ACCA Think Ahead

University of Glasgow
Adam Smith Business School

CLIMATE-CHANGE RISK-RELATED DISCLOSURES IN EXTRACTIVE INDUSTRIES: A COMPARATIVE STUDY

ACCA AND ADAM SMITH BUSINESS SCHOOL RESEARCH REPORT

About ACCA

ACCA (the Association of Chartered Certified Accountants) is the global professional body for professional accountants.

We're a thriving global community of 233,000 members and 536,000 future members based in 178 countries and regions, who work across a wide range of sectors and industries. We uphold the highest professional and ethical values.

We offer everyone everywhere the opportunity to experience a rewarding career in accountancy, finance and management. Our qualifications and learning opportunities develop strategic business leaders, forward-thinking professionals with the financial, business and digital expertise essential for the creation of sustainable organisations and flourishing societies.

Since 1904, being a force for public good has been embedded in our purpose. In December 2020, we made commitments to the UN Sustainable Development Goals which we are measuring and will report on in our annual integrated report.

We believe that accountancy is a cornerstone profession of society and is vital helping economies, organisations and individuals to grow and prosper. It does this by creating robust trusted financial and business management, combating corruption, ensuring organisations are managed ethically, driving sustainability, and providing rewarding career opportunities.

And through our cutting-edge research, we lead the profession by answering today's questions and preparing for the future. We're a not-for-profit organisation.

Find out more at www.accaglobal.com

About the Adam Smith Business School

The University of Glasgow includes among its alumni, the father of economics, Adam Smith. The Adam Smith Business School is named in his honour. We aim to follow his legacy by developing enlightened, engaged and enterprising graduates, who are internationally recognised and make a positive impact on culture and society. Our business is about creating inspiring leaders, researchers and professionals whose research and relations with industry have real impact, influencing organisations as they develop and grow globally.

The Adam Smith Business School has the triple crown of accreditation as it is accredited by the Association to Advance Collegiate Schools of Business (AACSB International), the European Quality Improvement System (EQUIS) and the Association of MBAs (AMBA) for its MBA programme.

The School is home to research, of international and national excellence, that contributes to theoretical advancement and is relevant to practice. Two more recent examples reflecting this are the School's contribution to the Productivity Institute and the Adam Smith Observatory of Corporate Reporting Practices. The Productivity Institute will directly inform government policy to improve UK productivity. The Observatory is comprised of an international network of researchers in accounting with practice-based experience. It aims at providing accounting standard setters and regulators across the world with evidence-based inputs, such as this report, when the evidence is timely and directly relevant to the issues they tackle.

Find out more about us at www.gla.ac.uk/schools/business/aboutus/

November 2021

CLIMATE-CHANGE RISK-RELATED DISCLOSURES IN EXTRACTIVE INDUSTRIES: A COMPARATIVE STUDY

ACCA AND ADAM SMITH BUSINESS SCHOOL RESEARCH REPORT

Diogenis Baboukardos (University of Essex)

Dionysia Dionysiou (University of Stirling)

Richard Slack (Durham University)

Ioannis Tsalavoutas (University of Glasgow)

Fanis Tsoligkas (University of Bath)

For further information, please contact:

Richard Martin, Head of Corporate Reporting, ACCA
richard.martin@accaglobal.com

Diogenis Baboukardos, Lecturer in Accounting,
Essex Business School, d.baboukardos@essex.ac.uk

Contents

Acknowledgements:

The authors would like to thank the Adam Smith Observatory of Corporate Reporting Practices and ACCA for providing the financial support for this project. We are grateful to Richard Martin (ACCA) for his valuable suggestions, support and advice during the project, and Alison Thomas for her useful insights at the early stages of this project. Feedback received from speakers and attendees at the two webinars organised by Carbon Tracker[1] and ACCA on 12 April 2021 and 14 September 2021, in which the findings of the first related report and preliminary findings of this report respectively were presented, are also acknowledged. We also thank Dimitrios Kanakis and Evangelos Seretis for their excellent research assistance with the data collection.

1 In these webinars, the findings of a study conducted by Carbon Tracker on the climate change-related disclosures of companies, together with the findings of our reports, were presented. See Carbon Tracker 2021.

1. Introduction

1.1 Background and objectives

There has been an ever-intensifying focus on the effect of climate change as well as the need for firms to identify the associated specific risks on companies' long-term operations and sustainability. Following this, there is a need for the transformation of the global economy to net-zero carbon. As a result, many companies' assets are expected to lose a substantial part of their value, as the estimated future net cash flows generated from the use of these assets may be significantly reduced. In addition, many firms will need to invest significant amounts of capital in new technologies not only to continue operating but also for protection from adverse weather conditions directly associated with climate change.

In parallel, there have been increasing direct and indirect pressures for firms to disclose these risks in their various means of communications with stakeholders and to take these risks into consideration in the estimates they are making in their financial statements for the recognition and measurement of their assets and liabilities. For instance, the European Banking Authority has acknowledged the ever-increasing importance of banks' exposure to climate-change-related financial risks (eg extreme weather and sea level rise) and has announced a new mandate, effective from 2022, for all European banks to disclose a 'green asset ratio'. This will inform users on the amount of climate-friendly loans, advances and debt securities the banks have given against their total assets (Jones 2021a). Hence, it is not surprising that major global banks have now started discussing 'climate' far more frequently in their annual reports (Schriber and Koppes 2021). Further, national authorities, with UK and New Zealand being in the forefront worldwide (McGrath 2021), are introducing mandatory climate-related financial disclosures aligned with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). The Securities and Exchange Commission in the US has announced that it will consider introducing similar mandatory disclosures by the end of 2021. Moreover, the European Commission has released a supplement to its Directive 2014/95/EU on non-financial reporting, providing more specific guidelines on companies' climate-change disclosures (European Commission 2019). Additionally, the IFRS Foundation is about to announce the creation of the International Sustainability Standards Board. This is intended to replace the various current voluntary reporting approaches with a single set of reporting standards for companies reporting on the impact of climate change on their operations (Jones 2021b). Importantly, shareholders are also becoming increasingly vocal in demanding disclosures of climate-change risks from their portfolio companies (Flammer et al. 2021).

In light of this, in February 2021, we published a report on the climate-change-related disclosures that extractive companies around the world were making in their 2019 annual reports (Baboukardos et al. 2021). Specifically, that study analysed the 2019 annual reports of the 60 largest 'polluters' in extractives industries[2] measured by their average Scope 1 and Scope 2 carbon emissions over the period 2016–18.[3] The primary objectives of that study were to:

- explore the level and depth of climate-related disclosures provided by companies in the in the narrative sections (ie front end) of their annual reports
- explore the level of integration of climate-related information into the accounting policies and relevant financial statements' notes in the financial reporting section (ie back end) of companies' annual reports, and
- identify good climate-related reporting practices in both the front and back ends of the annual reports.

The central message of that report was that companies did not engage sufficiently with disclosures about their climate-change-related risks. Companies were found to provide, on average, overly generic disclosures and they generally refrained from discussing how climate-change risks affect their operations. Furthermore, only a small number of companies acknowledged the central role of climate change in their current and future activities. These findings indicated that disclosures in both the

2 Industries qualifying as extractives, in accordance with the Industry Classification Benchmark, are: alternative fuels; aluminium; coal; copper; diamonds and gemstones; general mining; gold mining; integrated oil and gas; iron and steel; offshore drill and services; oil: crude producers; platinum and precious metals.

3 According to Thomson Reuters' Eikon database, Scope 1 carbon emissions are companies' direct emissions from sources that are owned or controlled by the company. Scope 2 carbon emissions are companies' indirect emissions from consumption of purchased electricity, heat or steam whose emissions occur at the facility where electricity, steam or heat is generated. The following gases are considered: carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCS), perfluorinated compounds (PFCs), sulphur hexafluoride (SF6), nitrogen trifluoride (NF3).

front and back ends of companies' 2019 annual reports lacked clarity and depth in relation to climate change. Also, it was evident that the two ends of the annual report were relatively disconnected, as companies provided substantially more information about their risks related to climate change in the front-end narratives than in the back-end financial statements and related notes.

During 2020, many firms in the extractives industry announced that they would recognise impairments in the value of their assets, while explicitly pointing to climate change and consumers' demands for greener operations as well as renewable energy. One case, for instance, and arguably the most prominent, was that of Royal Dutch Shell, which announced potential impairments of around $22bn in their 2020 results. This announcement almost coincided with the landmark ruling that the firm must cut its CO2 emissions by 45% of its 2019 levels, by 2030. Experts in the industry estimate that such impairments will continue across the sector over the next few years (Energy People 2020a, 2020b).

Against this backdrop, in this study, we consider the 2020 annual reports of the companies whose 2019 reports we analysed in February 2021. We employ the same research instruments[4] and our objectives are to:

- explore the level and depth of climate-change-related disclosures provided by companies in the extractive industries in the narrative sections (ie front end) of their annual reports and compare them with the previous year's levels of disclosure
- explore the level of integration of climate-change-related information into the accounting policies and relevant financial statements' notes in the financial reporting section (ie back end) of companies' annual reports and compare them with the previous year's levels of disclosure, and
- identify good climate-related reporting practices in both the front and back ends of the annual reports and identify any examples of improved reporting practice.

