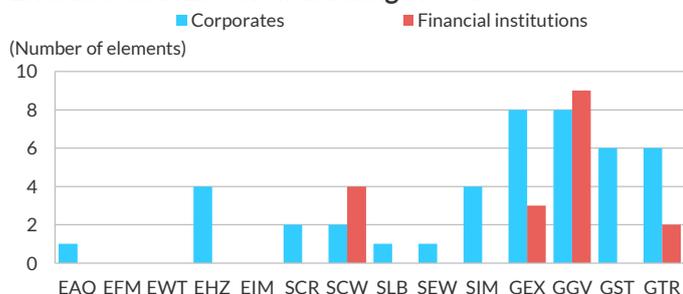


ESG Credit Quarterly: 1Q20

Defining “Brown” Harder than “Green”, but Has Potentially Greater Credit Implications

Elements with ESG.RS Increasing to '4' or '5'



Data: 7 January 2019 to 20 February 2020

Source: Fitch Ratings

Events, Litigation Drive “E” and “S” Changes

Since Fitch Ratings launched ESG relevance scores (ESG.RS) in early 2019, 2.1% of corporates and 1.7% of financial institutions have seen an increase in impact on credit ratings from ESG factors, from no or low impact. Governance scores for entities had the greatest frequency of increases, consistent with Fitch’s initial findings that governance factors most frequently affect credit ratings. Events such as operational disruptions, litigation and regulatory investigations have been frequent drivers of environmental and social relevance score changes.

Physical Risks Spur Climate Policy Debate

ESG.RS changes driven by extreme weather events have been rare despite the continued rise in the frequency of such events. This reflects in part how affected sectors, such as non-life insurers and utilities, have managed their exposure to physical-environmental impacts. Extreme weather events may have broader credit implications if they affect public and political opinion on climate policy.

EU Focus Moving from “Green” to “Brown”

There have been calls for a corresponding “brown” taxonomy (a list of environmentally harmful activities) following the publication of the final report on the EU taxonomy: a list of “green” activities deemed to support EU environmental objectives. Fitch expects it will be more difficult to find consensus on such a list, but it could have greater credit implications by defining targets for disincentive policies such as higher prudential capital requirements.

Brown List May Steer Exclusion Criteria

The brown taxonomy could inform how asset managers and banks screen for other fossil fuels or environmentally harmful activities in the future, beyond thermal coal which is already excluded by many in developed markets. This could affect corporates’ ability to raise finance, particular as asset managers increasingly apply exclusionary criteria across actively managed assets whether or not they are labelled as ESG.

Related Research

[ESG White Paper \(April 2020\)](#)

[Industry Faces Climate Transition Challenge \(February 2020\)](#)

[ESG Credit Trends 2020 \(December 2019\)](#)

Analysts



Mervyn Tang
+852 2263 9633
mervyn.tang@fitchratings.com

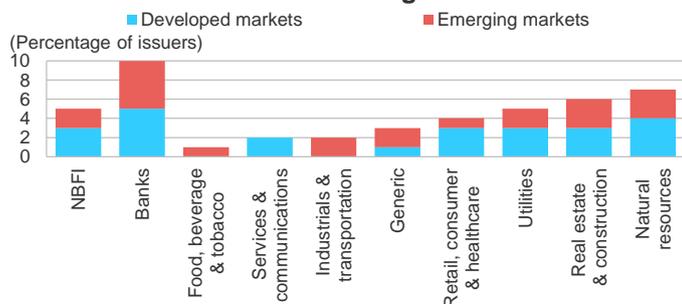


Andrew Steel
+44 20 3530 1596
andrew.steel@fitchratings.com

ESG Relevance Score Changes

It has been more than a year since Fitch launched ESG.RS for corporates (7 January 2019) and financial institutions (25 February 2019). Fitch is therefore starting to build time-series data for ESG.RS to help understand how different ESG factors are becoming more or less relevant to credit ratings.

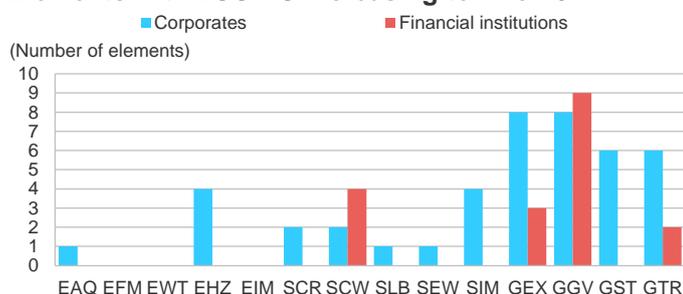
Issuers with ESG.RS Increasing to '4' or '5'



