level. The sum of all arrows, or the net change of probability, is zero. For regression details, see table B.2.

> > >

#### **BOX 4.1 - Natural Capital Components and Environmental Indicators: Two Measures of the Same?**

At first glance, natural capital components, which are wealth accounting variables (World Bank 2021), and environmental indicators, as defined on the World Bank Sovereign ESG Data Portal,<sup>a</sup> appear to measure very similar things. However, as figure B4.1.1, panel a, demonstrates, the relationship is not a simple one-to-one mapping. It is sometimes tempting to see a natural capital indicator (left) as the monetary equivalent of an environmental indicator (right), such as forest capital and forest land. These two factors – while having similar names – represent different metrics: , forest area is not featured in the forest capital calculation, which instead depends on the lifetime of the asset, the rents it produces, and the production (or extraction) quantity (World Bank 2021).

Figure B4.1.1, panel a, also presents another type of relationship: growth in a natural capital account can lead to measurable changes in an environmental indicator. For instance, growth in oil, gas, and coal capital (left), which involves extraction, production, and transportation, can lead to measurable CO<sub>2</sub> emissions (right). Another type of link is established when an environmental indicator is relevant for growth in a natural capital account. An example is the case of cooling degree days (right) and agricultural capital (left), because crop health and plant growth require sufficient days above crop-specific threshold temperatures over extended periods of time.

Thus, natural capital<sup>b</sup> and environmental scores are related in multiple ways. However, figure B4.1.1, panel b, shows that these conceptual relationships do not necessarily translate into quantifiable correlations. This translation difference can be explained in various ways. Natural capital focuses on the long-term economic value of forests, agricultural land, protected areas, and fossil fuel and mineral resources. In contrast, the E pillar aims at characterizing a country's current state in terms of emissions, energy use, climate risks, and food security. This distinction is also reflected in the units of measurement: E indicators are calculated as (shares of) metric tons, square kilometers, temperature degrees, and so on. Natural capital is always presented in dollar values.

As Gratcheva and Wang (2021) discuss, this low correlation is the result of two complementary approaches to measuring sustainability. Neither approach alone is sufficient to tell a complete story. Instead, a combination of both is necessary for the data to become relevant for economic and financial decision-making. As those authors mention, wealth accounting variables and environmental indicators are natural allies.

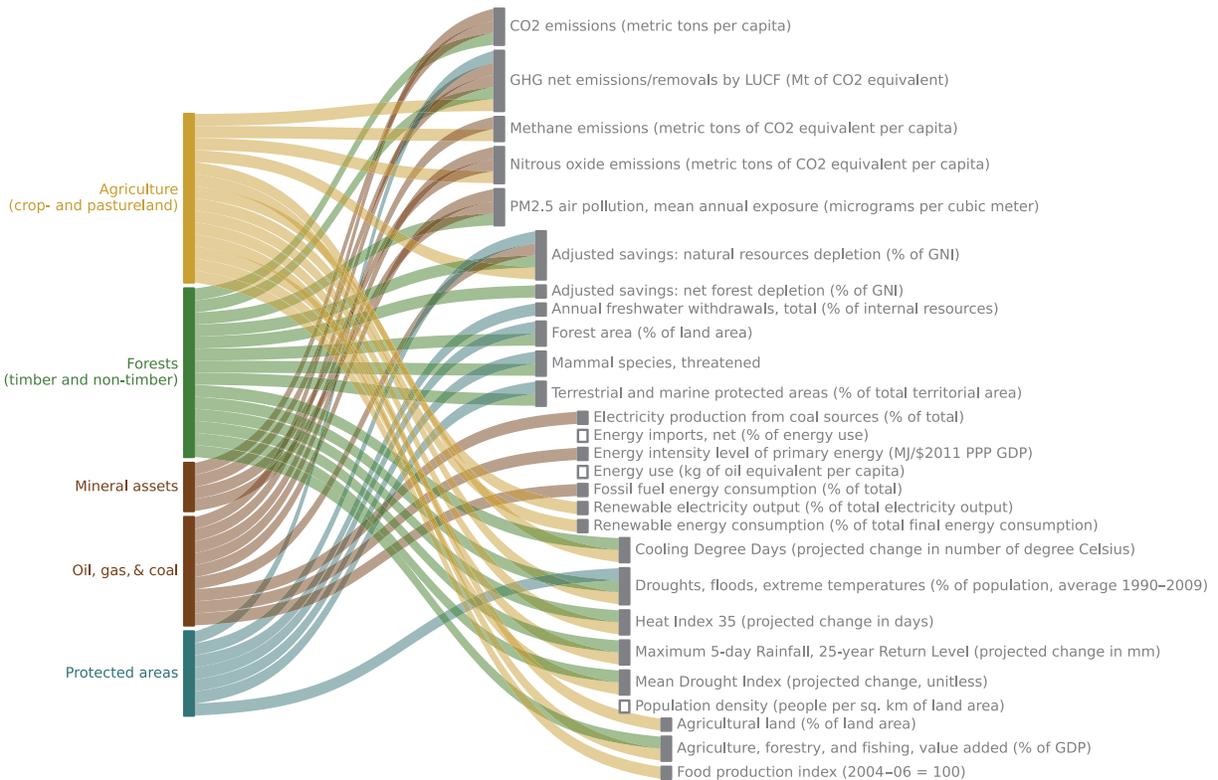
a. For the portal, see <http://esgdata.worldbank.org/>.

b. Natural capital is computed as the present value of future economic rents of various renewable (such as forests, agriculture, protected areas) and nonrenewable (such as oil, gas, minerals) resources. The lifetime of the resource depends on its extraction rate and, in the case of renewables, its regeneration rate. See appendix A, *Wealth Data*.

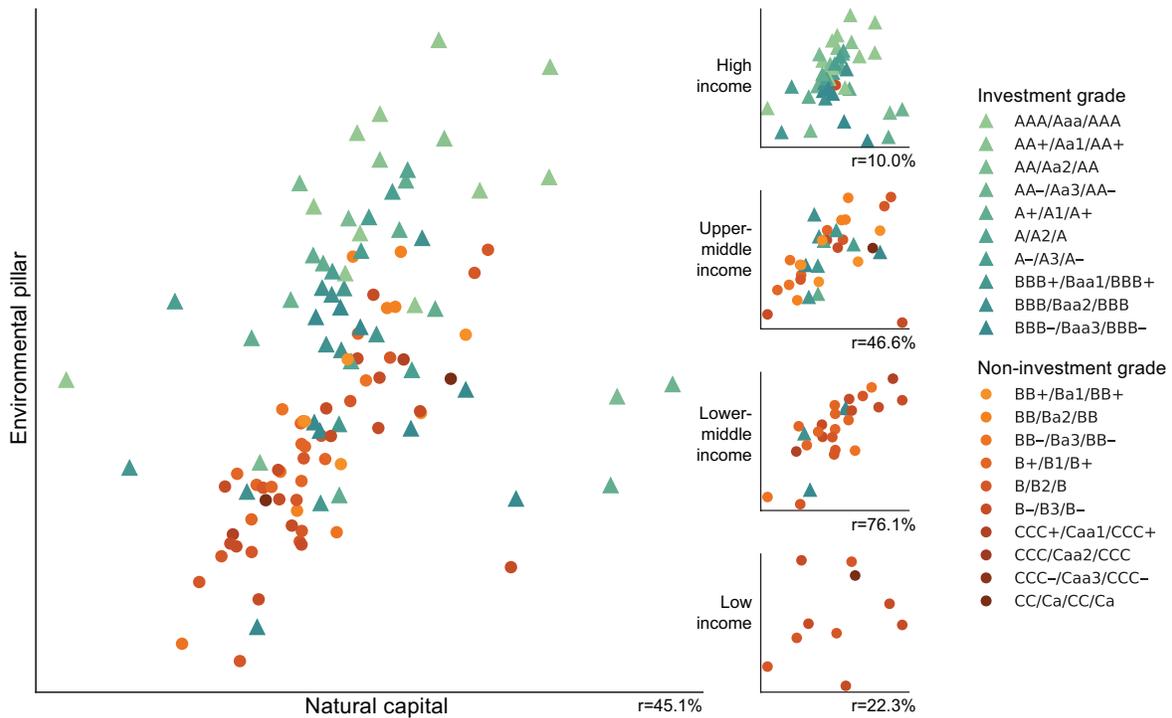
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**FIGURE B4.1.1 - Natural capital components and environmental indicators (selected from World Bank data portal)**

**a. Natural capital components (left) and environmental indicators (right) are conceptually related**



**b. However, the conceptual relationship does not translate into a strong quantitative relationship**



Source: World Bank staff calculations.