1.2 Method

As of 1 September 2021, 56 of the 60 firms we analysed in our first report had published their 2020 annual reports.[5] Thus, for this study, we reviewed these 56 reports manually. As previously, our approach was twofold: we first calculated a score based on the number of disclosure items found in each report and we also went deeper and identified good reporting practices for each disclosure item. We present the findings against these firms' disclosures in their 2019 reports. It is highlighted that companies that do not apply IFRS or equivalent local accounting standards, companies that do not have extractive activities (ie iron and steel producers) and companies that do not provide annual reports in English are not considered in either study.

1.3 Key findings

The comparative examination of the annual reports reveals interesting reporting trends in the extractive industries. It appears that in the 2020 annual reports, companies acknowledge, to a larger extent than in 2019, the need for engaging with disclosures about the climate-change risks they are facing and how they tackle them. Overall, a significant increase in the level of relevant disclosures is evident. Nevertheless, this improvement is overwhelmingly found in the front, narrative part of the annual reports. Disclosures related to climate change are still largely missing from the financial statements and related notes. Particularly, the key findings of our analysis can be summarised in the following points.

- Of the 56 companies in our sample, a substantial 73% (41 companies) provide a reserves/resources statement with relevant tabulated numerical information for their reserves/resources in 2020. For the same companies, the rate was 59% (33 companies) in 2019.
- The number of companies that provide a scenario analysis that considers climate-change risks has jumped from 13 (23%) in 2019 to 26 (46%) in 2020.
- Almost 80% of the sample companies (44) identify climate change as an important issue to be considered within their 2020 business model disclosures and half of them (22) consider international initiatives for climate change (primarily the 2015 Paris Agreement) in the discussion of their business model. These findings present a clearly improved picture compared with 2019, when the corresponding rates were 60% (34 companies) and 23% (13 companies) respectively.
- Nonetheless, as in 2019, no company is found to provide an assessment of their climate-change risks that is pertinent to their projects.
- The number of companies that voluntarily follow TCFD recommendations increased from 24 (43%) in 2019 to 37 (66%) in 2020.
- Half the sample companies (28) link their executives' remuneration with climate-change (or, more broadly, sustainability) performance metrics. This has improved since the previous year, when 24 companies linked their executives' remuneration with such metrics.

4 Appendices A1 and A2 outline the research instruments. For details in the development of these instruments, please refer to the February 2021 report (Baboukardos et al: section 2.2).

5 Appendix B lists the 56 firms included in our analysis.

- In relation to the accounting policies on provisions and contingent liabilities, exploration and evaluation assets, tangible and intangible assets, and financial instruments, there was no significant improvement in the number of companies recognising climate change as an important factor in its judgements and sources of estimations uncertainty.
- Although there was a large increase in the number of companies that recognise climate change as a key factor in their policies on impairment testing (from 10 in 2019 to 17 in 2020), only four of the 51 firms that recognise impairment losses in 2020 identify climate change as an influential factor in the recognition of these losses. The latter finding is almost identical to what was reported in 2019.
- As in 2019, none of the sample companies identifies climate-change risks as an important factor in determining the useful lives of its assets in 2020.
- In provisions and contingent liabilities notes, only marginal differences are found and, overall, companies' disclosure behaviour did not change dramatically from 2019 to 2020.
- Climate change has drawn auditors' attention in 2020 annual reports substantially more than in 2019. Specifically, in 13 companies (compared with eight in 2019), the audit report recognises risks related to climate change as giving rise to key audit matters.

1.4 Conclusions and policy recommendations

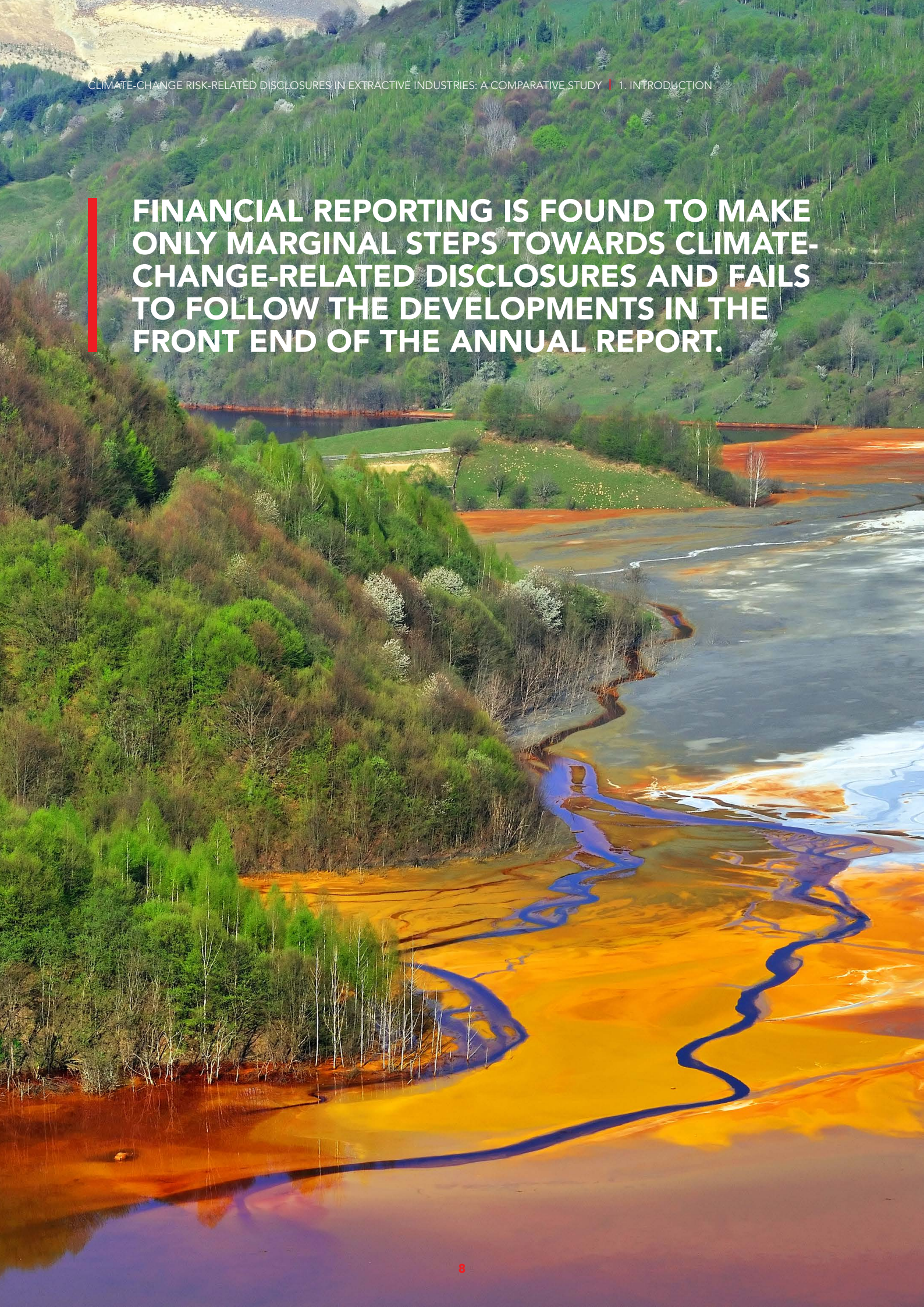
Our analysis indicates that companies in the extractive industries have improved their overall disclosures about climate-change risks but the improvement is overwhelmingly found in the front end rather than the back end of the report. The latter still lags behind in disclosures directly on the climate-change risks affecting items on the financial statements and estimates reported in the related notes. In fact, the gap between the information on climate change provided in the front and back ends of the annual reports has been widened in 2020 as companies are found to engage (on average) with 50% of the disclosure items of our research instrument in the front end and with 27% of the disclosure items in the back end whereas in 2019 the levels of disclosure were 39% for the front end and 24% for the back end. Hence, financial reporting is found to make only marginal steps towards climate-change-related disclosures and fails to follow the developments in the front end of the annual report.

Our findings are expected to inform reporting standards setters, capital market authorities and policymakers, who all demonstrate a growing interest in these issues. As mentioned in our initial report, although the International Accounting Standards Board (IASB) has provided guidance on how the current IFRS can address issues related to climate change (Anderson 2019; IFRS Foundation 2020), potential amendments of specific accounting standards such as IAS 1 (ie on key estimations and uncertainties), IFRS 6 (Exploration for and Evaluation of Mineral Resources), IAS 36 (Impairment of Assets) and IAS 37 (Provisions, Contingent Liabilities and Contingent Assets) may be needed. To this end, the IASB's third agenda consultation identifies climate-related risks as one of the topics within the scope of financial reporting that needs to be considered in its future projects (IASB 2021).

In this report, we also emphasise the role of financial reporting in companies' responses to climate change urgency. Interestingly, companies belonging to specific mining industries may expect climate change to have positive effects on their profitability owing to the transformation of the energy and transportation sectors, which will lead to increasing demand for the materials they extract. Any positive benefit should be balanced and reported against any negative consequences of associated increases in extraction, such as increased emissions that might be generated when meeting that demand

As climate change is expected to have severe negative implications for humankind and hence for the economy, the issue has been raised of whether the impact of climate change on a company can be considered in isolation from the negative impact it is expected to have on its external environment which inevitably will affect the company itself at some point. In turn, such a question leads to whether fundamental accounting concepts such as the entity assumption, which considers a company in isolation from its environment, should be applied to climate change or whether a different approach should be considered for its reporting in the front half.

