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ESG Credit Quarterly – 1Q22

Standardised Sustainability Disclosures Take Shape, While Security of Supply Concerns Shift Energy Policy Priorities

> 'Proposals for climate-related disclosures by the SEC and the ISSB, as well as movement on the EU's disclosure rules for corporates and investment managers over the first quarter of 2022 reveal a broad-based move towards alignment. By year-end we will have a clearer picture emerging on the future ESG disclosures landscape, with 2023 a key year for start of implementation.
>
> Marina Petroleka, Sustainable Fitch

Related Research

SEC's Proposed Climate Disclosures Would Bring the US into Line with Global Practices (April 2022)

Low-Carbon Supply Chains Face Growing Pressure (April 2022)

EU Energy Package Entails Costly Changes, Market Interventions (March 2022)

Chile Ushers in Sovereign Sustainability-Linked Bond Market (March 2022)

Litigation Is a Growing ESG-Related Risk (February 2022)

ESG Impact Is Rarely Credit Positive (February 2022)

Bank Climate Stress Tests Turn Focus to Risk Management (February 2022)

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ESG.RS Show Few Cases of Positive Impact

A review of instances of positive ESG Relevance Scores (ESG.RS) across asset classes reveals that about 3% of issuers or transactions had positive ESG.RS, indicated by a '+' by the score. This means that either in combination with other factors, or, as a key rating driver, the E,S or G general issue has been beneficial to the credit profile of the issuer or transaction. While these instances are few, they are concentrated in the structured finance and sovereign portfolios; the former on account of government sponsorship or guarantees, especially in the US, to promote social mandates, while on the later due to Fitch Ratings' Sovereign Rating Model (SRM) technicalities.

Disclosures Take Shape Over 1Q22

There have been notable and much anticipated sustainability disclosures proposals published over 1Q22 by the US Securities and Exchange Commission (SEC) and the International Sustainability Standards Board (ISSB), while in the EU the Council agreed its position on the Corporate Sustainability Reporting Directive (CSRD). By the end of this year, following conclusion of public consultations (SEC and ISSB) and legislative processes (CSRD), Fitch anticipates a much clearer picture on what climate and sustainability disclosure standards will entail specifically, and their timelines for implementation, with some due to come into force as early as January 2023 in the case of the CSRD.

Bank Climate Stress Tests Press Need for Data

Corporate disclosures will become even more important for financial institutions as climate stress tests proliferate and banks and insurers come under intense pressure to deepen their internal risk management capacities and engagement with counterparties for more accurate and comparable data. Wider use of climate change stress testing by regulators of banks and insurers is unlikely to lead to immediate changes in capital charges, but could prompt other regulatory action in internal governance of climate risks and risk management structures within regulated institutions.

Ukraine War Shifts European Energy Policy Priorities

The war in Ukraine has had an immediate and profound impact on energy policy priorities, primarily in Europe. On the one hand it has galvanised momentum towards decarbonisation, on the other hand, it has softened opposition to nuclear power, with likely higher market acceptance on its inclusion in the EU taxonomy, and hardened the resolve to substantially to fully diversify away from Russian natural gas, with a short-term acceptance of potentially higher reliance on coal.

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ESG.RS Review

Few Instances of Positive Credit Impact from an E, S or G Issue

Fitch's ESG.RS indicate the materiality and relevance that an Environmental, Social or Governance general issue has had on the rating outcome, on a scale of '1' (irrelevant) to '5' (a key rating driver).

Where the general issue has had an impact, indicated by a score of '4' or '5', the vast majority of times this impact is negative, meaning that it has weighted on the rating; in cases of an ESG.RS of '5' it has been a key rating driver in either an Outlook change or a downgrade.

However, there are a few instances where an E, S or G general issue can provide an uplift to the credit profile of an issuer or transaction. This means that either in combination with other factors, or, as a key rating driver, the general issue has been beneficial to the credit profile of the issuer or transaction.