Data: 7 January 2019 to 20 February 2020
Source: Fitch Ratings

ESG factors have a medium or high impact (at least one ESG score of '4' or '5') for 23% of corporates and 18% of financial institutions as of end-February 2020, from 22% and 20% respectively at launch. This is in part due to changes in the composition of issuers with ESG.RS, due to new and withdrawn issuers. Since the launch, 2.1% of corporates and 1.7% of financial institutions that had ESG factors with no or minimal impact on credit ratings (highest ESG.RS of '3' or less) now have ESG factors with a medium or high impact. The proportion was similar for developed and emerging-market issuers. The natural resources sector had the highest number of issuers that showed increases to '4' or '5', with waste and hazardous materials management, EHZ and governance structure (GGV) the most commonly affected factors. Nine out of 10 banks with ESG.RS increases to '4' or '5' were from GGV, with the remaining already having a score of '4' for this risk factor.

Elements with ESG.RS Increasing to '4' or '5'



Data: 7 January 2019 to 20 February 2020
Source: Fitch Ratings

Governance factors accounted for the majority of increases in ESG.RS to '4' or '5' for corporates and financial institutions, but there is a wider dispersion of score changes for corporates across environmental and social factors. The distribution of score changes is roughly in line with the distribution of '4' or '5' scores overall, with notable exceptions for environmental factors. Factors such as greenhouse gas emissions and air quality (EAQ) and energy and fuel management (EFM) are static compared to other factors, because they are more often driven by slower-moving regulatory

changes and business-model shifts that are less volatile year-on-year. This could change if there is an abrupt tightening of climate regulations in some jurisdictions; a risk Fitch identified due to the gap between government pledges and policy.

Fitch ESG Relevance Scores

Fitch launched ESG.RS for 1,534 corporate issuers in January 2019, and has since released more than 143,000 ESG.RS for over 10,200 issuers, transactions and programmes across corporates, financial institutions, sovereigns, public finances, infrastructure, structured finance and covered bonds. The scores, which are produced by Fitch's analytical teams, transparently and consistently display both the relevance and materiality of individually identified ESG risk elements to the rating decision.

Score	Impact on Credit	Description
1	None	Irrelevant to the entity, transaction or programme rating and irrelevant to the sector
2	None	Irrelevant to the entity, transaction or programme rating but relevant to the sector
3	Low	Minimally relevant to rating; either very low impact or an actively managed risk resulting in no impact on the entity, transaction or programme rating
4	Medium	Relevant to the entity, transaction or programme rating but not a key driver; has a rating impact in combination with other factors
5	High	Highly relevant; a key rating driver that has by itself a significant impact on the entity, transaction or programme rating

Source: Fitch Ratings

In contrast, the number of increases in EHZ scores is higher than suggested by the factor's overall relevance, perhaps reflecting a greater proportion of event risks that increase the factor's relevance. Examples of this include the effects of the Port Neches explosion on [TPC Group Inc](#) (B-/RWN) and the environmental damage caused by salt-mine operations on [Braskem S.A.](#) (BBB-/Negative). SIM scores and customer welfare, product safety and data security scores are also relatively dynamic, in part driven by litigation and regulatory investigations, as with [Arizona Public Service Co.](#) (A-/Negative), and by disruption due to operations in areas of conflict, as with [Nord Gold SE](#) (BB/Stable) and [Metinvest B.V.](#) (B-/Stable).

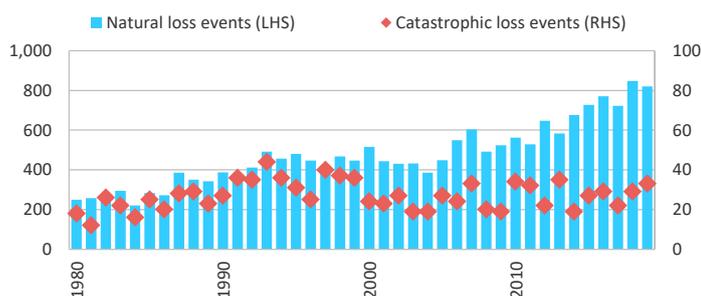
Positive-score changes are rare, as are positive scores. We increased the EAQ ESG.RS to '4' [+] for [Enel S.p.A.](#) (A-/Stable) because Enel's massive investment in renewables has been one of the factors increasing visibility over its cash flows, due to the company's largely contracted renewables production. This was accompanied by an increase in its EFM score to '4' as the company continuously reduced its emission intensity and this goes in parallel with a better positioning in the merit order (priority of dispatch), the lower operational risk for renewables, and decreasing exposure to ETS and commodity-price trends. There are a number of cases where EAQ and EFM are jointly relevant for utilities, reflecting the close link between emissions and energy mix in the sector.