On the positive side, we are witnessing two upward trends in, broadly defined, corporate governance mechanisms. First, auditors are more often found to consider climate change as a key audit matter and, second, there is an upward trend in the number of companies connecting their executives' compensation with climate change and, more broadly, sustainability-related metrics. These two findings may indicate that companies today have more incentives to engage with actions and reporting on climate-change risk and that these will increase in the future.



FINANCIAL REPORTING IS FOUND TO MAKE ONLY MARGINAL STEPS TOWARDS CLIMATE-CHANGE-RELATED DISCLOSURES AND FAILS TO FOLLOW THE DEVELOPMENTS IN THE FRONT END OF THE ANNUAL REPORT.

2. Findings and discussion

2.1 Sample identity

Of the 56 companies in our sample, 30 belong to the oil and gas industry (integrated oil and gas, and crude oil producers) and the remaining 26 belong to various industries of the mining super-sector (iron and steel; general mining; gold; copper; platinum and precious metals; aluminium and coal). Figure 2.1 provides companies' distribution by industry. As regards their geographic distribution, 29 of the companies (52%) are based in Europe, 10 in Asia (18%), 7 in North America, 4 in South America and 3 in each of Africa and Oceania (Figure 2.2). Finally, Table 2.1 shows that the mean (median) total assets' value of the sample firms is €51bn (€22.5bn), the mean (median) market capitalisation is €24bn (€14bn) and the mean (median) return on assets (ROA) is 3.65% (2.99%). These numbers indicate that the sample firms are indeed very large. Even so, these firm characteristics are substantially lower than the previous year reported in in our previous report, which may indicate the effect of the COVID-19 pandemic on companies' operations and related financial performance.

2.2 Overall findings

Looking at the 'big picture', it is evident that companies engaged more with climate-change risk in their disclosures in 2020 than in 2019, especially in the front end of their annual reports. As is shown in Figure 2.3, the average level of disclosures in the front end jumped from 39% in 2019 to 50% in 2020, but the increase in the back-end disclosures is negligible (from 24% to 27%). These findings indicate that although companies acknowledge the importance of communicating how climate-change risks affect their operations in the front end, this information does not necessarily flow to the back end, rendering the two ends of the report somewhat disconnected. Also, the levels of disclosures in the two ends are positively correlated (0.506), which indicates that the levels of disclosure at the two ends of the reports tend to follow each other. That is, companies that disclose more information related to climate change in the front end also provide more disclosures in the back end.

FIGURE 2.1: Sample distribution by industry

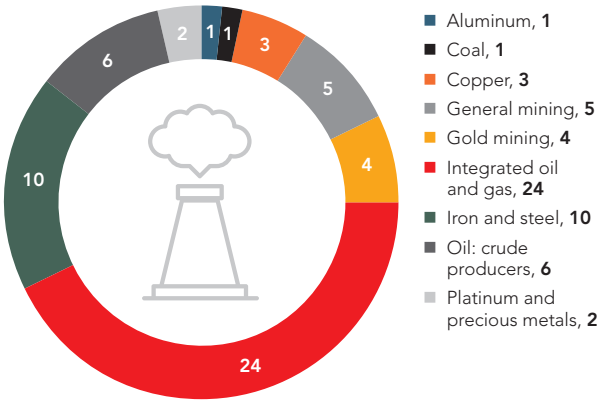


FIGURE 2.2: Sample distribution by geographic region

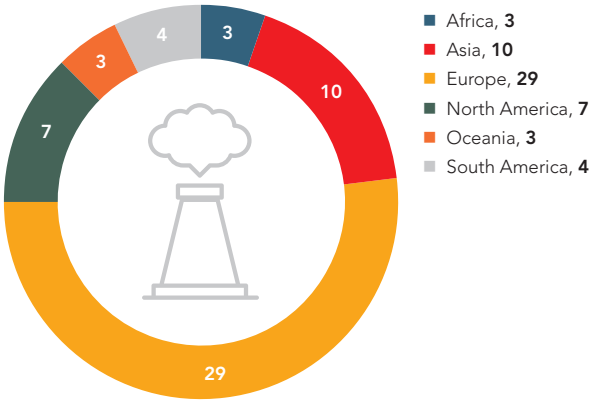


TABLE 2.1: Descriptive statistics of the sample

	N	MEAN	MEDIAN	ST. DEV.
Total assets (in €bn)	56	51.05	22.57	65.65
ROA	56	3.65	2.99	12.58
Market capitalisation (in €bn)	56	24.71	14.39	25.08

6 Statistically significant at the 1% level.

FIGURE 2.3: Average level of disclosures in the front and back ends

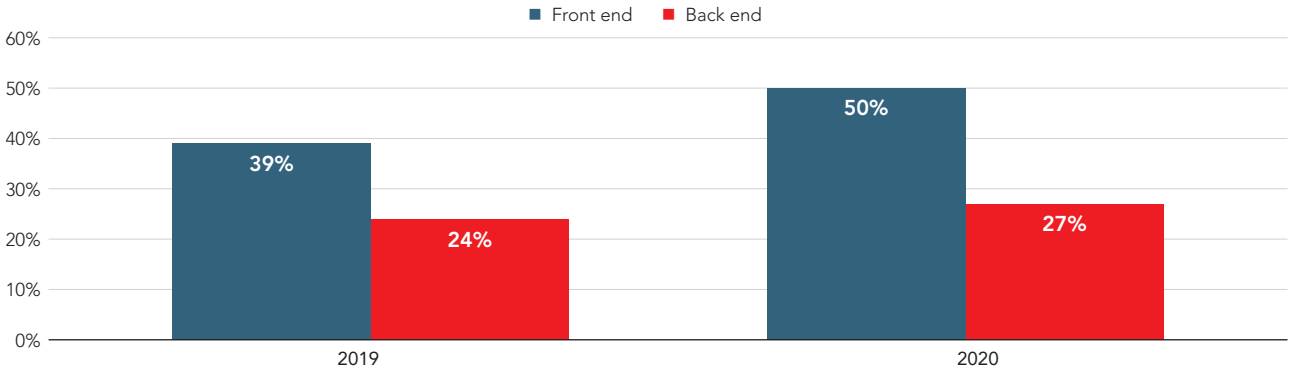


Table 2.2 provides average levels of disclosures by region (Panel A) and industry (Panel B). This shows that European companies are the leaders in disclosing climate-change risks in both ends of the report, with the highest means in both ends (61% and 36% respectively). Perhaps because of the mandatory introduction of Integrated Reporting in South Africa in 2010, South African companies also have comparatively high levels of disclosures (58% and 30% in front and back end, respectively), although still, perhaps surprisingly in this context, with a significant disconnection between the front and back ends of the report. By contrast, Canadian companies are found to engage the least with such disclosures in both ends of the annual report.

Turning our attention to the average disclosure levels by industry, it is revealed that in some industries, such as general mining and to a lesser extent those in integrated oil and gas, the levels of disclosure do not differ substantially between the front and the back ends. Such a finding indicates that companies in these industries make attempts to align the two ends of their annual reports.

EUROPEAN COMPANIES ARE THE LEADERS IN DISCLOSING CLIMATE-CHANGE RISKS IN BOTH ENDS OF THE REPORT, WITH THE HIGHEST MEANS IN BOTH ENDS (61% AND 36% RESPECTIVELY).

TABLE 2.2: Average levels of disclosure by region and industry

	N	FRONT END		BACK END	
		2019	2020	2019	2020
PANEL A. BY REGION					
Africa	3	55%	58%	30%	30%
Asia	10	26%	36%	13%	13%
Europe	29	50%	61%	30%	36%
North America	7	16%	25%	14%	14%
Oceania	3	39%	55%	15%	15%
South America	4	16%	50%	27%	30%
PANEL B. BY INDUSTRY					
Aluminum	1	64%	64%	36%	36%
Coal	1	27%	27%	9%	9%
Copper	3	45%	55%	15%	21%
General mining	5	51%	56%	31%	42%
Gold mining	4	23%	41%	16%	16%
Integrated oil & gas	24	42%	52%	30%	34%
Iron & steel	10	35%	55%	15%	17%
Oil: crude producers	6	24%	36%	15%	15%
Platinum and precious metals	2	55%	59%	32%	32%
TOTAL/MEAN	**56**	**39%**	**50%**	**24%**	**27%**

2.3 Front end

2.3.1 Reserves and resources reporting

As indicated in Table 2.3, 41 companies (73% of our sample), compared with 33 (59%) in 2019, provide a reserves/resources statement with relevant tabulated numerical information for their reserves/resources. As in 2019, no company is found to provide an assessment of their climate-change risks that is pertinent to their projects.

TABLE 2.3: Number of companies that provide a reserves/resources statement that includes relevant numerical information

	2019		2020	
INDUSTRY	NO	YES	NO	YES
Aluminum	1	0	1	0
Coal	1	0	1	0
Copper	1	2	1	2
General mining	1	4	1	4
Gold mining	1	3	0	4
Integrated oil and gas	10	14	7	17
Iron and steel	7	3	4	6
Oil: crude producers	1	5	0	6
Platinum and precious metals	0	2	0	2
TOTAL	23	33	15	41

2.3.2 Scenario analysis

Table 2.4 shows that the number of companies that provide a scenario analysis which considers climate-change risks has doubled from 13 (23%) in 2019 to 26 (46%) in 2020. In addition, only 9 out of the 26 companies provide specific quantitative information about relevant climate-change factors, assumptions and impacts within their scenario analysis.