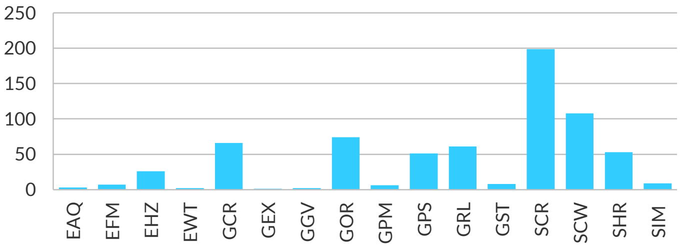
In a review of instances of positive ESG.RS across asset classes, Fitch found that about 3% of issuers or transactions had positive ESG.RS, indicated as a '4+' or '5+'.

In terms of general issues distribution, positive scores assigned to credit ratings globally are split equally between Governance and Social-related issues (47% each) with Environmental at 6%.

Distribution of Positive Scores by General Issue

End-December 2021

(Number of scores)



Note: See Appendix for ESG.RS abbreviations and list of General Issues.
Source: Fitch Ratings

Positive scores assigned to Social issues dealing with 'Community Relations, Social Access & Affordability' (SCR) and 'Customer Welfare, Privacy, Data Protection & Fair Lending' (SCW) show the highest concentration of positive ESG.RS.

This is driven by structured finance transactions, where a large number of RMBS transactions containing government-guaranteed mortgages have positive SCR scores. All securities issued by specific US government-sponsored agencies (e.g. Fannie Mae and Freddie Mac), which perform social roles, by being an integral part of the functioning of the US residential mortgage market and are high-volume issuers, have positive SCW scores. It is these government guarantees or government sponsorships to support social objectives that have a positive impact on credit profiles, reflected in the positive ESG.RS.

Positive Governance scores are concentrated in the sovereign portfolio due to SRM technicalities.

Analytical group	Share of total positive ESG.RS at end-2021 (%)
Sovereigns	49
Structured finance (including covered bonds)	34
Corporates	6
Public finance	6
Supranationals	3
Financial institutions	3

Figures do not total 100% due to rounding.
Source: Fitch Ratings

Notably, nearly 85% of sovereign issuers had at least one positive ESG.RS, while scores of '5[+]' are found only in the sovereign portfolio, with one exception in US public finance that is tied to federal government support.

Positive ESG.RS assigned to sovereign ratings are technical in nature. Fitch's SRM, a proprietary multiple regression rating model employing 18 quantitative variables to produce a score equivalent to a Long-Term Foreign-Currency Issuer Default Rating, considers input from the World Bank's Worldwide Governance Indicators (WGIs).

One key social issue, concerning human rights, features in both the WGIs and on our list of general social issues impacting sovereign ratings under our ESG.RS methodology (see *Appendix*). As WGIs have the highest weight of all variables in the SRM, this issue is automatically flagged as material and relevant to Fitch's sovereign ratings. Sovereigns scored in the top half of the WGIs are assigned a positive score for 'Human Rights & Political Freedoms' (SHR), which is supportive of credit ratings, while those included in the bottom half receive a negative score.

Similar SRM-related technicalities also apply to three governance issues ('Creditor Rights' (GCR), 'Political Stability & Rights' (GPS) and 'Rule of Law, Institutional & Regulatory Quality, Control of Corruption' (GOL). A clear majority of sovereigns are assigned a positive score for at least one of these four ESG issues, which explains the very high share of issuers with at least one positive ESG.RS.

There may be a higher incidence of positive scores in the future, and likely to be centred around Environmental issues, much more so than at the moment. Opportunities presented for some sectors and issuers during the transition to a low-carbon economy can drive this, due to favourable market growth dynamics, regulatory changes that support certain sectors, or access to financing on better terms, all of which can be credit positive.

Corporate and project finance issuers operating in the renewable energy sector may see additional positive ESG.RS given the sector's growth.

Data showing good performance of 'green' assets could support positives in structured finance transactions, while across public finance ratings, increased federal support for community, health, and education sectors could result in some additional positive scores.

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For financial institutions (FIs) greater exposure to 'green' labelled assets in lending and investments could lead to more favourable regulatory treatment and market access over time – for example, lower capital charges for banks than peers with more exposure to fossil fuels.

Fitch ESG Relevance Scores

Fitch launched ESG.RS for 1,534 corporate issuers in January 2019 and has since published more than 150,000 ESG.RS for in excess of 10,700 issuers, transactions and programmes across corporates, financial institutions, sovereigns, public finance, 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.