Eight out of the 30 corporates with score increases to '4' or '5' had multiple score changes, of which seven involved at least one governance-score increase and six involved multiple governance-score increases. This finding is consistent with Fitch's [earlier findings](#) that governance factors are more likely to be jointly relevant with other ESG factors. In cases such as the Brumadinho tailings dam collapse for [Vale S.A.](#) (BBB-/Stable), multiple ESG factors experienced higher scores. We increased Vale's scores to '4' for EHZ and SEW factors and to '5' for SIM and GEX factors, reflecting the range of consequences we considered. Vale already had a score of '4' for group structure (GST). Multiple increases in scores are rarer for financial institutions, but we observed this in [Australian banks](#) after conduct issues came under increased scrutiny by the public and regulators following some inquiries (with GGV scores increasing to '5' and SCW scores increasing to '4').

Physical Risks Spur Climate-Policy Debate

The credit relevance of natural environmental risk events is typically captured in ESG.RS under the exposure to environmental impact (EIM) factor for non-government entities and transactions, and under the natural disaster and climate change (ENC) factor for sovereigns and local and regional governments (including US states). There are no examples of EIM scores increasing to '4' or '5' for corporates or financial institutions. [Mozambique](#) (CCC) is the only sovereign that has experienced an increase in its ENC score (from '3' to '4'), as the macroeconomic impact of two cyclones became a factor for the rating, but not a key rating driver.

Natural Loss Events 1980-2018



Source: Fitch Ratings, Munich Re NatCatSERVICE

Increases in EIM and ENC factors have remained low despite several extreme weather events resulting in substantial economic loss, such as typhoons Hagibis and Faxal in Japan, hurricane Dorian in the Bahamas and [wildfires in California and Australia](#). Natural loss events (events that have caused at least one fatality or produced normalised losses of less than USD100,000, USD300,000, USD1 million or USD3 million depending on the income group of the affected country) registered on Munich Re's NatCatSERVICE database reached 820 in 2019 compared to an annual average of 466 since 1980. There is, however, less evidence of an increase in catastrophic natural loss events (events that have caused at least a thousand fatalities or produced normalised losses of more than USD100 million, USD300 million, USD1 billion or USD3 billion depending on the income group of the affected country), perhaps due to improvements in adaption and mitigation

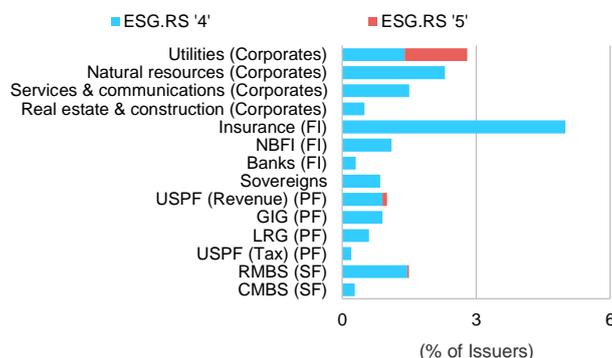
capabilities. The low frequency of score increases in part reflects how the impact of natural environmental events is often managed or mitigated to limit their relevance to credit ratings.

EIM is relevant to credit ratings for 5% of issuers in the insurance sector; the highest proportion across analytical groups, reflecting the underwriting activity of non-life insurers. Fitch commented on the impact of hurricanes and storms on [German and UK insurers](#), and of the bushfires on [Australian insurers](#), in 1Q20. However there are still no insurers with an EIM score of '5', indicating that environmental impacts have not yet become a key rating driver despite businesses' exposure. Insurers continually manage catastrophe risks through the adaption of allowances, reinsurance programmes and pricing models in response to changes in expected probability due to natural-loss events. Issuers in other sectors have also managed their exposure to weather risks through geographical diversification. For example, [Camposol S.A.](#) (BB-/Stable), an agricultural food producer in Peru which has been affected by several El Niño phenomena in the past five years, has reduced weather-related production risk by investing in a new plantation outside of Peru.

Cases where extreme weather events have been a key rating driver are rare and predominantly occur in Californian utilities that have been affected by wildfires. While there have been wildfires in several regions, they are more relevant to [Californian utilities](#) due to the Californian law which applies strict liabilities under inverse condemnation to privately owned utilities if their equipment is deemed to have ignited a wildfire. Regulatory nuances also drive many EIM scores of '4' in UK water utilities, with regulatory penalties creating a financial link to leakages and other performance factors affected by weather events.