5





# The Low-Carbon Transition and Stranded Assets in Sovereign Credit Ratings

The incorporation of climate change risks, both physical and transition risks, into sovereign credit assessments poses a particular challenge for CRAs.<sup>44</sup> This section focuses on the so-called stranded assets risks<sup>45</sup> that many countries face in transitioning to a low-carbon economy. These risks relate to the possibility that certain industries or natural resources that may now be regarded as a credit-positive sovereign asset would depreciate significantly in value as society moves toward cleaner energy sources and therefore negatively affect sovereign creditworthiness. Recent global policy actions<sup>46</sup> promoting the green agenda could also speed up such a transition and pose a significant challenge to economies that are less diversified. Indeed, the investment community is increasingly aware of these risks as evidenced by a recent J.P. Morgan survey (“the climate strategy survey”) of EM investors that indicate that stranded asset risks are now considered on a par with climate change as an investment risk.

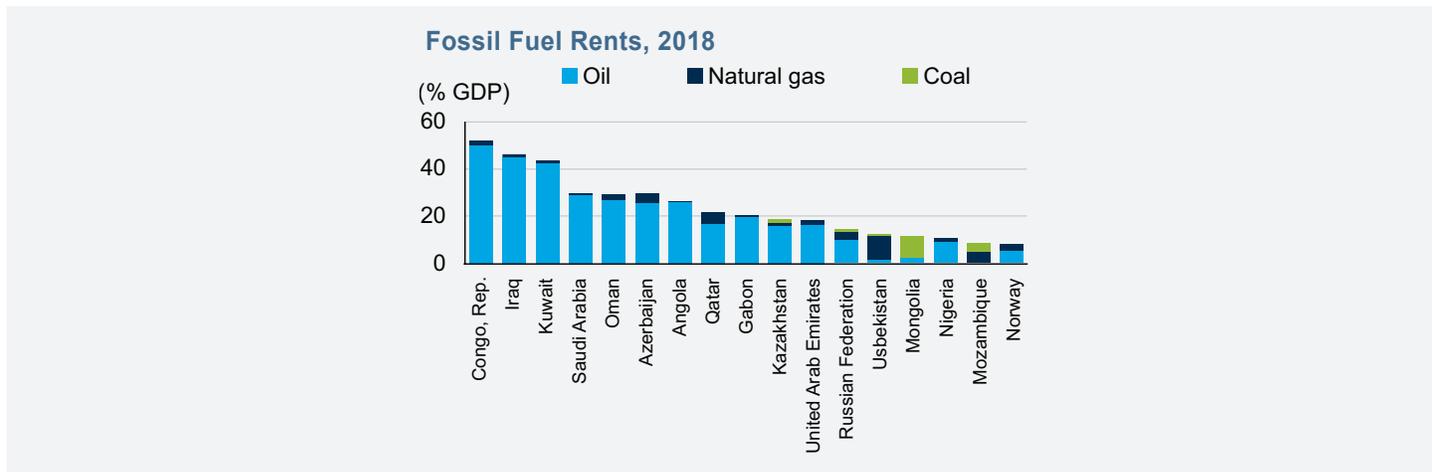
**Sovereigns with economies highly dependent on fossil fuels are most exposed to stranded-assets risks (figures 5.1 and 5.2).** As demand for fossil fuels wanes, unless the sovereigns are successful in diversifying their economies away from such fuels, the sovereigns will face a drop in fiscal revenue and export receipts, leading to economic decline, higher government debt, political instability, and rising financing costs. Sovereigns with strong balance sheets and potential to diversify their economies are better placed for the carbon transition. Because the path of the energy transition is highly uncertain, CRAs maintain that there is low visibility to such factors. It is expected that stranded-asset risks will build up over time and trigger more rating changes as the effects become clearer, closer, and more material (Fitch 2021).

<sup>44</sup> Physical risks include the frequency and severity of natural disasters and extreme weather events, rising sea levels, and other consequences of climate warming. Transition risks are risks related to the process of transitioning from traditional economic models that heavily rely on fossil fuels to a low-carbon economy that is based on low-carbon power sources.

<sup>45</sup> “Stranded assets” often refers to those assets that depreciate because of declining demand mainly caused by their negative effects on climate. Oil, coal, and gas are considered typical examples of stranded assets, but such assets might also include power plants that retire early because new emission regulations are imposed or fossil-fuel fields that are discovered but are not developed because of new regulations or low demand (IEA 2013).

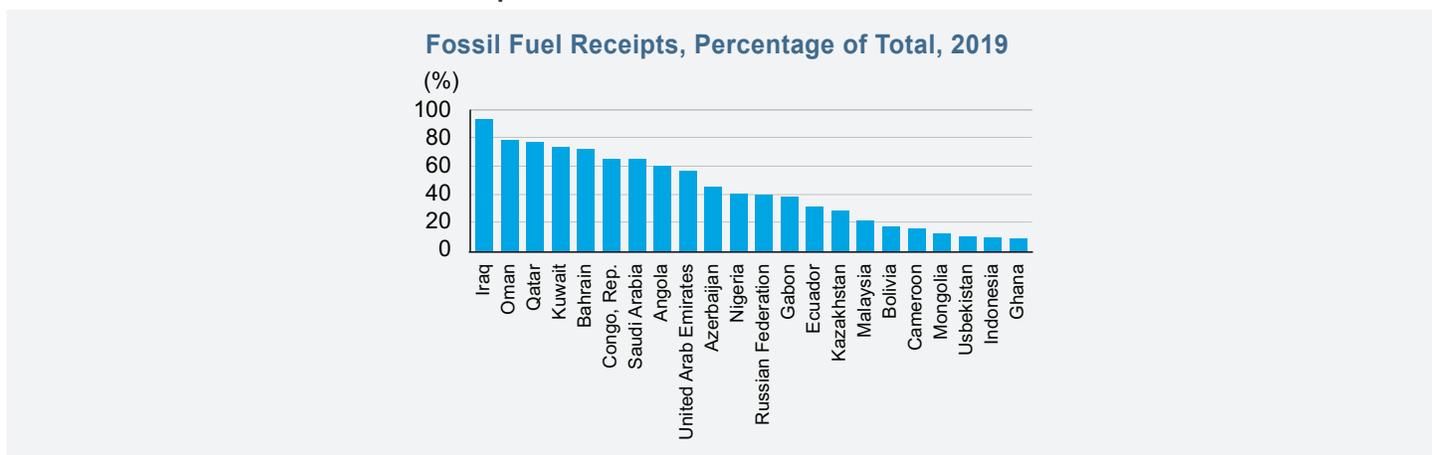
<sup>46</sup> These actions include the European Union’s green recovery plan and the United States’ new targets for the reduction in greenhouse gas emissions by 2030.

**FIGURE 5.1 - Selected countries' rents**



Source: Fitch Ratings, World Bank.

**FIGURE 5.2 - Selected countries' receipts**



Source: Fitch Ratings, World Bank.