The extract from BP plc in Figure 2.4 illustrates a good example of relevant disclosure.

TABLE 2.4: Number of companies that provide a scenario analysis which considers climate-change risks

	2019		2020	
INDUSTRY	NO	YES	NO	YES
Aluminum	0	1	0	1
Coal	1	0	1	0
Copper	3	0	2	1
General mining	2	3	1	4
Gold mining	4	0	4	0
Integrated oil and gas	17	7	10	14
Iron and steel	10	0	7	3
Oil: crude producers	5	1	4	2
Platinum and precious metals	1	1	1	1
TOTAL	43	13	30	26

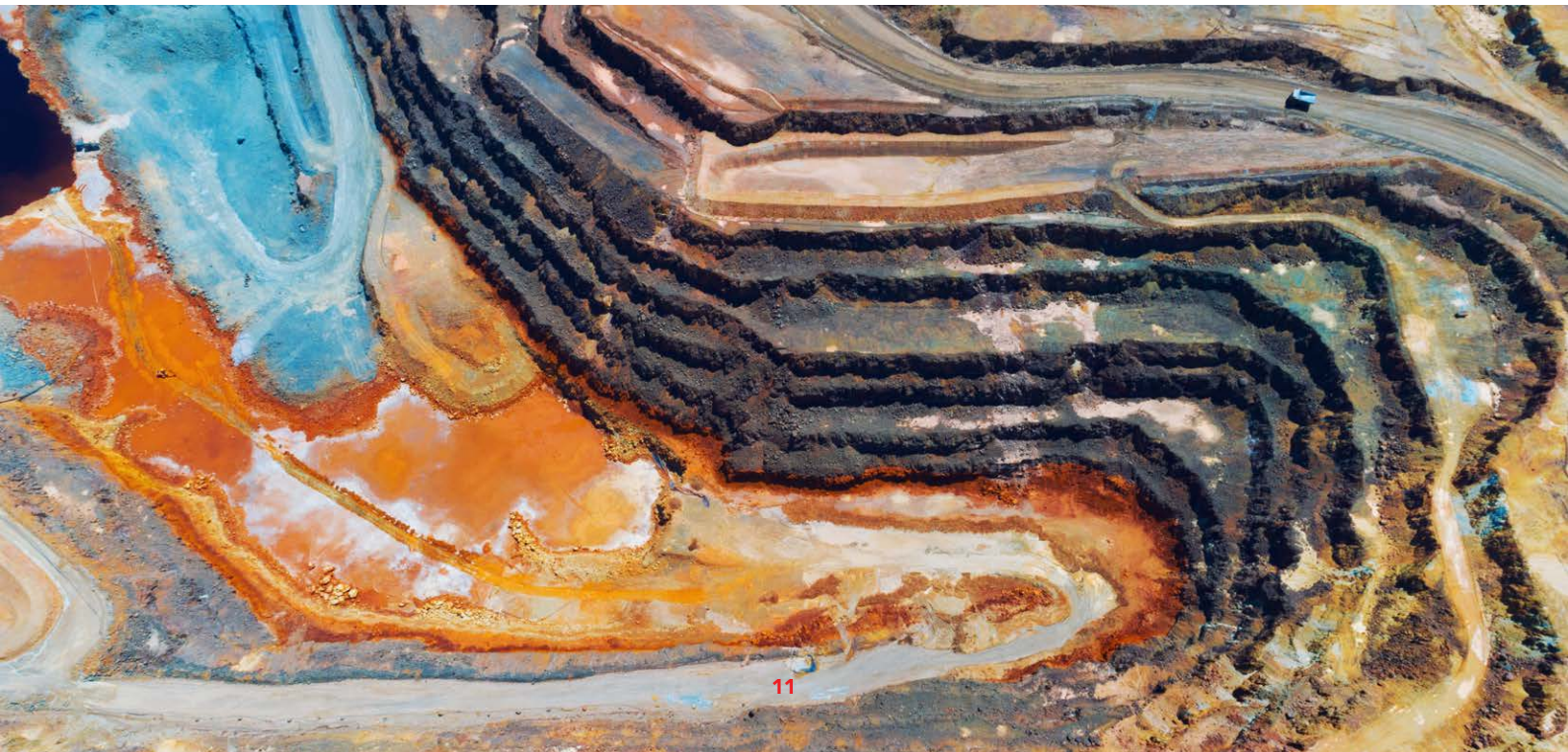
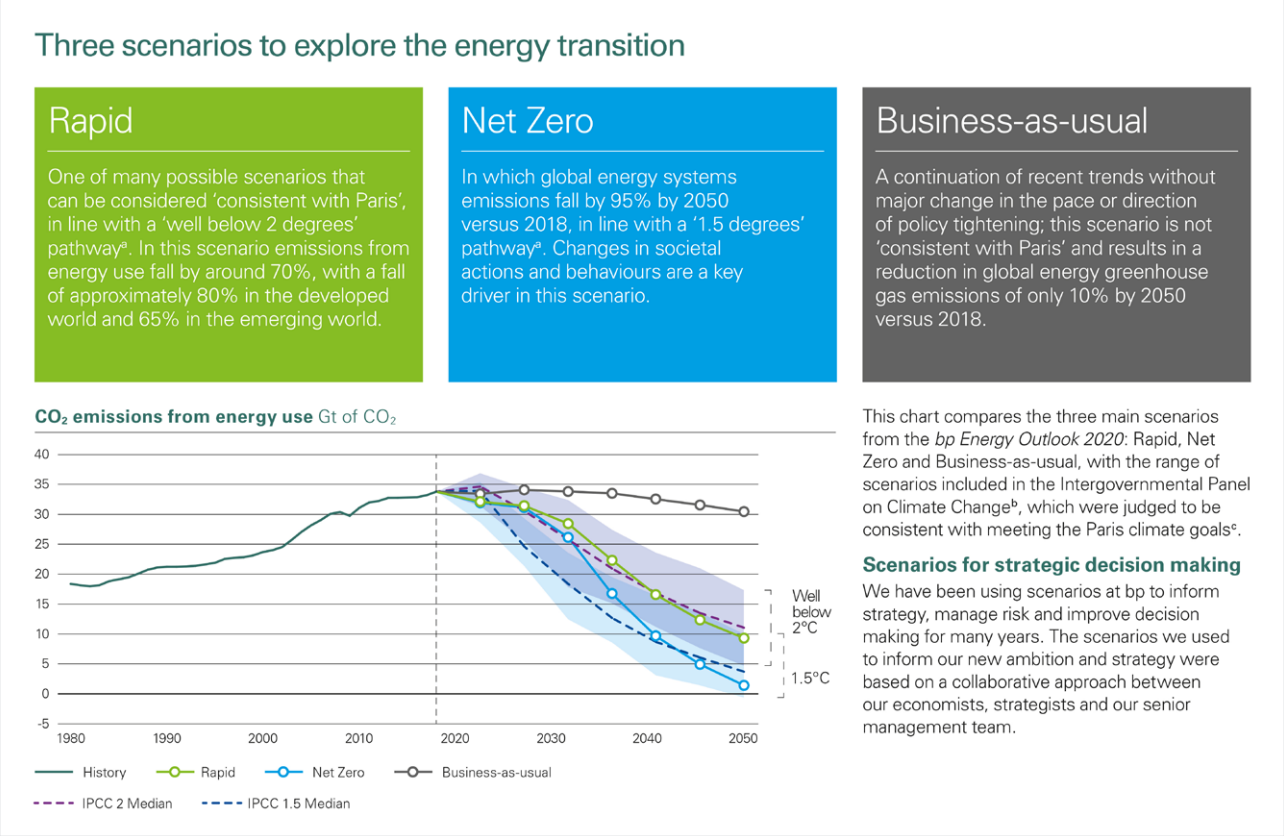
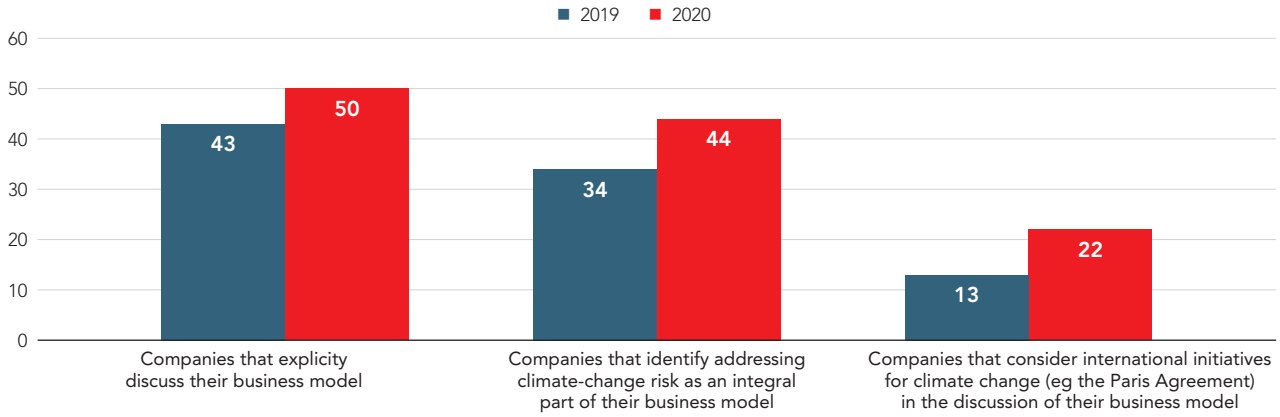


FIGURE 2.4: Example from BP plc, which adopts scenario analysis that considers climate-change risks



Source: BP plc 2020 annual report: 11

FIGURE 2.5: Number of companies providing disclosures about their business model



2.3.3 Business model

In business model disclosures, a clear trend towards more engagement with issues related to climate-change risk is evident. As shown in Figure 2.5, 90% of our sample companies (50) provide an explicit discussion about their business model. Out of these 50 companies, 44 identify climate change as an important issue to be considered within their business model and half of them (22) consider international initiatives for climate change (primarily the 2015 Paris Agreement) in the discussion of their business model. These findings show a clearly improved picture since 2019 and indicate that companies acknowledge the necessity of tackling climate-change risks through their operating activities.