Environmental Impact on Credit Ratings

Sectors with EIM or ENC scores of '4' or '5'



Source: Fitch Ratings

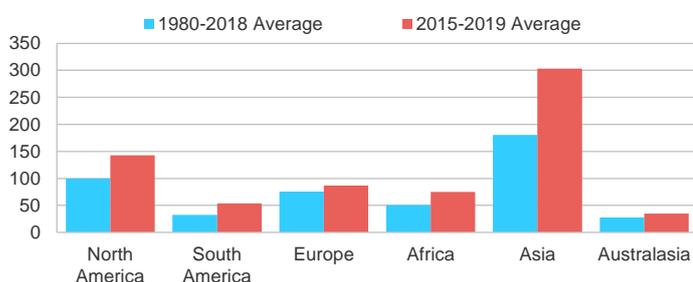
Other sectors have fewer examples of issuers that find natural disasters more relevant to their credit ratings. Some infrastructure transactions and corporates in the natural resources and services and communications sectors have been affected by weather events causing operational disruption and cost overruns. A small percentage of [RMBS and CMBS](#) transactions have EIM scores of '4', either due to damage to pool assets from weather events such as hurricanes, or significant geographical concentration in areas with greater catastrophe risk. [TechnoLeasing LLC](#) (B-/Stable) is the sole non-bank financial institution with a score of '4' for EIM, due to its high exposure to agriculture in an area with higher climate

risk. Credit impact is often dependent on insurance coverage, the norms of which differ by region. Munich Re estimates overall losses from natural-loss events of USD150 billion in 2019, of which USD52 billion was insured.

Natural-loss events could have broader credit implications if they shift public and political opinion on desired climate policies; an issue of increasing political significance in several countries. Recent wildfires and extreme weather events have been highlighted by public figures and policy-advocacy groups as the consequence of climate change, with the associated economic and social cost evidence of the urgent need for more stringent climate-related policies. Significant policy differences between political parties vying for control can increase the potential for extreme weather events to trigger abrupt shifts in policy, similar to how nuclear-energy policies have changed following major safety incidents or changes in the balance of power in coalition governments (as in Germany).

Natural Loss Events By Region

Number of events



Source: Fitch Ratings, Munich Re NatCatSERVICE

The number of natural loss events in Asia is higher and rising at a faster rate than other regions, potentially triggering more climate-policy actions. Climate mitigation and adaptation strategies gathered broad support in the region, but support for more aggressive low-carbon transition policies continue to be constrained by a high reliance on fossil fuels. This dynamic has been evident in Australia following its bushfires in January 2020, with the policy debate polarised between those arguing for faster decarbonisation and those calling for further measures on climate mitigation and adaptation.

Focus Moves from Green to Brown

The European Commission (EC) has released its final report on the EU taxonomy for sustainable activities (an initiative that was part of the EU's sustainable-finance action plan launched in March 2018), providing a list of economic activities and corresponding performance criteria that support the EU's environmental objectives.

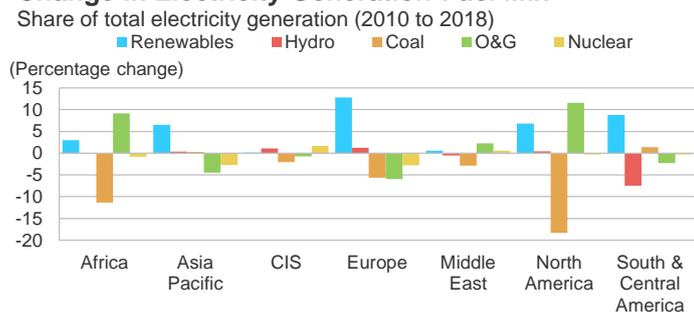
As discussed in the *ESG Credit Trends 2020* report, Fitch does not expect the EU taxonomy to have broad credit implications for issuers in the short term directly through the issuance of green and sustainable bonds, with little evidence so far that these products provide significant financing advantages. However, we expect use of the taxonomy to extend beyond sustainable finance, with it potentially providing a reference point for European environmental regulation that could direct policy support and investment (and which may in turn have greater implications for

credit ratings). Several EU countries have proposed environmental-policy strategy reforms in the past year, and we expect more to follow. ESG and sustainability considerations are also increasingly appearing in prudential regulation, with several central banks announcing climate stress tests and discussing environmental considerations on capital requirements. For example, the Hungarian central bank introduced preferential capital treatment for energy-efficient mortgage lending.