**The assessment of a sovereign's low-carbon transition is challenging because of uncertainty around its trajectory and how sovereign's economic activity and creditworthiness will be affected.** Most CRAs include a small weight in their methodologies to capture a country's exposure to fossil fuels. There are different types of factors that could partly capture a country's exposure such as (a) commodity dependence, economic diversity, or economic concentration indicators; (b) fiscal flexibility indicators and fiscal revenue structure (such as capturing the concentration of fiscal inflows on the fossil fuel industry); (c) overall robustness of government policy framework and governance strength; (d) volatility of GDP growth; (e) scenario analysis; and (f) additional qualitative considerations. Some CRAs' methodologies include qualitative assessments of a sovereign's ability to diversify its

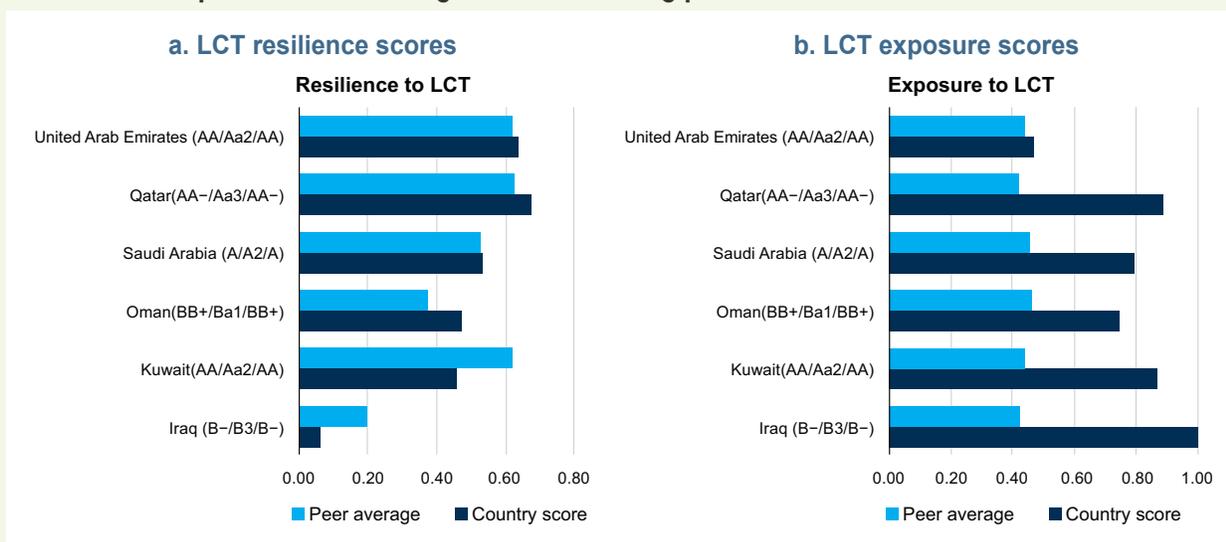
economy or to move to more sustainable energy sources that can positively affect credit ratings. For example, the "economic strength" factor by Moody's includes "other considerations," which are mainly qualitative and can include adjustments for sovereigns that are undergoing structural changes that may not be appropriately captured by other indicators. S&P mentions that a country's shift to a renewable energy source as a substitute for an imported energy source could lead to improving external metrics, for example, related to the country's imports or volatility of the country's terms of trade (S&P 2018). Fitch includes "commodity or sector dependence" as an indicator in the external finance component of its sovereign rating methodology. Box 5.1 provides an example of recent CRA treatment of sovereign stranded-asset risks.

### BOX 5.1 - How Do Stranded-Asset Risks Affect Credit Ratings of Persian Gulf Countries?

Persian Gulf countries are among the most exposed to stranded-asset risks globally, although they display moderate resilience to these risks. Figure B5.1.1 illustrates that Persian Gulf countries display a relatively small advantage on resilience scores relative to peer countries while being significantly more exposed to stranded-asset risks. Stranded-asset risks are not seen by CRAs as a driver of current credit assessments for many of these countries.

For example, Fitch, which affirmed Qatar at AA– in June 2021, did not mention stranded-asset risks in its rating action commentary.<sup>a</sup> Although the assessment did mention the country’s hydrocarbon dependency, the overall focus of the commentary is from the fiscal and debt perspective. On ESG credit factors, only governance credit factors were mentioned, and other environmental or social credit factors were deemed either credit neutral or having only a minimal credit impact. Moreover, in the rating sensitivities section—where the CRA outlines factors that could lead to a negative rating action or downgrade—any mention of stranded-asset risks or indeed other E issues were absent.

**FIGURE B5.1.1 - Low-carbon transition (LCT) resilience and exposure scores of Persian Gulf countries, compared to the average scores of rating peers**



Source: World Bank calculations using data from Peszko et al. (2020) and Fitch, Moody’s, and S&P.

Notes: Sovereign credit ratings as available at the end of October 2021.

a. See <https://www.fitchratings.com/research/sovereigns/fitch-affirms-qatar-at-aa-outlook-stable-18-06-2021>.

# THE RELATIONSHIP BETWEEN RISKS/OPPORTUNITIES RELATED TO STRANDED ASSETS AND SOVEREIGN CREDITWORTHINESS

We assess how the risks and opportunities related to sovereign stranded assets are reflected in current sovereign credit ratings. For this assessment, we use sovereign exposure and resilience scores calculated by Peszko et al. (2020) for more than 90 countries (box 5.2). A country's *exposure* to the low-carbon transition is typically measured by a combination of indicators such as (a) how much the country's exports are concentrated in fossil fuel

industries, (b) the carbon intensity of manufacturing, and (c) the size of accessible fossil fuel reserves. *Resilience* usually involves assessing institutional strength and different perspectives of the viability of the country's economic ecosystem, such as technological absorption, human capital, wealth, and other factors. Box 5.2 provides more information on the construction of the sovereign exposures and resilience scores used for our analysis.

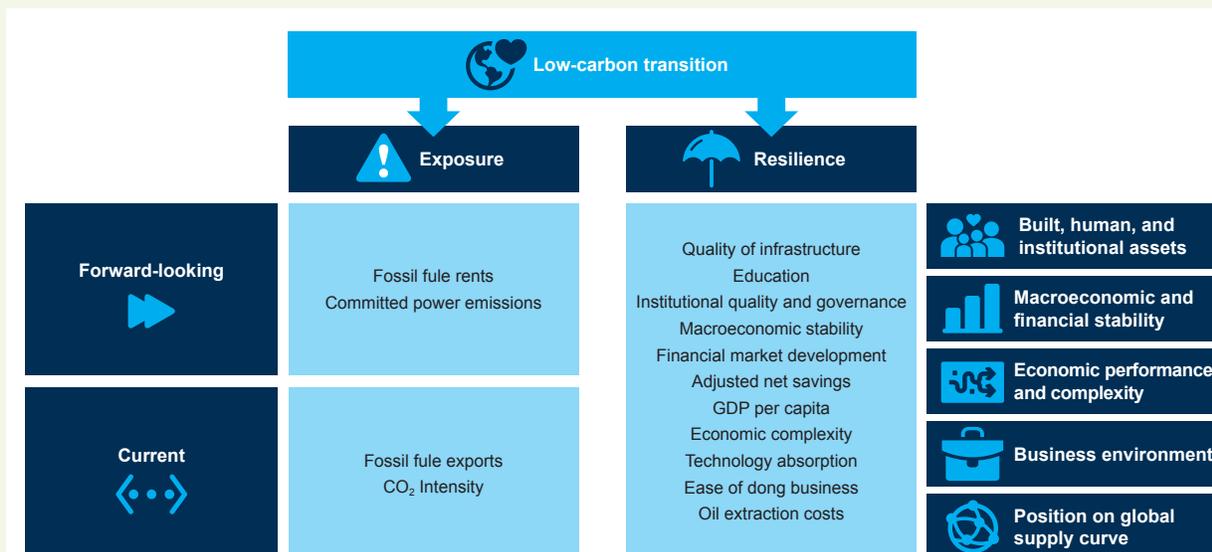
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## BOX 5.2 - Sovereign Exposure and Resilience Scores Constructed by Peszko et al. (2020)

The exposure score consists of four factors that measure how heavily a country is exposed to low-carbon transition risks. The first dimension of this measure is the timing of an exposure: (a) current exposure: carbon intensity of manufacturing exports and fossil fuel exports as a proportion of gross domestic product (GDP); (b) expected exposure: committed power emissions as a proportion of current annual power generation and expected resource rents as a proportion of GDP exposure. The second dimension is the type of exposed assets: (a) reliance on underground asset reserves: expected resource rents as a proportion of GDP and fossil fuel export as a proportion of GDP; (b) reliance on carbon-intensive built capital: carbon intensity of manufacturing exports and committed power emissions as a proportion of current annual power generation.