The extract from the 2020 annual report of natural gas company, Eni SpA (Figure 2.6) is an indicative example of how companies take into consideration climate-change risks and follow the recommendations of international initiatives (such as the Paris Agreement and the UN Sustainable Development Goals (SDGs) in their business model.

FIGURE 2.6: Example from the Eni SpA business model, which incorporates climate-change issues and international initiatives

Source: Eni SpA 2020 annual report: 5

2.3.4 Performance indicators

Slightly more frequently than in 2019, the vast majority of our sample companies (51 out of 56) provide some form of performance indicators related to climate change (Table 2.5). The most representative indicator relates to the level of carbon emissions. This is usually compared with previous years' related carbon performance. Of those 51 companies, three companies are found to integrate financial and climate-change-related information in a single performance indicator. The most common such indicator is the carbon intensity ratio, which expresses the level of carbon emissions per monetary unit of sales (see extract from the 2020 report of minerals extraction company Imerys SA in Figure 2.7). Further, 15 companies (compared with nine in 2019) display them adjacently to their climate-change-related performance indicators with relevant financial indicators (see extract from oil and natural gas extractor, Galp Energia in Figure 2.8).

Table 2.6 indicates that half of the sample companies link their executives' remuneration with performance metrics related to climate-change issues (or, more broadly, sustainability). This has improved since the previous year, when 24 companies (43%) linked their executives' remuneration with such metrics.

TABLE 2.5: Number of companies that provide climate-change-related performance indicators.

	2019		2020	
INDUSTRY	**NO**	**YES**	**NO**	**YES**
Aluminum	0	1	0	1
Coal	1	0	1	0
Copper	0	3	0	3
General mining	0	5	0	5
Gold mining	2	2	1	3
Integrated oil and gas	3	21	2	22
Iron and steel	1	9	0	10
Oil: crude producers	2	4	1	5
Platinum and precious metals	0	2	0	2
TOTAL	**9**	**47**	**5**	**51**

OF THE 51 COMPANIES THAT PROVIDE SOME FORM OF PERFORMANCE INDICATORS RELATED TO CLIMATE CHANGE, THREE COMPANIES ARE FOUND TO INTEGRATE FINANCIAL AND CLIMATE-CHANGE-RELATED INFORMATION IN A SINGLE PERFORMANCE INDICATOR.

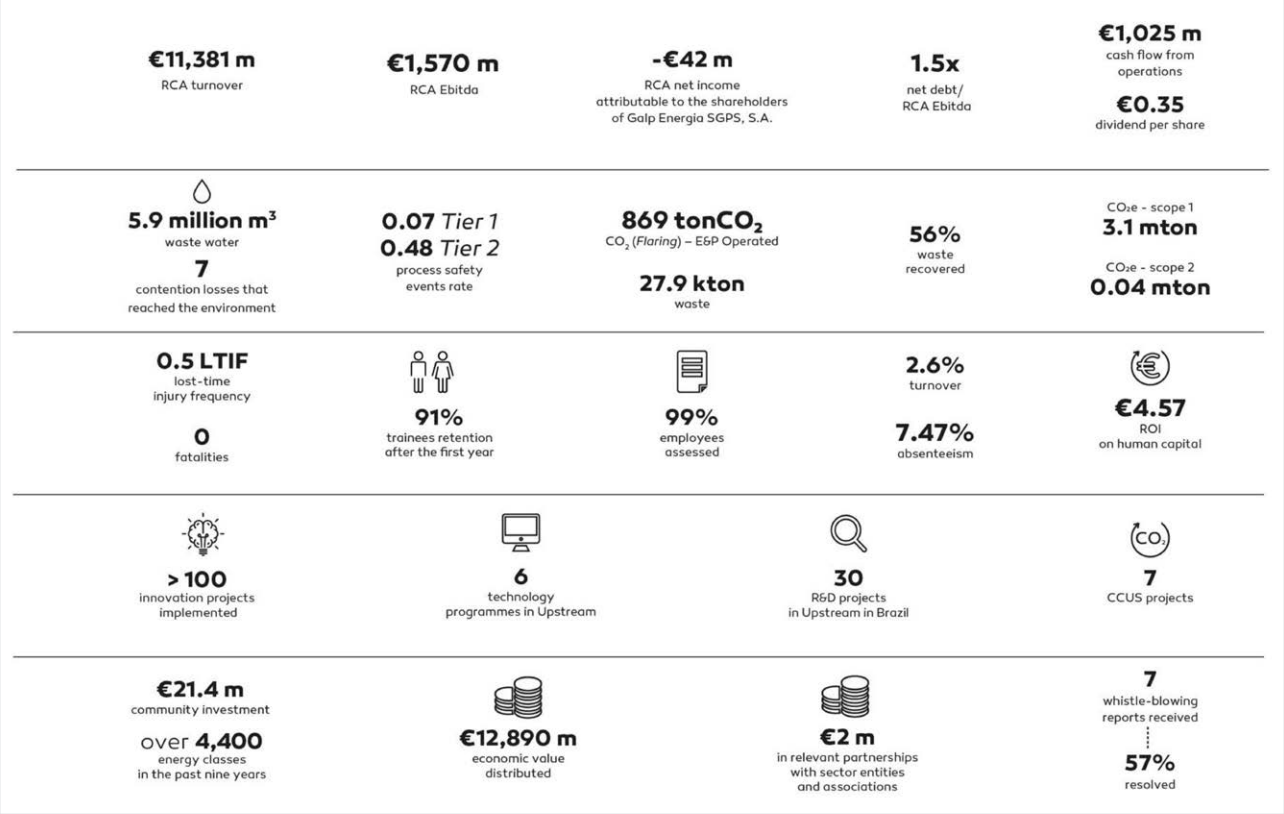
FIGURE 2.7: Example of how Imerys SA integrates financial and climate-change-related information in its performance indicators

Group carbon emissions

(thousands of tons, kt)	2020	2019[1]	2018
Scope 1 CO_2 emissions	1,510	1,740	2,207
Scope 2 CO_2 emissions	984	1,103	1,214
Total CO_2 emissions (Scope 1 and Scope 2)	**2,494**	**2,843**	**3,421**
Energy	86.7%	87.3%	84.1%
Processes	13.3%	12.7%	15.9%
CO_2 emission/revenue *(ton CO_2e/M€)*	**657**	**653**	**745**

Source: Imerys SA 2020 annual report: 77

FIGURE 2.8: Example showing Galp Energia's reporting of financial performance indicators alongside those related to climate change



Source: Galp Energia 2020 annual report: 22

TABLE 2.6: Number of companies that link executives' remuneration to climate-change-related performance metrics

	2019		2020	
INDUSTRY	**NO**	**YES**	**NO**	**YES**
Aluminum	0	1	0	1
Coal	0	1	0	1
Copper	2	1	2	1
General mining	2	3	1	4
Gold mining	3	1	3	1
Integrated oil and gas	12	12	13	11
Iron and steel	8	2	5	5
Oil: crude producers	4	2	4	2
Platinum and precious metals	1	1	0	2
TOTAL	**32**	**24**	**28**	**28**

2.3.5 TCFD recommendations

Companies are found to engage increasingly with the TCFD recommendations. As shown in Figure 2.9, the number of companies that voluntarily follow TCFD increased from 24 (43%) in 2019 to 37 (66%) in 2020. Figure 2.10 provides an example, from aluminium and energy company Norsk Hydro ASA, showing good practice in applying the TCFD recommendations.