ESG.RS Scale

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 actively managed resulting in no entity, transaction or programme rating impact.
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 a significant impact on the entity, transaction or programme rating on an individual basis.

Source: Fitch Ratings

Emerging ESG Trends

Climate Stress Tests for Financial Institutions

There is set to be a significant acceleration of climate stress-testing by financial institutions in 2022, building on early work by the Dutch, French and UK bank regulators.

We expect this to lead to further pressure on corporates for disclosure of climate-related performance data – or raw operational data to support bank estimations – and exposures to climate risk, and potentially a rising risk premium.

Ongoing and Planned Climate Stress Tests

Country	Authority	Timing
Australia	Australian Regulatory Prudential Authority	End-June 2022
Brazil	Banco do Central Brazil	From July 2022
Canada	Bank of Canada/Office of the Superintendent of Financial Institutions	Publication of pilot report ('Climate Scenario Analysis Exercise') January 2022
Eurozone	ECB	From January 2022
France	ACPR/Banque de France	Publication of pilot report May 2021
Hong Kong	Hong Kong Monetary Authority	Publication of pilot report December 2021
Singapore	Monetary Authority of Singapore	End-2022
Malaysia	Bank Negara Malaysia	TBC 2022; draft published December 2021
UK	Bank of England	Publication of CBES findings June 2022

Source: Fitch Ratings

Some regulators, such as the ECB, have highlighted that capital requirements may ultimately be affected, owing to the perceived relevance of climate risk to financial stability – ideally when banks have embedded processes allowing them to better understand climate risks.

The ECB launched its supervisory climate stress test of eurozone banks in January 2022, building on a broader exercise in 2021 assessing the impact of three climate policy scenarios on the European banking system and corporates.[1]

The stress-test results are expected to be published by July 2022 in what has been described as a 'learning exercise' for regulators and banks. However, the ECB has indicated that it would factor in 'qualitative findings' of the stress tests when assessing capital adequacy requirements and additional Pillar 2 charges within the Supervisory Review and Evaluation Process (SREP) scoring this year. We expect that any changes in capital charges arising from the SREP will not occur until at least January 2023.

Regulators in Canada and Hong Kong also published findings from their pilot stress-testing exercises in 1Q22, with both indicating that physical risks may dominate the impact on credit profiles over longer timeframes, but pointing to practical challenges in the measurement of these risks.

Challenges in terms of assessing credit risks include data gaps and still-emerging pathways for decarbonisation of specific economic sectors; carbon price assumptions, and their mapping to credit risk parameters and balance-sheet impacts, therefore rely on uncertain methodological foundations. These challenges are compounded by a lack of historical data for quality assurance of these exercises.

[1] Alogoskoufis et al., 'ECB Economy-wide climate stress test; Methodology and Results', ECB, 21 September 2021 – https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op281~05a7735b1c.en.pdf

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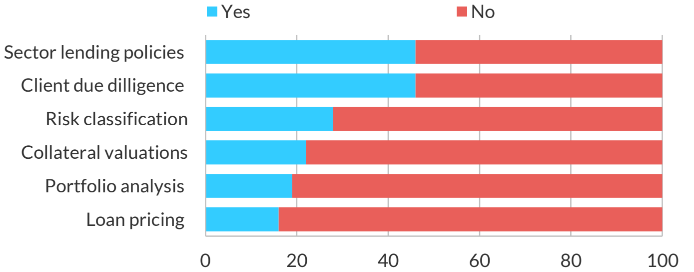
Most banks engaged by the ECB in 2021 regarded physical risks, together with transitional climate risks, as material consideration for their risk profile, most have significant knowledge gaps with regard to their physical risk exposures. Risk management processes for physical risks were also seen to be underdeveloped.

ECB assessments of current practices shows some early integration of climate risks into sector lending policies and credit risk management, albeit with limited examples of any clear risk premium in terms of loan pricing. This could change if results from climate stress testing exercises spur additional capital charges for activities deemed ‘high risk’ from a climate perspective.