The resilience score is a combination of 11 factors that measures a country's ability and flexibility in adapting to structural changes caused by the low-carbon transition. Accordingly, the set of subfactors of this index is quite broad and includes five categories: (a) built, human, and institutional assets; (b) macroeconomic and financial flexibility; (c) economic performance and complexity; (d) business environment;<sup>a</sup> and (e) position on the global supply curve. Figure B5.2.1 contains the list of factors that are combined into one composite resilience score.

**FIGURE B5.2.1 - Overview of measurement factors of countries' exposure and resilience to low-carbon transition**

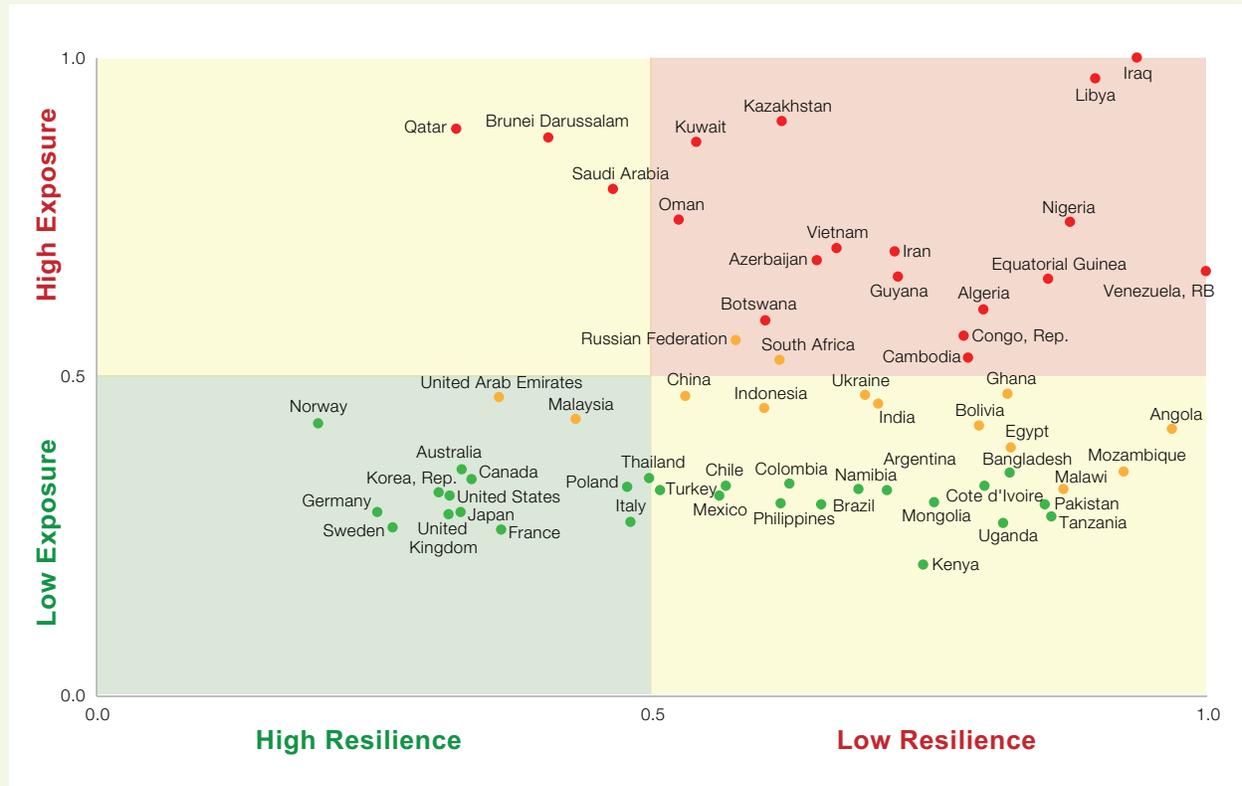


Source: Peszko et al. 2020; World Bank' infographics.

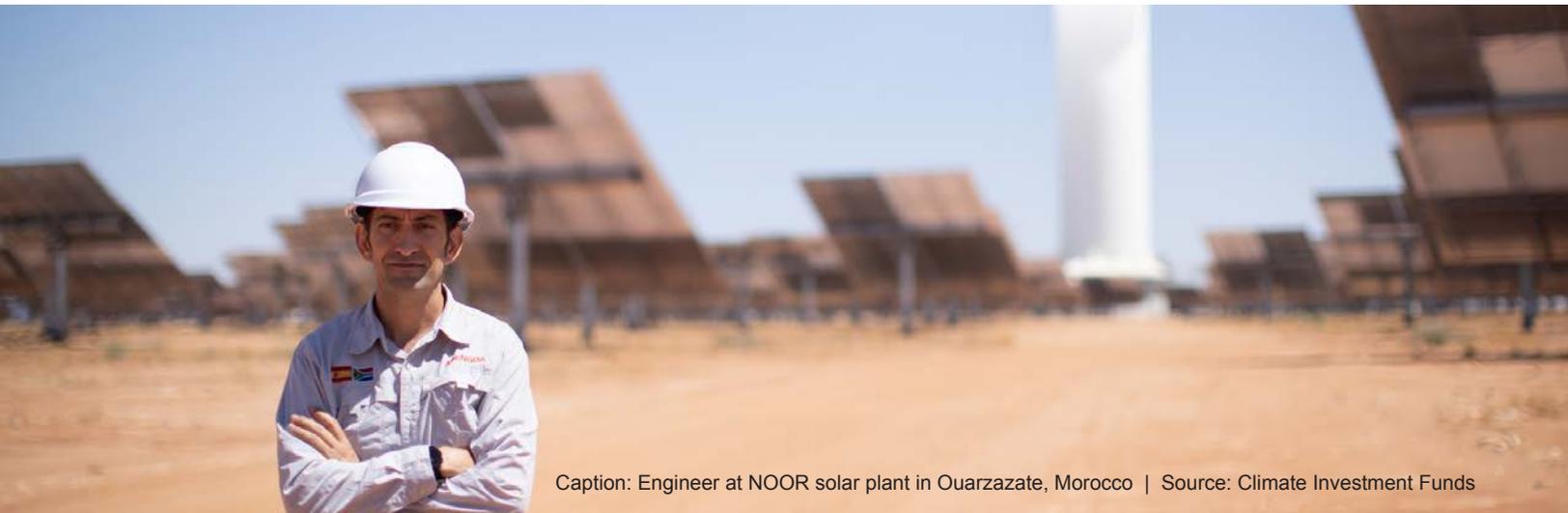
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**Figure B5.2.2 provides an overview of sovereign exposure and resilience scores.** Countries such as Iraq and Libya are both highly exposed and least resilient to stranded-asset risks. Other Persian Gulf countries like Kuwait and Oman are also highly exposed; however, their resilience is assessed at moderate levels. On the other end, wealthier countries such as Singapore and Switzerland have high resilience and low exposure to stranded-asset risks.

**FIGURE B5.2.2 - Overview of low-carbon transition exposure and resilience of the countries most exposed**



Source: Peszko et al. 2020.