A key function of the taxonomy is to outline what activities can be designated as green under the EU Green Bond Standard, as well as to support reporting and disclosure frameworks for companies and investors. The EC's final report offers more specific technical guidance on usage of the taxonomy, including the application of the contentious "do no harm" principle that constrains the eligibility of nuclear and non-solid fossil-fuel activities. The report also states the requirements for "transition activities" (those that support transition in a sector with no feasible low-carbon alternatives) or "enabling activities" (those that enable activities in another sector to meet environmental objectives); together, a potentially large market for sustainable-finance products and instruments but where opinions of the sustainability of such activities differ. The EC explicitly states that activities not defined as green (i.e. contribute substantially to environmental objectives) should not be automatically considered brown. The EC's technical expert group, which assists the EC on the taxonomy, has called for further work on a brown taxonomy: a list of activities deemed to be environmentally harmful. In the same way that the green taxonomy could be used to target support measures, a brown taxonomy could be used for disincentive measures. For example, the Bank of England has stated that it is considering the treatment of corporate bonds from carbon-intensive issuers on its balance sheet.

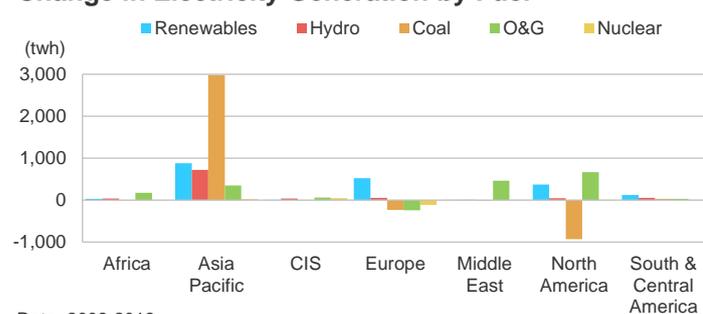
Fitch expects agreements on a brown taxonomy will be considerably harder to reach than on the green equivalent, particularly across borders. Governments have been broadly supportive of policies encouraging greater investment in less-carbon-intensive energy sources, marked by a rising share of renewables in electricity generation in most regions. The labelling of coal and other fossil fuels as brown will likely face greater stakeholder opposition outside of Europe and South and Central America. Over 70% of global electricity produced from coal is generated in Asia-Pacific (APAC), which has been the main source of fuel used to meet the region's rising energy demand in the past decade. China has continued to support thermal and metallurgical coal investments as part of its Belt and Road Initiative. The share of coal in electricity generation has fallen substantially in both Africa and North America, but has been largely substituted by oil and gas. Nuclear energy remains a significant part of the energy strategy for a number of economies. Therefore, even if an outline brown taxonomy is agreed, differences in fuel mix and reliance on different types of fossil fuels are likely to create a divergence in how brown labels should be applied across regions.

Change in Electricity-Generation Fuel Mix



Source: Fitch Ratings, BP Statistical Review of World Energy 2018

Change in Electricity Generation by Fuel

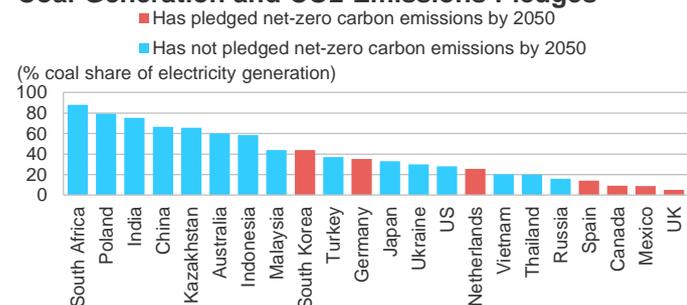


Data: 2008-2018

Source: Fitch Ratings, BP Statistical Review of World Energy 2018

Recent ambitious policy proposals for decarbonisation and net-zero carbon-dioxide emission pledges from [Germany](#) and South Korea suggest that fossil-fuel reliance is not necessarily a binding constraint for aggressive climate policies. Germany's proposals even address sectors outside of the EU Emission Trading System, including buildings, transport and agriculture. Prior to these pledges, commitments on phasing out coal or reaching net-zero carbon emissions were largely limited to countries with a relatively low share of coal and other fossil fuels in their existing electricity-generation fuel mix. It remains to be seen whether more ambitious decarbonisation commitments will extend to lower-income economies reliant on fossil fuels, or if redistributive agreements can create a global consensus. Many of the countries without pledges to achieve net-zero carbon emissions by 2050 are the most populous (China, India, Indonesia) or the largest emitters (the US and Japan). Some countries have reversed their climate policies, such as India's proposed carbon-tax waiver on coal, and the US's exit from the Paris Agreement.

Coal-Generation and CO2-Emissions Pledges



Source: Fitch Ratings, BP Statistical Review of World Energy 2018, Climate Action Tracker

Brown List May Steer Exclusion Criteria

A brown taxonomy could also become relevant to credit if asset managers and banks apply the taxonomy to their investment considerations, such as exclusion criteria. Fitch has previously discussed how ESG considerations by [banks](#) and [asset managers](#) have affected [corporates'](#) ability to raise finance, and even in exceptional circumstances have driven credit-rating downgrades.