Integration of Climate Risks into Credit Risk Management

(%) Respondents: large eurozone banks



Source: Fitch Ratings, ECB

ESG Disclosures Take Shape with Alignment Emerging

Financial institutions, alongside corporate issuers, are also at the forefront of entities that will be required to bolster their sustainability and climate-related disclosures as new standards take shape and become ready for implementation.

Over 1Q22, disclosure standards took tangible shape across major jurisdictions. By the end of this year, following conclusion of public consultations (SEC and ISSB) and legislative processes (CSRD), we anticipate a much clearer picture to have emerged on what climate and sustainability disclosure standards will entail specifically, and their timelines for implementation, with some coming into force as early as January 2023 in the case of the CSRD.

While each proposed standard will have unique features and modes of implementation the proposals reveal that alignment -much-desired by investors and other stakeholders- is indeed emerging around some of the core principles and parameters of sustainability disclosures. These include endorsement of the TCFD’s four-pillar approach (governance, strategy, risks management, metrics), financial materiality for the ISSB and SEC, and limited (scaling up to reasonable) assurance of some reported data as per the EU and SEC proposals.

Developments in Sustainability Disclosures (1Q22)

Date	Organisation	Disclosure	Materiality approach	Status
31 March 2022	IFRS – ISSB	Sustainability-related financial disclosures: general requirments; climate-related requirments	Financial materiality (enterprise value impact)	Proposals submited for public consultation until end-July 2022
21 March 2022	US SEC	Climate related disclosures	Financial materiality	Proposals submited for public Consulation until end-May 2022
24 February 2022	EU Commission, EFRAG	CSRD	Double materiality	EU Council agreed 'general approach' on CSRD proposal by the EU Commission – proposal moves to trialogue between EU Commission, Council and Parliament (expected in spring 2022)

Source: Sustainable Fitch

The SEC’s much-anticipated proposals for climate-related disclosures represent a significant bolstering of reporting requirements in the US. This is both in relative terms (the SEC is starting from a largely voluntary and recommendations-based regime) and absolute terms (disclosures are mandatory, as opposed to the comply-or-explain approach adopted elsewhere). The proposals are also the first major ESG disclosure requirement in the country.

At the heart of the SEC’s climate related disclosures is to mandate a comprehensive set of disclosures on materially important impacts of climate-related risks on companies’ operations and financial profiles.

The SEC left the question of alignment with the ISSB sustainability disclosure standards open-ended in its proposal, to be decided following feedback from its consultation. Some areas alignment seems natural given both organisations are endorsing the TCFD approach and both focus on financial materiality. SASB is also a notable association between the two proposals; the industry specific disclosure standards are the most widely deployed reporting framework in the US (on a voluntary basis) and the SEC has expressed its aim to build on what US companies are already using to minimise compliance burden. The ISSB is absorbing and consolidating SASB (as part of the Value Reporting Foundation) and work on enhancing SASB’s industry-specific reporting standards is a core part of its work on disclosures.

On 31 March, the ISSB released two exposure drafts, or proposals, of sustainability related financial disclosures, one covering general requirements and the other climate-related requirements. The ISSB disclosure standards will look at sustainability as a whole and its impact on enterprise value, but as per their original work plan, will take a climate-first approach, before considering disclosure standards for other, financially material sustainability issues.

The ISSB's proposals build on TCFD recommendations and industry specific requirements based on SASB standards. The board's overarching objective is for these disclosures (once finalised and adopted) to be endorsed widely by companies, investors as well as eventually regulators and authorities around the world and incorporated across jurisdictions as they aim to be compatible with jurisdiction-specific requirements.

For financial institutions, including banks and insurance companies, there will be a requirement to disclose financed-emissions, as opposed to their own generated Scope 1 and 2 emissions.

While the ISSB is focused on financial materiality via an enterprise value lens for its disclosures, the memorandum of understanding for a partnership with the Global Reporting Initiative (GRI) it signed on 24 March, a pre-eminent standard setter on impact reporting, indicates the rising interest amongst investors for a double materiality approach. The aim of this partnership is to align work by the two bodies so as when used jointly, the two reporting standards, from the ISSB and the GRI, can offer a double materiality assessment.