Caption: Engineer at NOOR solar plant in Ouarzazate, Morocco | Source: Climate Investment Funds



Caption: Panels at NOOR solar plant, Ouarzazate, Morocco | Source: Climate Investment Funds

**We find that there is no empirically discernible relationship between current sovereign credit ratings and the level of a country's exposure to a low-carbon transition (figure 5.3).**<sup>47</sup> This finding is robust for all income levels. However, any assessment of sovereign exposures also needs to consider institutional and economic resilience, which may mitigate risks linked to higher exposure. We find that resilience scores do display a high and statistically significant correlation with sovereign credit ratings. However, this relationship is less robust for lower-income countries (0.84, 0.71, and 0.63 for high-income, upper-middle income, and lower-middle income countries, respectively). Moreover, resilience and exposure scores, if combined into a single joint preparedness index, show a statistically significant correlation with credit ratings in the high-income group only. This finding indicates that sovereign credit ratings may not fully capture risks or opportunities related to stranded-asset risk for lower-income sovereigns and that other factors, such as macroeconomic and debt metrics, which are perceived as having more materiality to credit, drive the credit rating assessment.

**Our findings highlight that risks and opportunities related to stranded-asset risks may not be adequately reflected in current sovereign credit rating assessments.** This is especially the case for lower-income countries. The approach to sovereign exposure and resilience that we present could be relevant for CRAs in their sovereign assessments. We expect that stranded-asset risks will become increasingly priced into financial markets over the coming years and that

the communication by authorities and policy makers on how countries are adapting and managing the transition to a low-carbon economy will become increasingly important.

**Currently, many CRAs appear to treat the stranded-asset risk inconsistently and their approach is focused on the typical time horizon of a sovereign credit assessment.** For countries with significant stranded-asset risk exposure, CRAs frequently mention rating weaknesses around a dependency on fossil fuel. However, in most cases these weaknesses are outweighed by the short-term benefits of fossil fuels, particularly on the fiscal side. For example, the precedence of rating actions taken by S&P when it downgraded Kuwait's and Oman's sovereign credit ratings and revised the rating outlook for Bahrain because of the significant decline in oil prices illustrates how credit factors that are treated as a strength in the short term can quickly become the main cause for a rating downgrade.<sup>48</sup>

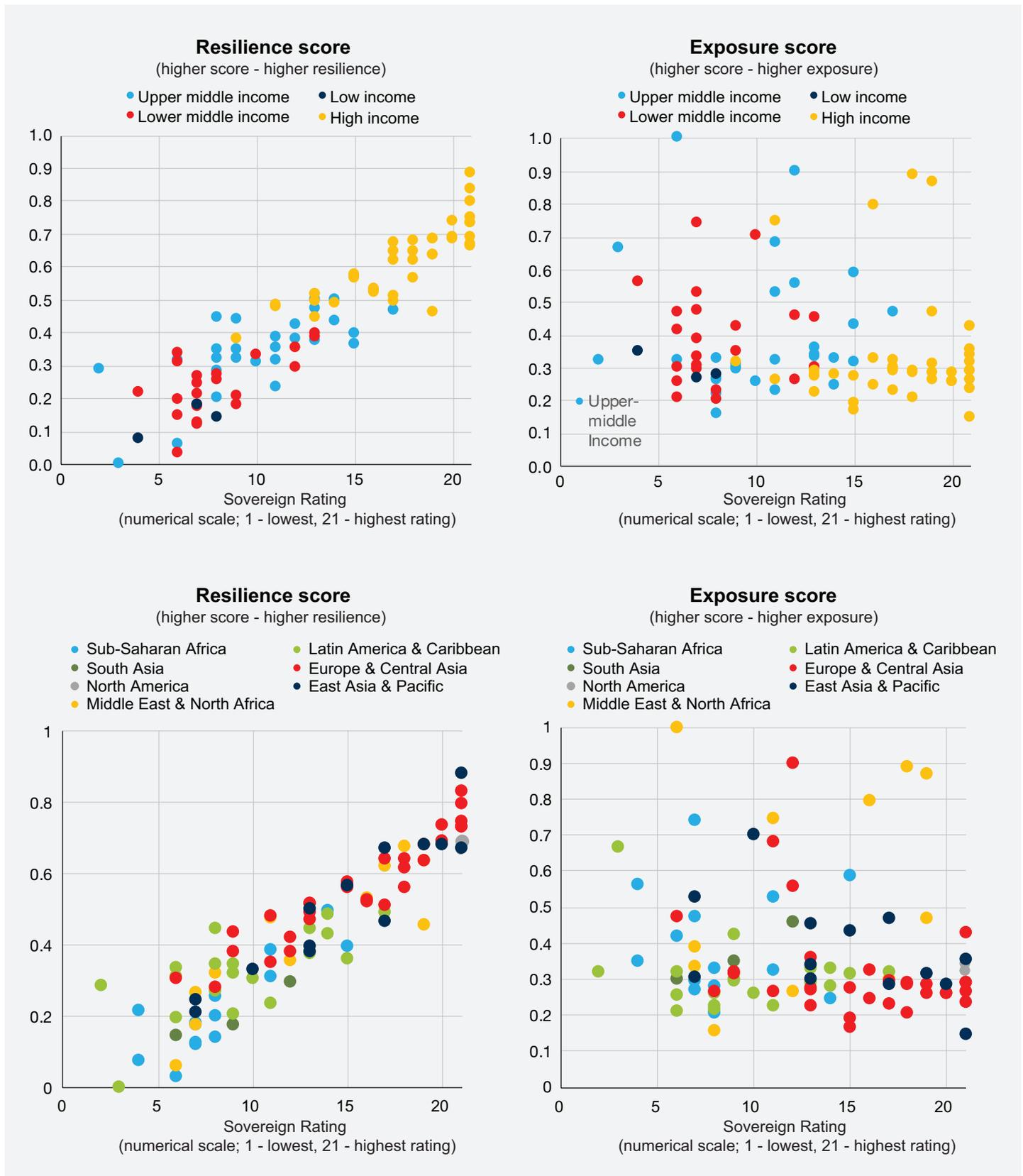
**Finally, sovereign debt managers and other policy makers should understand that the investment community, ESG providers, and CRAs are already forming opinions on a sovereign's sustainability performance.** As a result, issuers need to be proactive about providing information to these key stakeholders on how the country is planning to transition to a low-carbon economy. Failure to do so will likely result in higher credit spreads and a higher cost of borrowing over time. Recent World Bank publications provide advice to sovereign debt managers on this key area.<sup>49</sup>

47 Assessments have been conducted using the data for 23 lower-middle, 27 upper-middle, and 40 high-income countries.

48 <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/s-p-downgrades-kuwait-oman-revises-outlook-on-bahrain-on-plummeting-oil-prices-57780806>

49 See, for example, Boitreaud et al. 2020; Boitreaud et al. 2021; and Hussain 2020.

**FIGURE 5.3 - The relationship between current sovereign credit ratings and the level of a country's resilience and exposure to a low-carbon transition**



Source: World Bank calculations; Peszko et al. 2020; and CRAs.



6

Caption: Marine life near Caye Caulker, Belize | Source: Unsplash.com



## Conclusions

**This paper sheds light on select issues related to how sovereign ESG factors affect sovereign credit ratings.** We look at deeply embedded practices and methodologies that affect CRAs' response to the market demand for mainstream sustainability in their services and products and provides new evidence to inform the industry's evolution. Given the regulations and mandate for CRAs and prevailing constraints, both methodological and data related, on forward-looking analysis of ESG factors, the systematic integration of those factors into sovereign credit assessments is challenging. In recent years, CRAs have provided more clarity on their treatment of E, S, and G factors, but the many different CRA methodologies and new products are seen, by many, as not living up to the current sustainability challenge.

**Our analysis provides mixed evidence on the extent to which ESG factors are included in sovereign credit rating assessments.** The CRA industry emphasizes that only factors that influence a sovereign's creditworthiness over a particular time horizon (typically less than 10 years) are included in a credit rating assessment—and that this assessment should not be conflated with investment strategies that target social or environmental returns, in addition to a financial return. As a result, risks that are easier to understand and model are more explicitly included in credit assessments. Thus, G factors are included more often, but the explicit inclusion of E and S factors remains more limited.