FIGURE 2.9: Number of companies that follow the recommendations of the TCFD

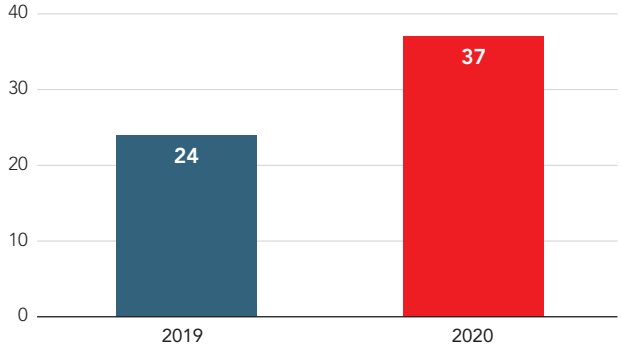


FIGURE 2.10: Example of Norsk Hydro ASA disclosures related to the recommendations of the TCFD

TCFD recommendations

Recommendation	Disclosure	Reference
Governance: Disclose the organization's governance around climate-related risks and opportunities		
a) Describe the board's oversight of climate-related risks and opportunities	Board developments Risk review Key developments and strategic direction Performance and Targets	37 112 13 74
Strategy: Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is material		
a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term	Risk review Energy and climate change	24-122 , 113-124 89-91
b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning	Risk review Energy and climate change	24-122 , 113-124 89-91
c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario	In 2018, Hydro concluded a review of its climate-related risks, including physical, technological, commercial, legal and reputational risk. The review forms the basis for scenario analyses and an update of the climate strategy.	89
Risk management: Disclose how the organization identifies, assesses, and manages climate-related risks		
a) Describe the organization's processes for identifying and assessing climate-related risks	Energy and climate change	89-91
b) Describe the organization's processes for managing climate-related risks	Environment Energy and climate change	33 89-91
c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organizations' overall risk management	Business planning and risk management	132
Metric and targets: Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material		
a) Disclose the metrics used by the organization to assess climaterelated risks and opportunities in line with its strategy and risk management process	Board of Directors' report: Environment Hydro's materiality analysis 2020 Environmental statements Note E1 to the environmental statements: Greenhouse gas emissions Note E3 to the environmental statements: Energy Note E4.2 to the environmental statements: Water Note E4.3 to the environmental statements: Recycling Note E6.2 to the environmental statements: Land use and rehabilitation	33 88 232 233-238 240-241 242- 243 245
b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks	Environmental statements Note E1 to the environmental statements	232 233-238
c) Describe the targets used by the organization to manage climaterelated risks and opportunities and performance against targets	Board of Directors' report Energy and climate change Environmental impact management	91

Source: Norsk Hydro ASA 2020 annual report: 275

2.4 Back end

2.4.1 Accounting policies

In their accounting policies note (Figure 2.11), about one-third of our sample companies recognise climate change as an important factor in their judgements and sources of estimations uncertainty for provisions and contingent liabilities. The number of companies has not significantly improved since 2019 (17 companies in 2019 vs 18 companies in 2020). Even so, we observe a large increase in the number of companies that recognise climate change as a key factor of their policies for impairment testing (from 10 in 2019 to 17 in 2020). Nevertheless, the total number remains small. For the other three accounting topics (exploration and evaluation assets, tangible and intangible assets, and financial instruments), very few companies are found to recognise climate change (three, four and none, respectively) as an important factor in their judgements and sources of estimations uncertainty. The number of companies engaging in such disclosures for these three topics, although still very low, has improved since 2019. The extract from mining company Anglo American plc shows an interesting example of a company that amended its impairment-testing accounting policies in 2020 to take into consideration risks and opportunities related to climate change that may affect its cash flows:

'Climate change may have a number of impacts for the Group including the risks and opportunities relating to the demand for the Group's commodities as a result of the transition to a low carbon economy and physical risks caused by climate change. For managed operations, the Group has incorporated carbon pricing, where material, in its projected cash flows. Short term carbon prices are incorporated based on currently enacted legislation, and where applicable longer term carbon prices are based on latest internal views, formed with reference to external forecasts. Separate carbon prices are used for developed and developing economies. Carbon costs are based on a carbon price per tonne/ CO2e, multiplied by estimated Scope 1 and 2 emissions. The cost and benefit of achieving the Group's emissions reduction strategy is included when the Group has a high degree of confidence that a project will achieve a reduction, which typically aligns with the related capital project being internally approved. The Group's commodity price and other key assumptions represent management's best estimate and do not reflect a specific climate-related scenario'. (Anglo American plc 2020: 170).

2.4.2 Impairment testing

The same six companies discussing climate change in their 2019 impairment testing note continue to do so in 2020 (Table 2.7). Perhaps surprisingly, there were no additional reporters in this area in 2020. Further, although the vast majority of our sample companies (51) recognise impairment losses in 2020, only four companies identify climate change as an influential factor in the recognition of these losses. The results are very similar to those of 2019 when three out of the 48 companies with impairment losses recognise climate risk as a key driver of the impairments.

FIGURE 2.11: Number of companies that recognise climate change as an important factor in their judgements and sources of estimations uncertainty in the accounting policies for the listed items

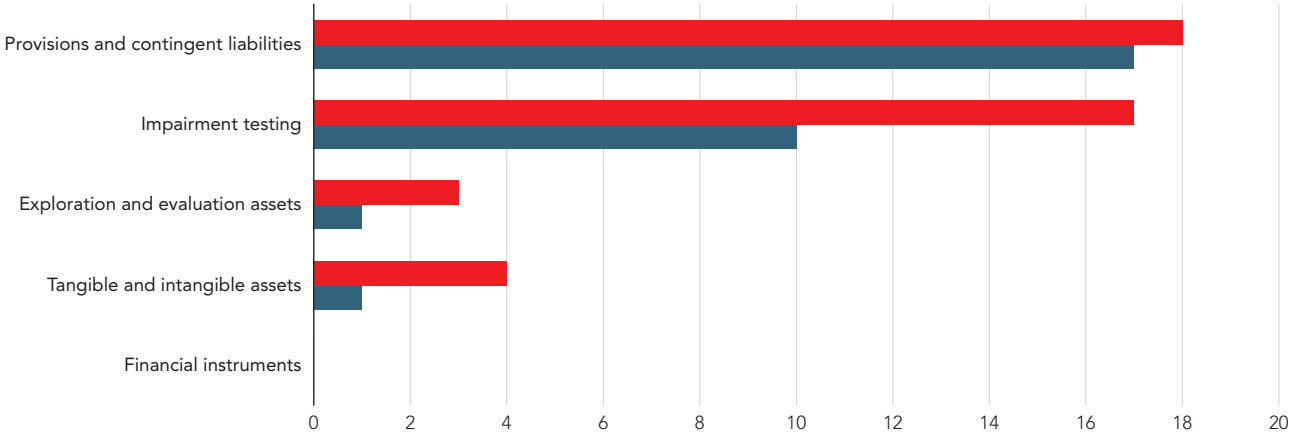


TABLE 2.7: Number of companies that consider climate-change risk as a factor in their impairment testing process of goodwill and other assets

	2019		2020	
INDUSTRY	NO	YES	NO	YES
Aluminum	1	0	1	0
Coal	1	0	1	0
Copper	3	0	3	0
General mining	4	1	4	1
Gold mining	4	0	4	0
Integrated oil and gas	19	5	19	5
Iron and steel	10	0	10	0
Oil: crude producers	6	0	6	0
Platinum and precious metals	2	0	2	0
TOTAL	50	6	50	6

2.4.3 Non-current assets

The 2020 disclosures with respect to climate change on non-current assets are almost identical to those in 2019. Specifically, and as in 2019, none of the sample companies identifies climate-change risks as an important factor in determining the useful lives of its assets in 2020. Also, again as in 2019, in 2020 all companies capitalise specific future expenses related to climate change (such as restoration costs) in their balance sheet but only 13 of them use financial instruments to settle future environmental obligations (Table 2.8).

Anglo American Platinum Ltd is an example of a company that employs financial instruments for settling its future environmental obligations; a relevant extract from its 2020 report is shown below. Companies that employ such financial instruments secure funds in an attempt to render the settlement of these obligations more probable.

'The Platinum Producers' Environmental Trust was created to fund the estimated cost of pollution control, rehabilitation and mine closure at the end of the lives of the group's mines. The group funds its environmental obligations through a combination of funding the Platinum Producers' Environmental Trust and providing guarantees to the Department of Mineral Resources. Contributions are determined on the basis of the estimated environmental obligation over the life of a mine. Contributions made are reflected in non-current investments held by the Platinum Producers' Environmental Trust if the investments are not short term.' (Anglo American Platinum Ltd 2020 annual report (financial report): 31).

Further, for capitalisation of carbon allowances as intangible assets, 12 companies are found to adopt this approach, compared with 11 last year (Table 2.9).

TABLE 2.8: Number of companies using financial instruments to settle future environmental obligations

	2019		2020	
INDUSTRY	NO	YES	NO	YES
Aluminum	1	0	1	0
Coal	1	0	1	0
Copper	2	1	2	1
General mining	3	2	3	2
Gold mining	3	1	3	1
Integrated oil and gas	19	5	19	5
Iron and steel	10	0	10	0
Oil: crude producers	4	2	4	2
Platinum and precious metals	0	2	0	2
TOTAL	43	13	43	13

TABLE 2.9: Number of companies recognising carbon allowances as intangible assets

	2019		2020	
INDUSTRY	NO	YES	NO	YES
Aluminum	0	1	0	1
Coal	1	0	1	0
Copper	3	0	3	0
General mining	4	1	4	1
Gold mining	4	0	4	0
Integrated oil and gas	16	8	15	9
Iron and steel	9	1	9	1
Oil: crude producers	6	0	6	0
Platinum and precious metals	2	0	2	0
TOTAL	45	11	44	12

2.4.4 Provisions and contingent liabilities

Companies' disclosure behaviour for provisions and contingent liabilities did not change dramatically in 2020 compared with 2019. In fact, only one more company (16 instead of 15) is found to recognise provisions related to climate-change risks (Table 2.10) and only one more company (seven instead of six) recognises climate-change risk as an important determinant of contingent liabilities (Table 2.11).