The EU Commission's work and proposals on CSRD and Sustainable Finance Disclosure Regulation (SFDR) also progressed over the first quarter. The EU Council agreed a 'general approach' on the CSRD proposal (originally submitted by the EU Commission in April 2021) with the key amendment to the proposal being a three-year phase-in period for listed SMEs. The CSRD proposal now moves to trialogue between the EU Commission, Council and Parliament, expected to run over spring 2022. EFRAG is also expected to release its CSRD specific disclosure standards by June 2022.

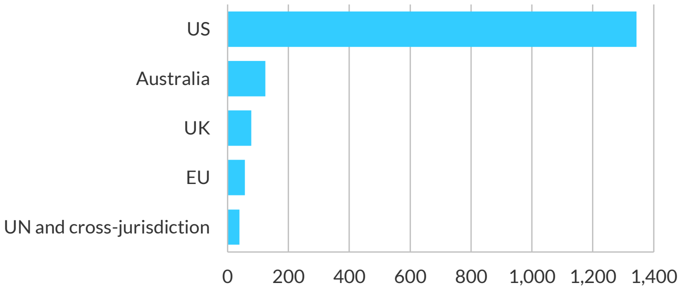
In early April, the Commission also adopted the much-anticipated regulatory technical standards (RTS) for the SFDR that are due to apply from 1 January 2023. They will replace the temporary regime of best effort reporting by financial market participants in the EU on the extent of ESG integration and principal adverse impacts at an entity and financial product level.

Data Deluge Can Prompt Higher ESG and Climate Related Litigation

The proliferation of disclosures and data is one of the drivers behind the increase in litigation as companies are encouraged, or mandated, to disclose their net-zero strategies, emissions data and transition plans.

Climate Change Litigations Filed by Geography

All cases to end-2021



Source: Fitch Ratings, LSE, Columbia University

While in the US safe-harbour provisions will safeguard against legal liabilities for any forward-looking statements around plans to reduce greenhouse gas (GHG) emissions and will also safeguard disclosures on Scope 3 emissions, where applicable, Scope 1 and 2 GHG emissions claims will need independent third-party assurance, while the filling of some climate-related disclosures in SEC reports will be subject to securities liabilities provisions. The risks that information filled (bar those protected by safe harbour) can be used in litigation by investors, non-government organisations or other stakeholders to either seek financial restitution or, as in *Milieudefensie et al. v. Royal Dutch Shell plc*, force a change in business strategy in relation to low-carbon transition can rise substantially.

The US provides the most scope for investors to pursue litigation based on information in securities documentation, but legal developments in several countries have increased the amount of litigation taking place in other markets. With mandatory sustainability disclosures set to proliferate we expect the upward trend in ESG-related litigation to continue.

Chile Blazes a Trail in SLBs and Sets Latin America Apart

Latin American sovereigns continued their prominent role in the sustainable bond market in 2022 with Chile (A-/Stable) issuing the world's first sovereign sustainability-linked bond (SLB) in March. These notes, also rated 'A-' by Fitch, were offered with a 4.35% coupon and a step-up adjustment of up to 25bp a year from 2034 until the bond maturity in 2042 if Chile misses performance targets related to GHG emissions and renewable energy generation. The USD2 billion issuance was 3x oversubscribed according to bookrunner Societe Generale S.A. (A-/Stable).

Chile's Sustainability-Linked Bond Offering – February 2022

Currency	Maturity	Step-Up Year	Step-Up
USD	2042	2034	12.5bp-25bp a year

KPI	SPT	Reference
GHG emissions a year	95MtCO_2e by 2030	112.3MtCO_2e (2018)
	Maximum of 1,100MtCO_2e 2020-2030	
Non-conventional renewable energy (NCRE)	50% from NCRE by 2028	27% (2021)
	60% from NCRE by 2032	