## KEY ACTION POINTS



**We suggest that there is scope to improve the current CRA approach by better reflecting ESG factors in sovereign credit rating methodologies.** Materiality is a key concept in the discussion of the inclusion of credit-relevant ESG factors. Although on a conceptual level many ESG factors can affect a country's sustainability profile, their financial materiality may be hard to measure for now and, therefore, they are currently not included in the overall credit assessment. Nevertheless, given that the ESG “lens” is now a structural tenet of the investment process, we suggest that credit rating agencies should also adapt their methodologies to align with this structural shift. Increasing transparency here will benefit the whole financial system.



**The CRAs and ESG provider mandates need to become clearer and distinguishable.** Both industries have an important role to play. CRAs are focused on their medium-term credit assessments from a financial risk perspective. ESG providers need to focus on longer-term sustainability measurements from a sovereign ESG impact perspective—an area of increasing interest from investors. Furthermore, CRAs need to begin to plan for a longer-term credit measure that can complement the traditional CRA rating.



**CRAs could also consider adjusting their current rating scales toward greater granularity so that the financial materiality of ESG factors, as well as the financial materiality of other factors, could be better reflected on the credit rating scale.** Currently, as the impact of the ingrained income bias dominates ESG factors, their signal is not “strong” enough to be regarded as being material from a credit perspective. Bringing more granularity to the rating scale, as well as clarity on what factors are driving differences, even if small, could provide more clarity to investors. As already mentioned, given the dynamic nature of materiality, some of these financially material factors may soon become credit relevant.



**World Bank research shows that wealth accounting data related to a country's natural capital and information on a sovereign's stranded-asset risks and opportunities** represents additional ESG relevant information that could be better reflected in sovereign credit assessments. The wealth accounting approach is inherently forward-looking and captures determinants for long-term sustainable growth. Additionally transition risks and opportunities related to stranded assets are often not clearly taken into account in current sovereign CRA assessments- and CRAs could improve their analysis of these potentially relevant credit factors, going forward.



**Policy makers as well as sovereign debt managers have an important role to play in this changing ecosphere (Boitreaud et al. 2020).** A sovereign's debt management office should play a key role in engaging with investors on the sovereign's ESG credentials and providing material information to market participants. This transparency will ultimately be valued by participants and allow a sovereign to explain how it is adapting to a more sustainable future. This approach is important for sovereigns that may be regarded by the market as lagging peers.

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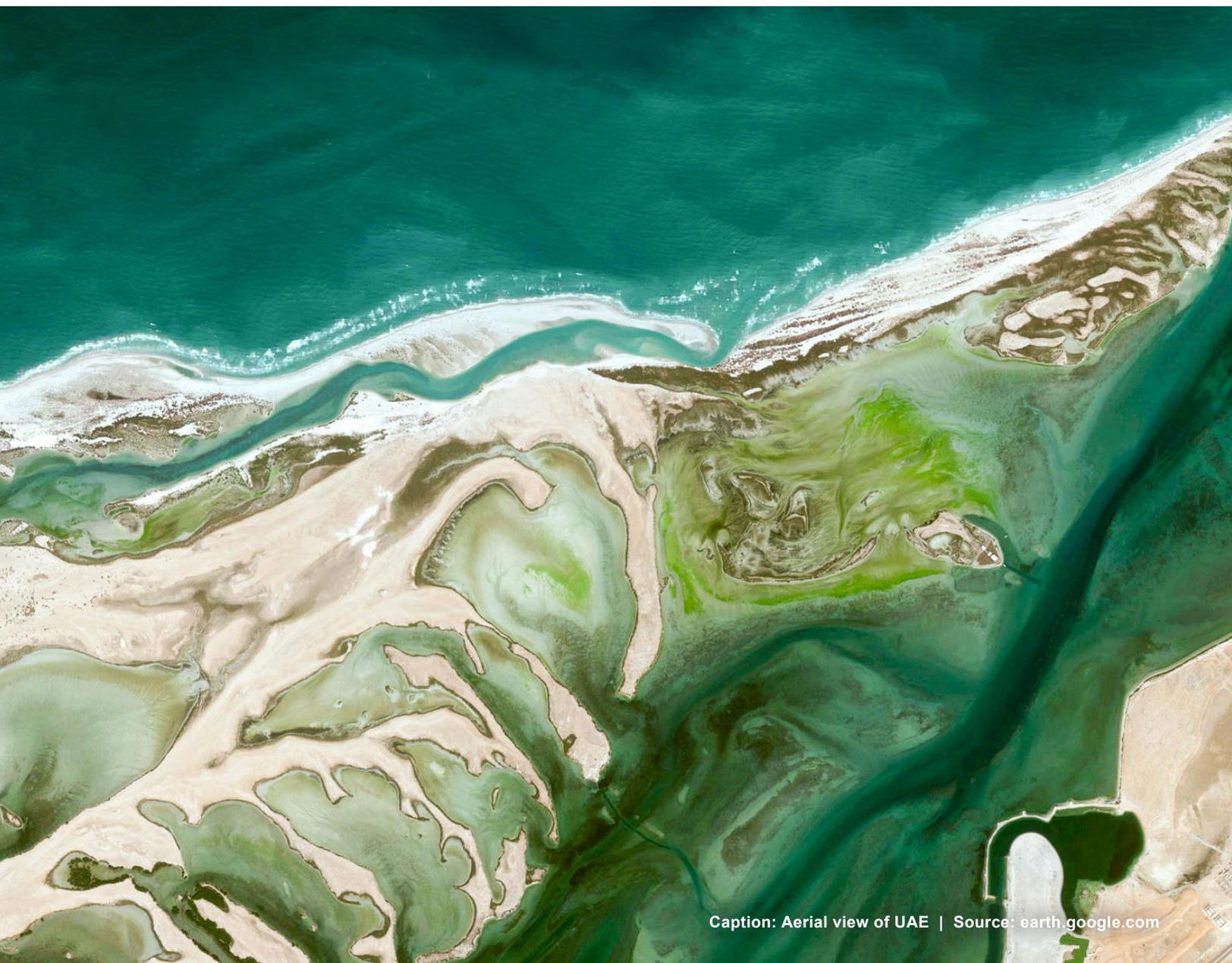
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Caption: Aerial view of UAE | Source: earth.google.com

# Appendix A

## Extended History of Credit Rating Agencies

This account is based on **Daniel Cash, Sustainability Rating Agencies vs Credit Rating Agencies: The Battle to Serve the Mainstream Investor (Palgrave Studies in Impact Financing, London: Palgrave Macmillan, 2021).**

The Credit Rating Agency (CRA) industry has been a central component of the financial architecture for more than 200 years and has continuously adapted and evolved with the times. Although the first CRA was founded in 1900 by John Moody, credit *reference* agencies were a feature of the financial marketplace even earlier, from the early 1800s.<sup>50</sup> The earlier history of the industry was sporadic, and the industry proved agile, adapting to societal, structural, and financial system change. This adaptability has helped to sustain the

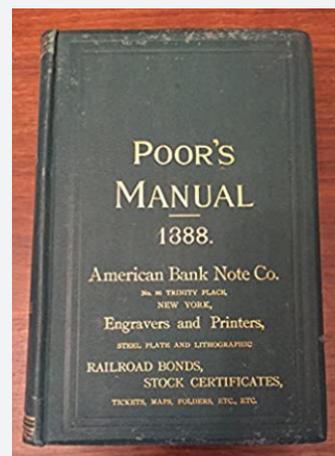
industry. The first form of formally collating data on businesses to better understand their creditworthiness was in the United Kingdom, with Scottish and English mercantile societies forming to provide members with protection against “swindlers and sharpers.” However, as European nations began establishing bankruptcy networks and associated protections, the nascent American economy rejected such evolution. As global trade grew, wealthy European banking entities faced the prospect of dealing with new customers. By the early 1800s, Baring Brothers surveyed the creditworthiness of American Houses and opportunities and ranked them on a scale of 1 to 11.<sup>51</sup>

In the United States, the first commercialized entity was the law firm of Griffen, Cleaveland, and Campbell in 1835. The firm developed a network of attorneys that produced reports on businesspeople. Subscribers could view the reports at the offices of the firm. However, appetite for credit risk analysis at this time was curtailed by a booming economy. By the late 1830s, sentiment toward credit risk had changed after a spike in bankruptcies. The spike led to the National Bankruptcy Act of 1841 to provide relief to the thousands of individuals who had gone bankrupt during the dramatic deflation that followed the crises of the late 1830s. Shortly after the enactment of this act, Lewis Tappan launched the Mercantile Agency, which became the first viable credit reporting service in the United States.