Corporate Sectors Ranked by Negative Screening (Global)

Customer segment	Overall ranking	Most often used reason
Metals & Mining	1	Environmental
Gaming, Lodging, Leisure	2	Social
Chemicals & Fertilizers	3	Environmental
Energy & Natural Resources	4	Environmental
Industrials	5	Environmental
Utilities & Power	6	Environmental
Transportation	7	Environmental
Real Estate & Homebuilding	8	Governance
Healthcare & Pharma	9	Governance
Retail & Consumer Products	10	Governance
Technology, Media, Telecom	11	Governance

Ranking from 1 (most prohibited) to 11 (least prohibited)

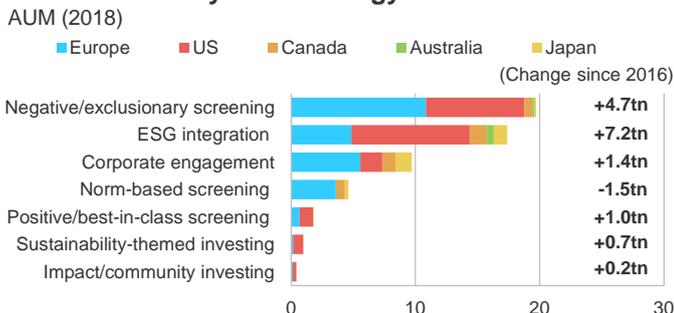
Source: Fitch Rating

In Fitch's global survey of 182 banks, Fitch found that ESG screening policies for lending were common in medium and large banks, particularly in Africa, western Europe and Latin America. The sectors most likely to be scrutinised for environmental risks (including transition risks) were (extractive) metals and mining, and chemicals and fertilisers. This screening typically involved greater deal due-diligence rather than outright deal rejection. The key exceptions, however, are transactions and projects with suspected human-rights abuses (such as the use of forced human or child labour) or unsafe working conditions. Many western European banks (including those from Benelux, France, Germany, the Nordic countries and the UK) and some Developed Markets APAC-based banks (mainly in Australia and Singapore) have stopped providing direct project finance for new thermal-coal-mine projects or new coal-fired power-station projects.

Negative or exclusionary screening has been the most commonly applied ESG strategy by asset managers, particularly in Europe, although funding alongside engagement is starting to emerge as a second-phase approach. Exclusion of certain sectors, such as controversial weapons or violators of the UN Global Compact, is common across the largest asset managers. Asset managers have increasingly added thermal coal to their exclusion lists, but there have been notable differences in criteria. Typically, companies are screened based on revenue and excluded if their exposure to a particularly business exceeds a revenue threshold. Many investors used a 30% threshold for thermal-coal mining and power generation, but some are setting more stringent criteria. BNP Paribas Asset Management set a 10% threshold for coal mining, and a further 1% threshold based on share of global coal

production. Nordea Asset Management has also added metallurgical coal to its exclusionary policy. A brown taxonomy could therefore further inform how banks and investors treat other fossil fuels or activities considered to be environmentally harmful.

NAV of Funds by ESG Strategy



Exclusions are increasingly applied at a firm level across actively managed assets, whether or not they are labelled as ESG. This broadens the financial impact given that the pool of assets under dedicated ESG strategies is relatively small, at an estimated USD8 trillion compared to USD31 trillion in global sustainably managed assets (based on the Global Sustainable Investor Alliance's 2018 survey). A brown taxonomy could lead to greater standardisation in the approach of investors and banks in screening sectors deemed environmentally harmful, and could lead to significant shifts in financing conditions for affected sectors and entities.

A brown taxonomy could also affect how investors identify and assess environmentally harmful companies under ESG-integrated

investment frameworks. ESG integration is the fastest-growing ESG approach, defined as the explicit and systematic inclusion of ESG issues in the investment process. Most large asset managers now apply ESG integration and exclusionary policies to their actively managed assets, but the list of affected sectors will be limited, while it is likely that ESG integration would be applied across the portfolio. Fitch expects that the impact of ESG integration on financing conditions will be broader but less significant than the impact of screening, given the variety of approaches used and factors considered. Some investors may look to invest in companies with poor-but-improving ESG performance based on some proprietary or third-party measure, while some may assess the necessary compensation they need to take on ESG risks, and others may simply enhance their due-diligence process. Entities with activities labelled as brown will likely come under greater scrutiny under ESG integration, but the consideration of other factors make it less likely to trigger mass sell-offs than hard-exclusion policies.