TABLE 2.10: Number of companies that consider risks related to climate change in the estimation of their provisions

	2019		2020	
INDUSTRY	NO	YES	NO	YES
Aluminum	0	1	0	1
Coal	1	0	1	0
Copper	3	0	3	0
General mining	2	3	2	3
Gold mining	4	0	4	0
Integrated oil and gas	17	7	16	8
Iron and steel	7	3	7	3
Oil: crude producers	6	0	6	0
Platinum and precious metals	1	1	1	1
TOTAL	41	15	40	16

TABLE 2.11: Number of companies that identify climate change as an important factor in their contingent liabilities

	2019		2020	
INDUSTRY	NO	YES	NO	YES
Aluminum	1	0	1	0
Coal	1	0	1	0
Copper	3	0	3	0
General mining	5	0	5	0
Gold mining	3	1	3	1
Integrated oil and gas	20	4	19	5
Iron and steel	9	1	9	1
Oil: crude producers	6	0	6	0
Platinum and precious metals	2	0	2	0
TOTAL	50	6	49	7

2.4.5 Auditor's report

In 2020, climate change has drawn auditors' attention substantially more than in 2019. Specifically, in 13 companies (compared with eight in 2019), the audit report recognises climate-change risks as giving rise to key audit matters (Table 2.12). Figure 2.12 presents an extract from mineral and energy company, Glencore PLC's report: one of the most comprehensive discussions in the audit report that we came across as identifying climate-change risk as key audit matter.

IN 2020, CLIMATE CHANGE HAS DRAWN AUDITORS' ATTENTION SUBSTANTIALLY MORE THAN IN 2019. SPECIFICALLY, IN 13 COMPANIES (COMPARED WITH EIGHT IN 2019), THE AUDIT REPORT RECOGNISES CLIMATE-CHANGE RISKS AS GIVING RISE TO KEY AUDIT MATTERS.

TABLE 2.12: Number of companies whose auditors acknowledge that climate change gives rise to key audit matters

	2019		2020	
INDUSTRY	NO	YES	NO	YES
Aluminum	1	0	1	0
Coal	1	0	1	0
Copper	3	0	2	1
General mining	3	2	3	2
Gold mining	4	0	4	0
Integrated oil and gas	19	5	16	8
Iron and steel	9	1	8	2
Oil: crude producers	6	0	6	0
Platinum and precious metals	2	0	2	0
TOTAL	48	8	43	13

FIGURE 2.12: Key audit matters as identified in Glencore PLC's audit report, 2020

Description of key audit matter
As described on pages 16 to 21, climate change, and the world's response to climate change, present significant risks and uncertainties for Glencore's energy industrial assets as a result of the sensitivity to demand for future fossil fuels, particularly thermal coal. Glencore's thermal coal portfolio at 31 December 2020 has a carrying value of $11.9 billion. As described on page 16, in December 2020 the Group published its *Climate Report 2020: Pathway to net zero*, which sets out the Group's target of a 40% reduction in total emissions by 2035 and its ambition to achieve net zero total emissions by 2050. To test the resilience of its portfolio to the impacts of climate change, the Group has developed three scenarios: • Current Pathway scenario, consistent with the IEA Stated Policies scenario (STEPS); • Rapid Transition scenario, consistent with IEA Sustainable Development scenario (SDS), and • Radical Transformation scenario, consistent with the IEA Net Zero Emissions by 2050 scenario (NZE2050). Glencore's base case production decline profile used in its internal modelling and business plans is consistent with the Group's net zero ambition. However, as explained in note 1, the base case price assumptions used in management's impairment assessment (see the key audit matter above) are higher than those assumed in STEPS and SDS. While under all credible scenarios, fossil fuels (coal, gas and oil) will continue to be part of the global energy mix into the future, policies supporting the Rapid Transition and Radical Transformation scenarios would lead to significant coal demand decline over the longer term and likely lower prices. The Group has set out in note 1 to the financial statements illustrative impairment downside impacts to current carrying values at possible commodity price curves consistent with STEPS and SDS. Under STEPS the illustrative impairment is $2.5 billion while under SDS the illustrative impairment is $7.7 billion. We identified a key audit matter relating to the accuracy and presentation of this analysis and the consistency of the Group's net zero ambition with its internal modelling and business plans, including those used in its impairment assessment.

Source: Glencore PLC 2020 annual report: 122

3. Conclusions

In August 2021 and ahead of the 2021 UN Climate Change Conference in Glasgow, the UN Intergovernmental Panel on Climate Change (IPCC) released its sixth Assessment Report which rings the bell more clearly and loudly than ever before: human influence has warmed the atmosphere and led to changes in the Earth's climate and only immediate human action may mitigate the climate-change risks mankind is facing (IPCC 2021).

In light of this urgency and of various recent initiatives intended to render companies more transparent about how they affect, and are affected by, climate change, we conducted this follow up study in which we compared the findings of the analysis of the 2019 annual reports of 56 of the largest 'polluters' in the extractive industries with their 2020 annual reports.

Our findings indicate that companies have improved their disclosures on climate change in 2020 compared with 2019 but the improvement is overwhelmingly found in the front end of the annual report. The back ends of the reports exhibit just marginal improvements. As such, we can say that there has been a shift in attention towards discussion of climate-change risks but there is still long way to go until these are substantially integrated into companies' financial statements. The disconnection between the two parts of companies' annual reports certainly raises concerns and is another call for financial reporting standard setters to continue their efforts in assisting firms to integrate climate-change risks in the recognition and measurement of financial statement items and their corresponding disclosures.

As was the case for our previous report, we acknowledge that our research is bounded by two limitations. First, our findings about accounting policies, provisions and contingent liabilities include findings from companies that discuss their environmental impact, without necessarily making explicit reference to climate change. Had a stricter approach been taken, our results about the back end would reveal even lower level of disclosures. Second, because one of the aims is to examine the integration of climate-change risks into companies' financial statements, our analysis focuses only on the companies' annual reports. We do not consider other reporting media that may include detailed relevant information.

About the **authors**

Dr Diogenis Baboukardos, University of Essex

Diogenis is an assistant professor at the University of Essex. He is an affiliate of the Adam Smith Observatory of Corporate Reporting Practices at the University of Glasgow and an officer of the British Accounting & Finance Association Financial Accounting & Reporting Special Interest Group. Diogenis is particularly interested in issues related to financial reporting; sustainability reporting; integrated reporting and corporate governance. He has attracted research grants from various organisations such as the Financial Reporting Council and the Association of Chartered Certified Accountants. Diogenis has a rich professional record with extensive experience in accounting and taxation consultancy positions.

Dr Dionysia Dionysiou, University of Stirling

Dionysia is a senior lecturer in accounting and finance at the University of Stirling. Before that, Dionysia was a researcher within the INTACCT network, where she worked on the implications of the mandatory implementation of IFRS in European countries. Dionysia's main areas of research interest are in corporate finance and corporate distress, as well as financial reporting and market-based accounting. She has published on these areas in internationally acclaimed journals and, for her practice-relevant research, she has received research grants from the Institute of Chartered Accountants of Scotland (ICAS) and ACCA.

Dr Richard Slack, Durham University

Richard is a professor in accounting at Durham University Business School. Richard joined Durham University in 2012, having previously been professor in accounting at Newcastle Business School, Northumbria University. Before his academic career, Richard, a graduate of St Andrews University, worked at Price Waterhouse and is a qualified chartered accountant. Richard's research encompasses areas of accounting information, and its use by, and usefulness to, capital market users. Further, Richard is interested in the way information is presented by companies and whether narrative disclosure is decision-useful to stakeholder groups.

Dr Ioannis Tsalavoutas, University of Glasgow

Ioannis is a professor of accounting at the University of Glasgow. His main area of expertise is financial accounting and reporting: in particular, investigating companies' reporting practices under IFRS across different jurisdictions, along with any economic consequences that may arise from divergence in practice. Ioannis' work experience includes positions as an accounting assistant (in Greece) and as a financial accounting and reporting analyst at Company Reporting Ltd in Edinburgh. Before joining the University of Glasgow in January 2015, Ioannis was a lecturer in accounting at the University of Stirling.

Dr Fanis Tsoligkas, University of Bath

Fanis is a lecturer in accounting at the University of Bath. His main research interests lie in the fields of financial reporting discretion and the adoption of IFRS. They also include the capital market effects of accounting information and the effect of the trading behaviour of corporate executives and directors. Before joining academia, Fanis practised accountancy in Greece.

References

Anderson, N. (2019), 'IFRS Standards and Climate-related Disclosures', IFRS Foundation, <https://www.ifrs.org/content/dam/ifrs/news/2019/november/in-brief-climate-change-nick-anderson.pdf>, accessed 23 September 2021.

Baboukardos, D., Dionysiou, D., Slack, R., Tsalavoutas, I. and Tsoligkas, F. (2021), *Climate Change Risk-related Disclosures in Extractive Industries* (ACCA and Adam Smith Business School, doi:10.36399/gla.pubs.234936).

Carbon Tracker (2021), *Flying Blind: The Glaring Absence of Climate Risk in Financial Reporting* <https://carbontracker.org/reports/flying-blind-the-glaring-absence-of-climate-risks-in-financial-reporting/> accessed 22 September 2021.