The Mercantile Agency perfected the approach of Griffen, Cleaveland, and Campbell, with the agency consisting of lawyers from all over the country who would report on local business entities.<sup>52</sup> At this time, the main competitor was the Bradstreet Co., which pioneered the “Reference Book.” This book was sent to subscribers and included “notification sheets” on changes in credit risk assessments. These sheets brought their references up to date and were the original rating modifiers. This system moved the process toward more of a ranking. At the same time, the two leading referencing entities faced a variety of legal challenges in the United States against their right to publish such information, with the common argument being that negative reports were libelous. Still, the courts predominantly sided with the agencies and ruled that their reports constituted opinions protected under the US Constitution.

Henry Varnum Poor published his *History of Railroads and Canals in the United States* in 1860 and in 1867, he formed H.V. and H.W. Poor, which later evolved into Poor’s Railroad Manual Company. In 1900, John Moody founded his first company, John Moody & Co, which published *Moody’s Manual of Industrial and Miscellaneous Securities*. As a result of the stock market downturn in 1903, he lost control of the company and its name.

FIGURE A.1 - Poor’s Manual



Source: Amazon.com

50 Credit reference agencies are companies that collect and hold information that affects a subject’s creditworthiness, while not explicitly rating the subject. Credit rating agencies rate the issuer’s ability and willingness to repay debt.

51 Baring Brothers was a London merchant bank founded in 1763 by the Baring family to finance trade with the United States and India.

52 Reporters included Abraham Lincoln and Ulysses S. Grant before their presidencies.

Moody reestablished an agency in 1907 under the Analyses Publishing Co. The agency adopted a new approach by focusing on rating securities as well as companies. He launched Moody's Analyses of Investments in 1910, and the rating industry began to take shape as we know it. Following the market crash of 1929, on May 27, 1933, legislators passed the first major federal securities law—the 1933 Securities Act—also referred to as the Truth in Securities Act, the Federal Securities Act, or the 1933 Act. The act was seen as a reflection of the existing market dynamic, because the reliance on the agencies, from the perspective of regulators and the judiciary, began well before the 1933 Act. In 1941, Poor's merged with Standard Statistics, which had been established in 1906 as the Standard Statistics Bureau.

In 1973, the Securities and Exchange Commission essentially began the era of forcing the rating agencies upon the financial markets. This effort culminated with the registering of recognized rating agencies under the name of a Nationally Recognized Statistical Rating Organization. The rating industry developed steadily from this point on. S&P developed under the auspices of its parent company McGraw-Hill. Warren Buffett's Berkshire Hathaway bought Dun and Bradstreet in 2000 and immediately spun the Moody's brand off. Following the failures of Enron in 2001 and WorldCom in 2002, regulatory scrutiny of the credit rating agencies intensified, and they became regulated for the first time in 2005, just before the Global Financial Crisis of 2007–08.

## INTEGRATION OF ESG AS A SEPARATE COMPONENT INTO THE SOVEREIGN CREDIT METHODOLOGY

Scope Ratings GmbH is currently the only CRA that includes ESG as a stand-alone factor in its sovereign credit rating methodology. In October 2021, Scope published a sovereign credit rating methodology.<sup>53</sup> In general, Scope's sovereign credit ratings framework rests on five categories of sovereign risk, one of which is directly tied to ESG: "Domestic economic risk," "Public finances risk," "External economic risk," "Financial stability risk," and "ESG risks." The ESG credit risk component is established by expanding the previously used "Institutional & political risk" pillar to account for social and

environmental risks. The ESG pillar gets a 20 percent weight, with seven indicators representing this component (figure A.2). In addition to quantitative indicators, Scope's sovereign credit rating framework includes qualitative scorecards that span all five pillars.

Scope's approach brings more transparency to the role that ESG factors play in sovereign credit rating assessments. Although many of the traditional indicators and qualitative considerations in sovereign credit rating methodologies could already be labeled as ESG-related credit factors, the explicit

FIGURE A.2 - Scope GmbH's sovereign credit rating methodology



Source: Scope Sovereign Rating Methodology.

53 See <https://www.scooperatings.com/ScopeRatingsApi/api/downloadmethodology?id=01508950-119c-4ab5-9182-54ffdc1003f>.

breakdown of these risks into an ESG sphere brings clarity to the topic. Notwithstanding this improved clarity, the separation of ESG as a discrete structural component of sovereign credit

rating methodologies is not a goal in itself. However, there is a need for a more robust understanding of which ESG factors materially affect credit risk.

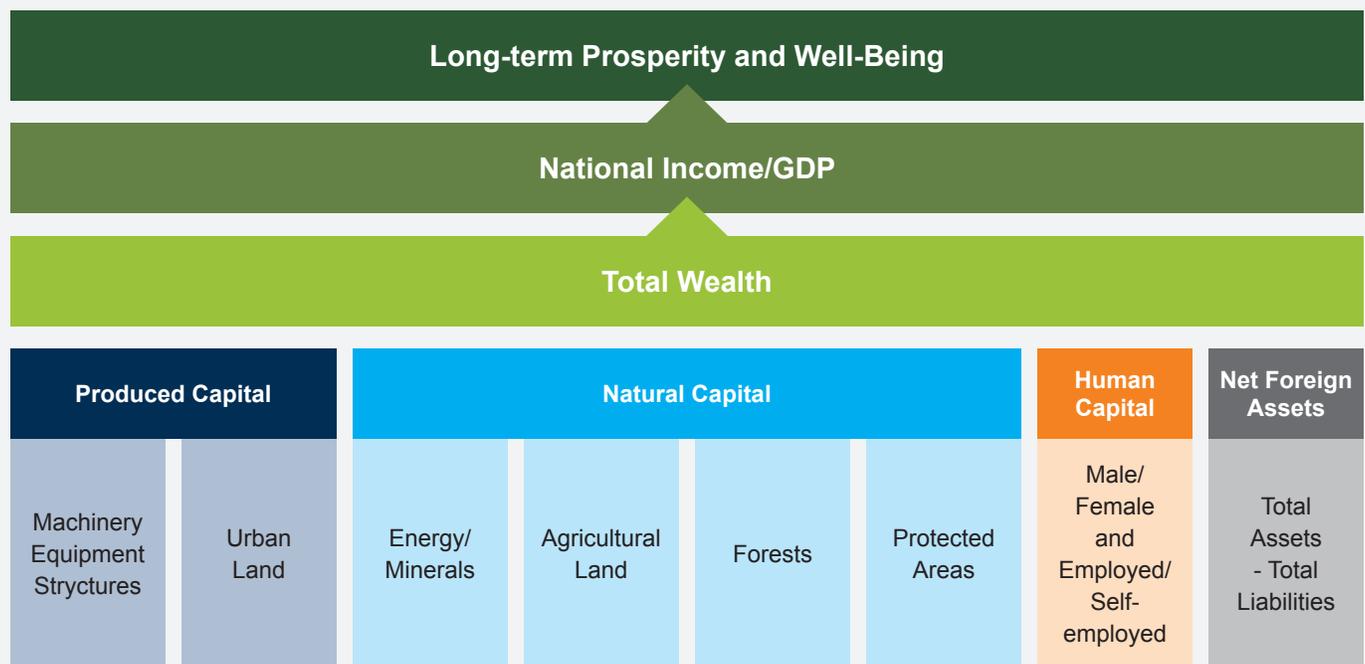
## WEALTH DATA

The World Bank's Wealth Accounting and the Valuation of Ecosystem Services (WAVES) partnership has created a national wealth accounting framework that works to incorporate the value of natural capital and human capital alongside traditional financial measures of national income to create a more holistic accounting of national wealth (figure A.3). The purpose is to move beyond traditional GDP and capture the interaction of economic activity, the environment, and the human capital of a country's citizens. Human capital, for instance, is calculated as the discounted expected lifetime earnings of a population. A similar rationale applies to the