The impact of ESG consideration on financing conditions will likely grow as more financial institutions adopt [ESG strategies and frameworks](#), including asset classes where ESG adoption is less mature. Global AUM by [ESG-focused money market funds](#) (MMFs) grew by around 30% across 35 funds in 2019 to EUR70 billion (compared to MMF AUM of EUR6.2 trillion). In comparison, Fitch estimates that global MMF AUM grew by around 15% last year. Adoption of ESG approaches for passive assets are based on client demands, but there are growing options for passive investors such as exchange-traded products based on fossil-fuel-free indices.

Appendix: Referenced Reports

Rating Action Commentaries

Fitch Affirms Enel and Endesa at 'A-'; Outlook Stable (February 2020)

Fitch Affirms Nord Gold at 'BB'; Outlook Stable (February 2020)

Fitch Assigns Final 'BB-' Rating to Camposol SA's Senior Unsecured Notes (February 2020)

Fitch Affirms Braskem's IDR at 'BBB-'; Outlook Revised to Negative (November 2019)

Fitch Places TPC Group, Inc. on Rating Watch Negative (December 2019)

Fitch Rates Arizona Public Service Co.'s \$300MM Sr. Unsecured Notes 'A'; Outlook Negative (November 2019)

Fitch Upgrades Mozambique to 'CCC' (November 2019)

Fitch Affirms TechnoLeasing at 'B-'; Outlook Stable (October 2019)

Fitch Affirms Vale's Investment-Grade Ratings; Removes Negative Watch (September 2019)

Fitch Rates Metinvest B.V.'s Upcoming Notes 'BB-(EXP)'; Upgrades IDR to 'BB-' (September 2019)

Special Reports

Lure of Higher Inflows to Fuel ESG Fund Launches Post-Coronavirus (April 2020)

Limited Impact on German Insurers from Storms Sabine and Victoria (February 2020)

Storms Ciara and Dennis Add to Pressure on UK Insurers (February 2020)

Where ESG Matters for Global SF and CVB Ratings - A Case Study (February 2020)

2020 Peer Review: Australian Major Banks (February 2020)

German 2030 Climate Package May Become a Blueprint for National Environmental Regulations (February 2020)

Global ESG Money Market Fund Dashboard: End-2019 (February 2020)

Industry Faces Climate Transition Challenge (February 2020)

Fund Managers' ESG Focus Adds to Corporate Financing Risks (January 2020)

ESG Has Growing Influence on Bank Lending to Corporates (January 2020)

Global Wildfire Risk Illustrates ESG Factor Relevance for Credit (January 2020)

Australian Bushfire Insured Losses Eased by Reinsurance, But May Rise (January 2020)

ESG Credit Trends 2020 (December 2019)

Regulatory Risk Amid Global Emissions Gap: Carbon Pricing (December 2019)

Banks' Risk Management Embraces ESG (December 2019)

Heightened CA Wildfire Risk Could Test Utility Creditworthiness (November 2019)

Spotlight: Australian Thermal Coal (October 2019)

Clear Evidence of Sectoral, Regional ESG Credit Patterns (June 2019)

Webinars

ESG's Growing Impact On Corporate Credit (February 2020)

Quarterly Banking Regulation Session 1 (February 2020)

ESG in Money Market Funds (February 2020)

Climate Policies and Carbon Pricing, what impact on Credit? (December 2019)

ALL FITCH CREDIT RATINGS ARE SUBJECT TO CERTAIN LIMITATIONS AND DISCLAIMERS. PLEASE READ THESE LIMITATIONS AND DISCLAIMERS BY FOLLOWING THIS LINK: [HTTPS://FITCHRATINGS.COM/UNDERSTANDINGCREDITRATINGS](https://fitchratings.com/understandingcreditratings). IN ADDITION, RATING DEFINITIONS AND THE TERMS OF USE OF SUCH RATINGS ARE AVAILABLE ON THE AGENCY'S PUBLIC WEB SITE AT WWW.FITCHRATINGS.COM. PUBLISHED RATINGS, CRITERIA, AND METHODOLOGIES ARE AVAILABLE FROM THIS SITE AT ALL TIMES. FITCH'S CODE OF CONDUCT, CONFIDENTIALITY, CONFLICTS OF INTEREST, AFFILIATE FIREWALL, COMPLIANCE, AND OTHER RELEVANT POLICIES AND PROCEDURES ARE ALSO AVAILABLE FROM THE CODE OF CONDUCT SECTION OF THIS SITE. FITCH MAY HAVE PROVIDED ANOTHER PERMISSIBLE SERVICE TO THE RATED ENTITY OR ITS RELATED THIRD PARTIES. DETAILS OF THIS SERVICE FOR RATINGS FOR WHICH THE LEAD ANALYST IS BASED IN AN EU-REGISTERED ENTITY CAN BE FOUND ON THE ENTITY SUMMARY PAGE FOR THIS ISSUER ON THE FITCH WEBSITE.