Energy People (2020a), 'Underperforming Offshore Wells Rack up over $100 billion in Abandonment Liabilities Worldwide', [website article], 8 June 2020 <https://energypeople.com/news/story/underperforming-offshore-wells-rack-up-over--100-billion-in-abandonment-liabilities-worldwide>, accessed 17 September 2021.

Energy People (2020b), 'IEA: The Energy Sector will Never be the Same Again', [website article], 16 June 2020 <https://energypeople.com/news/story/iea--the-energy-sector-will-never-be-the-same-again>, accessed 17 September 2021.

European Commission (2019), Communication from the Commission. Guidelines on Non-financial Reporting: Supplement on Reporting Climate-related Information 2019/C 209/01.

Flammer, C., Toffel, M., Viswanathan, K. (2021), 'Shareholders Pressing for Climate Risk Disclosures Are Doing Companies a Favour', [website article], PRI, <https://www.unpri.org/pri-blog/shareholders-pressing-for-climate-risk-disclosures-are-doing-companies-a-favour/7713.article>, accessed 17 September 2021.

IFRS Foundation (2020), *Effects of climate-related matters on financial statements* <https://www.ifrs.org/content/dam/ifrs/supporting-implementation/documents/effects-of-climate-related-matters-on-financial-statements.pdf>, accessed 27 September 2021.

IPCC (Intergovernmental Panel on Climate Change) (2021), 'Summary for Policymakers', in *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*, eds. Masson-Delmotte, V., P. Zhai, A. Pirani, S. L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T. K. Maycock, T. Waterfield, O. Yelekçi, R. Yu and B. Zhou. (Cambridge University Press).

IASB (International Accounting Standards Board) (2021), *Request for Information: Third Agenda Consultation* <https://www.ifrs.org/content/dam/ifrs/project/third-agenda-consultation/rfi-third-agenda-consultation-2021.pdf>, accessed 23 September 2021.

Jones, H. (2021a). 'Banks in EU to publish world's first 'green' yardstick from next year', Reuters. <https://www.reuters.com/article/us-climate-change-eu-banks-idUSKCN2AT1XU>, accessed 23 September 2021.

Jones, H. (2021b), 'Battle to Host Global Sustainability Company Disclosures Body Heats Up' [website article] Reuters, 1 March <https://www.reuters.com/business/sustainable-business/battle-host-global-sustainability-company-disclosures-body-heats-up-2021-09-01/>, accessed 23 September 2021.

McGrath C. (2021), 'UK and NZ Lead Way on Mandatory Climate Risk Disclosures', [website article], Australian Institute of Company Directors, <https://aicd.companydirectors.com.au/membership/membership-update/uk-and-nz-lead-way-on-mandatory-climate-risk-disclosures>, accessed 17th of September 2021.

Schriber, A. and Koppes, S. (2021), 'Climate Risk is Financial Risk – For Banks it's a Board-level Issue', [website article] <https://home.kpmg/xx/en/home/insights/2021/04/banks-climate-change-reporting.html?cid=linkd_soc_xx-acx_ifrs-news&utm_medium=soc&utm_source=linkd&utm_content=xx-acx&utm_campaign=ifrs-news>, accessed 17th of September 2021.

Appendix A1:
Instrument for annual report analysis: **Front end**

RESERVES AND RESOURCES REPORTING/STATEMENT	
RRR1	Does the company provide a reserves/resources statement with relevant numerical information?
RRR2	Does the company report an assessment of climate-change/environment-related risks and/or liabilities that are pertinent to its projects, including, but not limited to, legislative requirements, assumptions and limitations?
SCENARIO ANALYSIS	
SA1	Does the company provide scenario analysis which considers climate-change risks?
SA2	For the companies that provide a scenario analysis as above, do they provide, within this, quantitative information about the climate-change factors, assumptions and impacts of their operations?
BUSINESS MODEL	
BM1	Does the company explicitly discuss its business model?
BM2	Does the company identify addressing climate-change risk as an integral part of its business model?
BM3	Does the company consider any international initiative for climate change (eg the Paris Agreement) in the discussion of its business model?
CLIMATE CHANGE-RELATED PERFORMANCE INDICATORS (PIS)	
KPI1	Does the company have climate-change-related PIs?
KPI2	Does the company integrate financial and climate-change-related information into its PIs?
KPI3	Does the company link executives' remuneration to climate-change-related performance metrics?
TCFD	
TCFD	Does the company follow the recommendations of the Task Force on Climate-related Financial Disclosures?

Appendix A2:
Instrument for annual report analysis: **Back end**

ACCOUNTING POLICIES	
AP1	Is climate change recognised as an important factor in the company's judgements and sources of estimations uncertainty? – In financial instruments?
AP2	Is climate change recognised as an important factor in the company's judgements and sources of estimations uncertainty? – In tangible and intangible assets?
AP3	Is climate change recognised as an important factor in the company's judgements and sources of estimations uncertainty? – In exploration and evaluation assets?
AP4	Is climate change recognised as an important factor in the company's judgements and sources of estimations uncertainty? – In impairment testing?
AP5	Is climate change recognised as an important factor in the company's judgements and sources of estimations uncertainty? – In provisions and contingent liabilities?
IMPAIRMENT TESTING	
IT1	Is climate-change risk recognised to affect the company's future estimated cash flows and hence the recoverable amount of its assets such as property, plant and equipment; mineral resources; evaluation and exploration assets; financial instruments; intangible assets; and goodwill?
IT2	When a company recognises impairments, does it recognise climate risk factors affecting these?
NON-CURRENT ASSETS	
NCA1	Are climate-change-related risks considered when estimating the useful lives of the company's assets?
NCA2	Does the company capitalise expenses related to climate change?
NCA3	Does the company use financial instruments in order to settle future environmental obligations (eg South Africa fund)?
NCA4	Does the company recognise carbon allowances as intangible assets?
PROVISIONS AND CONTINGENT LIABILITIES	
PCL1	Does the company consider climate-change-related risks in the estimation of its provisions?
PCL2	Does the company identify climate-change risk as important factor in its contingent liabilities?
AUDIT REPORT	
AR	Does climate change give rise to key audit matters?

Appendix B:
Sample companies

COMPANY	COUNTRY	COMPANY	COUNTRY
Integrated oil and gas		**Coal**	
YPF SA	ARGENTINA	Banpu PCL	THAILAND
OMV AG	AUSTRIA		
Petroleo Brasileiro SA Petrobras	BRAZIL	**Copper**	
Cenovus Energy Inc	CANADA	KGHM Polska Miedz SA	POLAND
Husky Energy Inc	CANADA	Antofagasta PLC	UNITED KINGDOM
Suncor Energy Inc	CANADA	Kaz Minerals PLC	UNITED KINGDOM
Ecopetrol SA	COLOMBIA		
Total SE	FRANCE	**General mining**	
MOL Magyar Olajes Gazipari Nyrt	HUNGARY	Teck Resources Ltd	CANADA
Oil and Natural Gas Corporation Ltd	INDIA	Imerys SA	FRANCE
Eni SpA	ITALY	Anglo American plc	UNITED KINGDOM
Petronas Dagangan Bhd	MALAYSIA	Glencore PLC	UNITED KINGDOM
Royal Dutch Shell PLC	NETHERLANDS	Rio Tinto PLC	UNITED KINGDOM
Equinor ASA	NORWAY		
Polskie Gornictwo Naftowe i Gaz. SA	POLAND	**Gold mining**	
Galp Energia SGPS SA	PORTUGAL	Barrick Gold Corp	CANADA
Gazprom Neft' PAO	RUSSIAN FEDER.	Zijin Mining Group Co Ltd	CHINA
Gazprom PAO	RUSSIAN FEDER.	Polyus PAO	RUSSIAN FEDER.
NK Lukoil PAO	RUSSIAN FEDER.	AngloGold Ashanti Ltd	SOUTH AFRICA
NK Rosneft' PAO	RUSSIAN FEDER.		
Novatek PAO	RUSSIAN FEDER.	**Iron and steel**	
Repsol SA	SPAIN	Fortescue Metals Group Ltd	AUSTRALIA
PTT PCL	THAILAND	Vale SA	BRAZIL
BP PLC	UNITED KINGDOM	JSW Steel Ltd	INDIA
		Tata Steel Ltd	INDIA
Oil: crude producers		Vedanta Ltd	INDIA
Santos Ltd	AUSTRALIA	ArcelorMittal SA	NETHERLANDS
Woodside Petroleum Ltd	AUSTRALIA	Novolipetsk Steel PAO	RUSSIAN FEDER.
Canadian Natural Resources Ltd	CANADA	Severstal' PAO	RUSSIAN FEDER.
Crescent Point Energy Corp	CANADA	EVRAZ plc	UNITED KINGDOM
CNOOC Ltd	HONG KONG	Ferrexpo PLC	UNITED KINGDOM
PTT Exploration and Production PCL	THAILAND		
		Platinum and precious metals	
Aluminum		Anglo American Platinum Ltd	SOUTH AFRICA
Norsk Hydro ASA	NORWAY	Sibanye Stillwater Ltd	SOUTH AFRICA

PI-CLIMATE-RISK-EI-COMPARATIVE-STUDY

ACCA The Adelphi 1/11 John Adam Street London WC2N 6AU United Kingdom / +44 (0)20 7059 5000 / **www.accaglobal.com**