valuation of natural resources. A country's fossil fuel wealth is calculated as the discounted value of future resource rents, until this nonrenewable resource is depleted. Renewable resources, such as forests or agricultural land, distinguish themselves in that their discounting horizon depends on the rate of extraction versus replacement. For instance, forest capital is a function of (inflation-adjusted) unit rents, production quantities, and the difference between deforestation and re-/afforestation rates. In principle, renewable resources can produce rents in perpetuity.

**FIGURE A.3 - Total wealth composition**

See the *Changing Wealth of Nations*, a World Bank report, for a database and an analysis of the world's wealth accounts, covering 146 countries: <https://www.worldbank.org/en/publication/changing-wealth-of-nations>.



Source: World Bank staff illustration.

Notes: Natural capital includes the value of natural resources and ecosystem services.

Human capital is the present value of future earnings for the labor force.

Produced capital is the value of machinery, equipment, and structures, as well as urban land.

Total wealth captures the sum of the produced capital, natural capital, human capital, and net foreign assets.

# Appendix B

## Additional Tables

**TABLE B.1 - Sovereign credit ratings, ranks, and credit quality steps (CQS)**

GRADE	CREDIT QUALITY STEP	DESCRIPTION	MOODY'S		S&P		FITCH	
			RATING	#	RATING	#	RATING	#
Investment	1	Prime	Aaa	1	AAA	1	AAA	1
		High grade	Aa1	2	AA+	2	AA+	2
			Aa2	3	AA	3	AA	3
			Aa3	4	AA-	4	AA-	4
	2	Upper medium grade	A1	5	A+	5	A+	5
			A2	6	A	6	A	6
			A3	7	A-	7	A-	7
	3	Lower medium grade	Baa1	8	BBB+	8	BBB+	8
			Baa2	9	BBB	9	BBB	9
			Baa3	10	BBB-	10	BBB-	10
Non-investment	4	Speculative	Ba1	11	BB+	11	BB+	11
			Ba2	12	BB	12	BB	12
			Ba3	13	BB-	13	BB-	13
	5	Highly speculative	B1	14	B+	14	B+	14
			B2	15	B	15	B	15
			B3	16	B-	16	B-	16
6	Substantial risks	Caa1	17	CCC+	17	CCC+	17	
		Extremely speculative	Caa2	18	CCC	18	CCC	18
	Default imminent	Caa3	19	CCC-	19	CCC-	19	
		Ca	20	CC	20	CC	20	
		Ca	20	C	21	C	21	
In default	C	21	D	22	DDD	22		
	C	21	D	22	DD	23		
			C	21	D	22	D	24

Source: World Bank staff calculations.

**TABLE B.2 - Ordered probit model results**

The subtables (a) and (b) report the underlying results for figures B3.1.1 and 4.4. Marginal effects are computed for a linear-linear relationship for the hypothetical average country. Income FE stands for income group fixed effects (low, lower-middle, upper-middle, and high income).

**a. Sovereign ESG scores**

MARGINAL EFF.	ENVIRONMENTAL			SOCIAL			GOVERNANCE		
	COEF.	STD.ERR.	P-VALUE	COEF.	STD.ERR.	P-VALUE	COEF.	STD.ERR.	P-VALUE
LiProb=cqs1	0.0017	(0.0011)	0.1320	0.0065	(0.0010)	0.0000	0.0053	(0.0008)	0.0000
LiProb=cqs2	0.0002	(0.0003)	0.4580	0.0008	(0.0009)	0.3260	0.0007	(0.0007)	0.3150
LiProb=cqs3	0.0002	(0.0002)	0.2830	0.0014	(0.0006)	0.0159	0.0012	(0.0006)	0.0262
LiProb=cqs4	0.0003	(0.0003)	0.3340	0.0010	(0.0008)	0.2020	0.0010	(0.0006)	0.1310
LiProb=cqs5	-0.0016	(0.0011)	0.1460	-0.0063	(0.0014)	0.0000	-0.0056	(0.0013)	0.0000
LiProb=cqs6	-0.0008	(0.0006)	0.1880	-0.0033	(0.0011)	0.0037	-0.0026	(0.0009)	0.0046
Observations	115	-	-	115	-	-	115	-	-
Income FE	Yes	-	-	Yes	-	-	Yes	-	-

**b. Wealth accounting variables**

MARGINAL EFF.	HUMAN CAPITAL			PRODUCED CAPITAL			NATURAL CAPITAL		
	COEF.	STD.ERR.	P-VALUE	COEF.	STD.ERR.	P-VALUE	COEF.	STD.ERR.	P-VALUE
LiProb=cqs1	0.0849	(0.0211)	0.0001	0.1190	(0.0168)	0.0000	0.0001	(0.0174)	0.9950
LiProb=cqs2	0.0096	(0.0121)	0.4290	0.0156	(0.0157)	0.3210	0.0000	(0.0020)	0.9950
LiProb=cqs3	0.0169	(0.0094)	0.0728	0.0253	(0.0122)	0.0381	0.0000	(0.0019)	0.9950
LiProb=cqs4	0.0134	(0.0108)	0.2160	0.0274	(0.0148)	0.0649	0.0000	(0.0027)	0.9950
LiProb=cqs5	-0.0814	(0.0243)	0.0008	-0.1130	(0.0268)	0.0000	-0.0001	(0.0163)	0.9950
LiProb=cqs6	-0.0433	(0.0177)	0.0145	-0.0740	(0.0257)	0.0040	-0.0000	(0.0077)	0.9950
Observations	115	-	-	115	-	-	115	-	-
Income FE	Yes	-	-	Yes	-	-	Yes	-	-

Source: World Bank staff calculations.

## Other insights into **sustainable finance** you may be interested in

-  *Riding the Wave: Navigating the ESG Landscape for Sovereign Debt Managers.* by S. Boitreaud, E. Gratcheva, B. Gurhy, C. Paladines and A. Skarnulis
-  *Demystifying Sovereign ESG.* by E. Gratcheva, T. Emery and D. Wang
-  *A New Dawn - Rethinking Sovereign ESG.* by E. Gratcheva, B. Gurhy, T. Emery and D. Wang
-  *Credit Worthy: ESG Considerations in Sovereign Credit Ratings.* by E. Gratcheva, B. Gurhy, F. Stewart, A. Skarnulis and D. Wang
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-  *Natural Allies: Wealth and Sovereign ESG, in: The Changing Wealth of Nations 2021: Managing Assets for the Future.* by E. Gratcheva and D. Wang
-  *Natural Capital and Sovereign Bonds.* by D. Wang
-  *Paving the Path: Lessons from Chile's Experiences as a Sovereign Issuer for Sustainable Finance Action.* by S. Boitreaud; T. Emery; L. Gonzales; B. Gurhy; F. Larrain; C. Paladines
-  *Spatial Finance: Challenges and Opportunities in a Changing World* by WWF and World Bank.
-  *Geospatial ESG – The emerging application of geospatial data for gaining 'environmental' insights on the asset, corporate and sovereign level.* by WWF, World Bank and GC



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