Source: Fitch Ratings, Sustainable Fitch, Chilean Ministry of Finance

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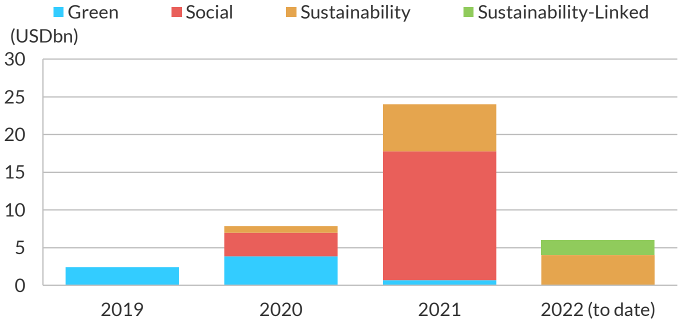
In addition to being Latin America's first sovereign green bond issuer in 2019, Chile is the only sovereign globally to have issued in every sustainable bond format: green, social, sustainability, and sustainability-linked. In total, six sovereigns from the region have participated in this market – Chile, Colombia (BB+/Stable), Ecuador (B-/Stable), Guatemala (BB-/Stable), Mexico (BBB-/Stable) and Peru (BBB/Stable).

More broadly, Latin American sovereigns have issued more than USD40 billion in sustainable bonds since 2019 and a number of countries have their own market firsts. Ecuador issued the first sovereign social bond in January 2020 to raise USD400 million for public housing. Mexico was the first sovereign to issue a Sustainable Development Goal (SDG) bond – an instrument with green and social proceeds focused on SDG-related outcomes – in September 2020 and has raised EUR2 billion under this framework.

Latin America Sovereign Issuance



Source: Fitch Ratings, Environmental Finance Data.

Many of Latin America's fossil fuel exporting countries, including Bolivia (B/Stable), Ecuador, Paraguay (BB+/Stable) and Venezuela, have not yet entered the green bond market. Brazil (BB-/Negative), an oil and gas producer and a major GHG emitter from commercial agriculture, is another yet to enter the market, despite global investors expressing interest in deforestation-themed bonds from the government.

The presence of a large fossil fuel sector may not be a deterrent for some investors. The order book for Mexico's first SDG bond was over 6x oversubscribed. In its SDG bond framework, the uses of proceeds associated with SDG 13 "Climate Action" only address renewable energy and affordable energy access, and not the oil industry. Colombia's 2021 local-currency green bond earned a 7bp "greenium" compared to the existing 10-year fixed-rate Colombian peso-denominated bonds.

This greenium – an observed coupon discount for GSS bonds from their conventional/non-GSS equivalent – is an important consideration for EM borrowers in choosing a sustainable bond format, and is observable in recent GSS issuances from Chile, Colombia and Indonesia (BBB/Stable). The greenium is driven by high investor demand for GSS debt and low current supply.

We expect to see more emerging markets sovereigns among the list of subsequent SLB offerings as other government seek to adopt the structure, due to the strong demand for other sustainable bonds and the innovation of SLBs. Uruguay (BBB-/Stable) has indicated plans to issue in the near future, while Ghana (B-/Negative) has published an SLB framework with performance targets in education and healthcare.

Ukraine Conflict Shifts European Energy Policy Priorities, Tightens Supply Chains

The war in Ukraine has had an immediate and profound impact on energy policy priorities, primarily though not exclusively Europe's, while also severely disrupting low carbon technology supply chains.

It has galvanised momentum towards decarbonisation, hardened the resolve to substantially to fully diversify away from Russian hydrocarbons, particularly natural gas, with a short-term acceptance of potentially higher reliance on coal, and likely also softening some market and policy makers' opposition on inclusion of nuclear power in the EU green taxonomy, which will allow, under certain conditions, investments in nuclear power to be considered sustainable in Europe. Recent weeks have seen ambitious new targets announced for nuclear deployment in France and the UK, given the importance of 'firm' low-carbon baseload power. A faster timescale for deployment of low-carbon technologies is set to be costly and technologically complex, and face supply-chain and inflationary challenges. Trade-offs between sustainable, secure and affordable energy are likely to become acute.

