



CLIMATE CHANGE RISK-RELATED DISCLOSURES IN EXTRACTIVE COMPANIES – A FOLLOW UP 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. 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

Contents

Context	4
Sample	4
Method	5
Findings – Front end	5
Findings – Back end	6
Commentary	7
Recommendations	7
APPENDIX A: Sample companies	8
APPENDIX B: Instrument for annual report analysis: Front end	9
APPENDIX B: Instrument for annual report analysis: Back end	10
APPENDIX C: Results	11
APPENDIX D: Examples	12

Context

In February 2021, ACCA and the University of Glasgow published a report on the disclosures that extractive companies around the world were making in their 2019 corporate reports. During 2020, we gained an impression that there had been a step change in the recognition of the impact that climate change might have, by investors and by companies.

In particular, several major extractive companies made announcements that reinforced that change of perception by disclosing significant impairments and changes in strategy. So it seemed useful to look at the extent to which that could be seen in the 2020 reports of the same companies, using the same measures as before.

Sample

Both the study of the 2019 reports and this follow-up covered both the annual management report (front end) and the financial statements (back end) of the reports. To simplify the interpretation of the results of the financial statements, the studies were restricted to those reporting using International Financial Reporting Standards (IFRS) or national standards based substantially on them. The main exclusions were therefore US companies. The studies were of extractive companies because this is a sector expected to be acutely affected: negatively for hydrocarbon producers and those in iron and steel, but positively for some metal (for example copper) producers, which could be expected to benefit.

The 60 extractive companies chosen for the 2019 study were those that had the largest Scope 1 and Scope 2 carbon emissions in the preceding years and with publicly available reports in English. The sample included 13 companies (mostly from India and Australia where March and June reporting dates are common) whose most recent reports are not yet available. This follow-up study therefore covers 47 companies from around the world (Figure 1). More than half the sample are based in Europe, compared with just under half in the 2019 report.

The 47 are split between sectors as shown in Table 1.

The most carbon-exposed companies in oil, gas and coal account for just over half the sample in both years. There are proportionally fewer iron and steel companies in the 2020 study, because of the absence of the Indian companies. Some of the general mining companies have interests in oil, gas and coal. Some of the changes noted below may in part reflect the absence of the 13 companies missing as yet from the 2020 analysis. The 47 companies are identified in Appendix A.

For this study, in addition to the 47 from the 2019 one, a few smaller listed companies were looked at to judge whether any trends in the larger extractives applied to the sector more widely. These were seven companies listed in London from the oil, gas and coal sector – four exploration companies listed on the AIM (secondary market) and three mid-size oil and gas producers. We also looked at the report of Saudi Aramco, the world's largest oil and gas producer.



FIGURE 1: Geographical distribution of the reports

TABLE 1: Distribution of the sample reports by sector

SECTOR	2020	2019
Oil, gas and coal	26	31
Iron and steel	6	11
General mining and other metals	15	18
TOTAL	47	60

Method

Exactly the same questions were considered in 2020 as had been in 2019. These are set out in Appendix B. These identify matters relevant to climate change that might be expected to appear in the annual reports and accounts of companies that could be significantly affected.

Findings – Front end

For the front end of the reports, this study found that 68% of the possible climate-related disclosures had been provided and that this was up significantly from the 52% found in the 2019 reports. This would seem to bear out the expectation that climate risk disclosures are now being addressed much more completely. There has indeed been a step change in the reporting by these larger companies.

The matters in the front half where this improvement among was most marked are set out in Table 2.

> 68% OF THE POSSIBLE CLIMATE-RELATED DISCLOSURES HAD BEEN PROVIDED AND THAT THIS WAS UP SIGNIFICANTLY FROM THE 52% FOUND IN THE 2019 REPORTS.

Oil and gas companies provided much of the improvement by including scenario analyses (particularly recommended by the TCFD) and the incorporation of climate risk in their business model.

Despite this step change in front-end reporting, there is a way to go. It remains the case that scenario analyses are only provided by about half these large companies. While the great majority have climate-related key performance indicators (KPIs) (see Evraz example in Appendix D), under half link those KPIs to executive remuneration. One-third have not made a commitment to following the disclosures recommended by TCFD.

The full results are available as Appendix C.

The smaller hydrocarbon companies appear to be lagging well behind in discussing the climate risks, as their equivalent figure was only 25%. For them, the discussion of key climate change impacts was very scant as most of their score derived from providing numerical reserves information and a description of their business model. This was also true of the largest company, Saudi Aramco.

TABLE 2: Areas covered in the front end of the sample reports in 2019 and 2020

	2020 %	2019 %
Provision of a reserves report, including relevant numerical information	74	60
Provision of scenario analysis that considers climate change risks	53	23
A statement that addressing climate change risk is an integral part of the company's business model	83	60
Inclusion of an international initiative for climate change (eg the Paris Agreement) in the discussion of the company's business model	45	25
Provision of a statement that the company follows the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD).	66	43

Findings – Back end

In the financial statements there has been much less change. The potential effects of climate change remain less discussed than in the front half of the reports, as was the case in the 2019 review. As some investors have commented, this is a concern because the extent to which the implications of climate change are incorporated into impairments of assets and in asset lives/depletion for depreciation, in particular, is often not clear. Likewise, it is not made evident whether there is alignment between the unaudited discussion of strategy in the front end and the audited carrying values of assets in the back end. See the examples from Total Energies and from BP in Appendix D, looking particularly at forward estimates of crude oil prices, which can be seen as a key disclosure and link between the different parts of the report.