Copyright © 2020 by Fitch Ratings, Inc., Fitch Ratings Ltd. and its subsidiaries. 33 Whitehall Street, NY, NY 10004. Telephone: 1-800-753-4824, (212) 908-0500. Fax: (212) 480-4435. Reproduction or retransmission in whole or in part is prohibited except by permission. All rights reserved. In issuing and maintaining its ratings and in making other reports (including forecast information), Fitch relies on factual information it receives from issuers and underwriters and from other sources Fitch believes to be credible. Fitch conducts a reasonable investigation of the factual information relied upon by it in accordance with its ratings methodology, and obtains reasonable verification of that information from independent sources, to the extent such sources are available for a given security or in a given jurisdiction. The manner of Fitch's factual investigation and the scope of the third-party verification it obtains will vary depending on the nature of the rated security and its issuer, the requirements and practices in the jurisdiction in which the rated security is offered and sold and/or the issuer is located, the availability and nature of relevant public information, access to the management of the issuer and its advisers, the availability of pre-existing third-party verifications such as audit reports, agreed-upon procedures letters, appraisals, actuarial reports, engineering reports, legal opinions and other reports provided by third parties, the availability of independent and competent third-party verification sources with respect to the particular security or in the particular jurisdiction of the issuer, and a variety of other factors. Users of Fitch's ratings and reports should understand that neither an enhanced factual investigation nor any third-party verification can ensure that all of the information Fitch relies on in connection with a rating or a report will be accurate and complete. Ultimately, the issuer and its advisers are responsible for the accuracy of the information they provide to Fitch and to the market in offering documents and other reports. In issuing its ratings and its reports, Fitch must rely on the work of experts, including independent auditors with respect to financial statements and attorneys with respect to legal and tax matters. Further, ratings and forecasts of financial and other information are inherently forward-looking and embody assumptions and predictions about future events that by their nature cannot be verified as facts. As a result, despite any verification of current facts, ratings and forecasts can be affected by future events or conditions that were not anticipated at the time a rating or forecast was issued or affirmed.

The information in this report is provided "as is" without any representation or warranty of any kind, and Fitch does not represent or warrant that the report or any of its contents will meet any of the requirements of a recipient of the report. A Fitch rating is an opinion as to the creditworthiness of a security. This opinion and reports made by Fitch are based on established criteria and methodologies that Fitch is continuously evaluating and updating. Therefore, ratings and reports are the collective work product of Fitch and no individual, or group of individuals, is solely responsible for a rating or a report. The rating does not address the risk of loss due to risks other than credit risk, unless such risk is specifically mentioned. Fitch is not engaged in the offer or sale of any security. All Fitch reports have shared authorship. Individuals identified in a Fitch report were involved in, but are not solely responsible for, the opinions stated therein. The individuals are named for contact purposes only. A report providing a Fitch rating is neither a prospectus nor a substitute for the information assembled, verified and presented to investors by the issuer and its agents in connection with the sale of the securities. Ratings may be changed or withdrawn at any time for any reason in the sole discretion of Fitch. Fitch does not provide investment advice of any sort. Ratings are not a recommendation to buy, sell, or hold any security. Ratings do not comment on the adequacy of market price, the suitability of any security for a particular investor, or the tax-exempt nature or taxability of payments made in respect to any security. Fitch receives fees from issuers, insurers, guarantors, other obligors, and underwriters for rating securities. Such fees generally vary from US\$1,000 to US\$750,000 (or the applicable currency equivalent) per issue. In certain cases, Fitch will rate all or a number of issues issued by a particular issuer, or insured or guaranteed by a particular insurer or guarantor, for a single annual fee. Such fees are expected to vary from US\$10,000 to US\$1,500,000 (or the applicable currency equivalent). The assignment, publication, or dissemination of a rating by Fitch shall not constitute a consent by Fitch to use its name as an expert in connection with any registration statement filed under the United States securities laws, the Financial Services and Markets Act of 2000 of the United Kingdom, or the securities laws of any particular jurisdiction. Due to the relative efficiency of electronic publishing and distribution, Fitch research may be available to electronic subscribers up to three days earlier than to print subscribers.

For Australia, New Zealand, Taiwan and South Korea only: Fitch Australia Pty Ltd holds an Australian financial services license (AFS license no. 337123) which authorizes it to provide credit ratings to wholesale clients only. Credit ratings information published by Fitch is not intended to be used by persons who are retail clients within the meaning of the Corporations Act 2001.