Hard Choices Lie Ahead on Energy Security

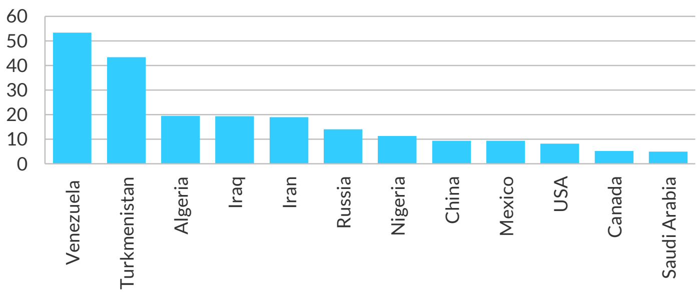
The EU's March 2022 response to Russia's invasion of Ukraine, the 'REPowerEU' energy policy package, reflects shifting policy priorities as a result of the conflict, balancing immediate concerns over security of supplies with the longer-term low-carbon transition.

The plan aims to reduce European dependence on Russian fossil fuels and diversify energy supplies across liquefied natural gas (LNG) and renewable energy; introduce energy-efficiency measures; and develop local biogas production. It outlines a goal to achieve Europe's independence from Russian fossil fuels well before 2030. Nonetheless, wider inflationary pressures could limit the viability of some goals.

Increased LNG imports represent the bulk of the short-term target but may involve significant costs given globally traded LNG cargoes typically ship wherever prices are highest, while demand from Asia is strong and spot prices are extremely high. Moreover, the climate impact of key LNG sources is high in the form of methane leakage and emissions associated with extraction, transport, liquefaction and re-gasification.

Methane Intensity of Oil and Gas Production by Country

Methane intensity of oil and gas production (t methane/ktoe)



Source: Fitch Ratings, International Energy Agency

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Key short-term risks for the European utility sector relate to increasing political intervention across the EU aimed at capping energy costs for households and businesses given growing inflationary pressures. Simultaneously, a Temporary Crisis Framework anticipates liquidity support to energy-intensive consumers, and revisions to ETS guidelines on state aid could mitigate pressures on affected sectors, such as steel and fertiliser production.

Longer term, we expect the shift from Russian fossil fuels to lead to significantly tighter oil and gas markets globally, and higher energy and commodity prices. Over time, this should heighten the relative competitiveness of renewable and other low-carbon energy sources and emerging technologies.

Low-Carbon Supply Chains Face Pressure

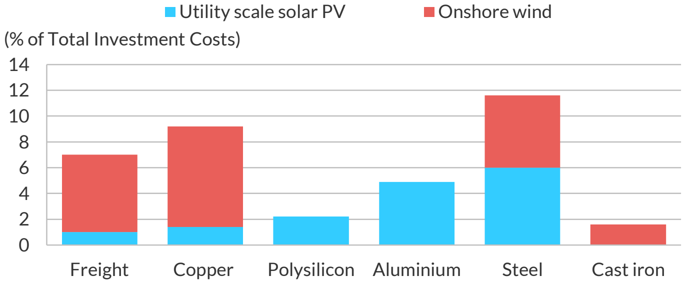
The Ukraine war has also exacerbated metal markets' tightness, and sent the prices of some metals key to energy transition technologies soaring to all-time highs. This could pose challenges to the development and adoption of transition technologies, as battery and renewables equipment manufacturers will face escalating production costs and significant supply-chain challenges to secure supply from elsewhere. Russia is a significant supplier of several strategic materials for low-carbon technologies, including nickel, copper, aluminium and platinum.

Sanctions imposed on Russia will most likely disrupt mineral and metal production and trade in the country. Buyers have also reportedly started to shun Russian metal supply as the threat of further sanctions directly affecting metals mounts, exacerbating supply chain pressures at a time of already tight commodity markets.

Regarding battery technology, raw materials account for up to 80% of their cost of production. As a result, the magnitude of the price rally in 2022 could reverse the long-term trend of falling battery costs, the most expensive component of electric vehicles (EVs), notwithstanding long-term supply contracts buffering some EV manufacturers for the time being. Climbing manufacturing costs coupled with the lingering chip shortage could curb EV production capacity this year and delay the profitability targets EV manufacturers had set for mid 2020s. They could also dampen the strong momentum of EV sales, as higher costs for new EVs relative to internal combustion engine vehicles remains one of the biggest barriers for EV adoption according to consumer surveys.

Meanwhile, skyrocketing prices of materials will also incentivise public support and private investment for the circular economy and recycling of batteries.

Investment Cost Structure for Solar PV, Wind by Commodity



Source: Fitch Ratings, International Energy Agency

Regarding renewables, equipment manufacturing could also be affected, as most components for renewables include copper, and some also require large quantities of zinc (wind) and polysilicon (solar). This could delay installation for new renewable projects: nearly a quarter of planned solar projects in Europe were cancelled in 2021 because of rising raw material costs.

The rally in low-carbon technology materials prices will affect most manufacturers around the world, although European producers are most at risk of lower physical supply given their high reliance on Russian metal exports. These acute supply challenges could add impetus to the trend of low-carbon technology manufacturers securing supply for strategic minerals by signing long-term agreements with upstream companies located in stable markets with better sustainability records, such as Australia.

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Appendix

ESG General Issues Across Analytical Groups

Environmental	Social	Governance
GHG Emissions & Air Quality (EAQ)	Human Rights, Community Relations, Access and Affordability (SCR)	Management Strategy (GEX)
Energy Management (EFM)	Customer Welfare: Fair Messaging, Privacy & Data Security (SCW)	Governance Structure (GGV)
Water & Wastewater Management (EWT)	Labour Relations & Practices (SLB)	Group Structure (GST)
Waste & Hazardous Materials Management, Ecological Impacts (EHZ)	Employee Wellbeing (SEW)	Financial Transparency (GTR)
Exposure to Environmental Impacts (EIM)	Exposure to Social Impacts (SIM)	Policy Status & Mandate Effectiveness (supranationals only)
Water Resources & Management (EWR)	Human Rights & Political Freedoms (SHR)	Political Stability and Rights (GPS)
Biodiversity & Natural Resources Management (EBN)	Human Development, Health & Education (SHD)	Rule of Law, Institutional & Regulatory Quality, Control of Corruption (GRL)
Natural Disasters & Climate Change (ENC)	Employment & Income Inequality (sovereign only; SEI)	International Relations & Trade (GIR)
	Public Safety & Security (SPS)	Creditor Rights (GCR)
	Population Demographics (IPF: local and regional governments only; SDT)	Data Quality & Transparency (Sovereign, USPF: Tax, IPF: local and regional governments only; GDQ)
	Demographic Trends (Sovereign & USPF: tax only; SDT)	Data Transparency & Privacy (GDT)
	Privacy & Data Security (supranationals only; SPD)	Transaction Parties & Operational Risk (GOR)
		Transaction & Collateral Structure (GTC)

Grey	Applies to all analytical groups
Red	Applies to corporates, FIs, IPF: GREs, USPF: Revenue, infrastructure, structured finance and covered bonds, supranationals, USPF: Tax and IPF: Local and regional governments (SLB only)
Blue	Applies to corporates, FIs, IPF: GREs, USPF: Revenue, infrastructure, supranationals (not GST)
Green	Applies to sovereigns, IPF: Local and regional governments, USPF: Tax, supranationals (GRL only), structured finance and covered bonds (GRL only)
White	Applies to structured finance and covered bonds

Source: Fitch Ratings

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Related Research – 1Q22

LatAm Sovereign GSS Bond Market Will See Further Growth (March 2022)

TNFD Aims to Enhance Nature-Related Disclosures (March 2022)

Green, Social Securitisation Growth Needs Robust Data Standards (March 2022)

SSA-50 Ratings Resilient to Pandemic Response; GSS Issuance Grows (March 2022)

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Where ESG Matters for Bank Ratings (March 2022)

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Non-Financial Corporates Interactive ESG Dashboard – 4Q21 (January 2022)

Non-Financial Corporates ESG Relevance Heatmap – 4Q21 (January 2022)

Financial Institutions ESG Relevance Heatmap – 4Q21 (January 2022)

Financial Institutions ESG Sector Discovery Tool – 4Q21 (January 2022)

Financial Institutions Interactive ESG Dashboard – 4Q21 (January 2022)

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Structured Finance & Covered Bonds ESG Sector Discovery Tool – 4Q21 (January 2022)

Structured Finance & Covered Bonds Interactive ESG Dashboard – 4Q21 (January 2022)

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