Overall, the 2020 study found that in the financial statements only 27% of possible climate-related disclosures were provided by the companies, and this was little changed from the 26% in 2019.

That means that significant potential impacts of climate change are still not addressed in the financial statements.

12

For example, none of the sample reports discussed assets' useful lives and depletion with reference to climate change. There remain fewer explanations than there should be of the impact on the actual impairments recognised. Climate change features in only a small number of provisions and contingencies.

Table 3 shows areas where there had been some improvement, albeit still at a low level. Of these, the increasing reference to climate change as a matter of judgement in estimating impairment is an encouraging sign, even if the impact on any impairments recognised in the year is made clear much less frequently. Auditors are also more frequently identifying climate change as a significant matter for them to assess.

The smaller hydrocarbon companies made little or no reference to climate change in their financial statements. The average was 13% of possible climate change disclosures, half that of the large companies in the main sample. None of the possible matters were disclosed in Saudi Aramco's accounts.

2020 % 2019 % Climate change included as a matter of judgement or estimation uncertainty in the following: • Carrying values of exploration and evaluation intangibles 2 6 • Carrying values of property, plant and equipment (PP&E) 9 2 • Impairments 30 18 Recognition of carbon allowances as assets or liabilities 23 17 21 15 Climate change included as a key audit matter

TABLE 3: Areas in the financial statements showing greater recognition of climate change

THE 2020 STUDY FOUND THAT IN THE FINANCIAL STATEMENTS ONLY 27% OF POSSIBLE CLIMATE-RELATED DISCLOSURES WERE PROVIDED BY THE COMPANIES, AND THIS WAS LITTLE CHANGED FROM THE 26% IN 2019.

Commentary

The better discussion of climate change in the front half of the reports is a marked change, especially in the business model and the provision of scenario analysis. The increasing adoption of the TCFD's recommendations should help to continue these trends. They probably reflect the increased investor interest and regulatory requirements, current and future. These are, however, crude measures. For example, environmental strategy, KPIs and related executive remuneration in the oil and gas sector may consist of the reduction of Scope 1 and 2 emissions from their own production. While happy to include and measure these impacts on the environment and society, companies seem more reluctant to incorporate the Scope 3 emissions that may cause consumers and governments to switch to other sources of energy and endanger oil and gas business prospects.

Why has there yet been much less evidence of the recognition of climate change in the financial statements, especially effects on asset depreciation and impairment? The answer is not clear. A common narrative in the hydrocarbon sector may refer to energy transition but may also conclude that their products (especially gas) will continue to play a significant role for many years to come. Those who claim to be low-cost producers project that they will continue to be viable as demand shrinks and others are priced out. See an example from Tullow Oil in Appendix D.

Recommendations

'VERY FEW OF THE SAMPLE COMPANIES DISCUSS EXTENSIVELY AND IN A COMPLETE MANNER THE IMPACT OF CLIMATE CHANGE RISKS ON THEIR FUTURE FINANCIAL PERFORMANCE'.

This conclusion from the 2019 report still holds, even though this study has confirmed that there has been a step change in the reporting in the front end of reports. Companies should be ensuring that their reporting of climate risks is more complete. The impacts in the financial statements, in particular, need to be clearer as well as fully aligned with the front end. It seems that smaller companies need to make greater strides.

Much of the improvement may have derived from investor pressure for better explanations of how companies are addressing these important issues. That pressure seems likely to continue.

Capital markets regulators should be assisting investors by requiring that listed companies take up and comply with the TCFD recommendations. Companies on alternative markets such as AIM should not be excused from doing so. Standard setters have a role to play in setting widely accepted standards for the front-end reporting to capital markets. The decision by the IFRS Foundation¹, in particular, to establish a new board to set such standards (with an immediate focus on climate change) should be very helpful. The International Accounting Standards Board (IASB) are currently consulting on their agenda for the next five years² and are suggesting a possible project to improve the reporting of climate change in financial statements. This report indicates that this should be a priority. The two boards working together should be well placed to improve the alignment of reporting in front and back ends, for example on key assumptions and ensuring realistic future prices for carbon and oil.

Once standards are set, then auditors can provide assurance to investors and others on the front end as well as the back. The EU is proposing that assurance will be required for the sustainability report. Elsewhere assurance may be voluntary, but company directors should carefully consider obtaining it.

¹ IFRS – IFRS Foundation Trustees announce strategic direction and further steps based on feedback to sustainability reporting consultation

² IFRS - Request for Information and comment letters: Third Agenda Consultation

APPENDIX A: Sample companies

Oil, gas and coalIron and SteelIron and SteelYPF SAARGENTINAVale SABRAZILOMV AGAUSTRIAArcelorMittal SANETHERLANDSPetroleo Brasileiro SABRAZILNovolipetsk Steel PAORUSSIAN FEDERATIONCenovus Energy IncCANADASeverstal' PAORUSSIAN FEDERATIONCanadian Natural Resources LtdEVRAZ plcUNITED KINGDOMSuncor Energy IncCANADAFerrexpo PLCUNITED KINGDOMEcopetrol SACOLOMBIATotal SEFRANCEGeneral mining and other metals	COMPANY	COUNTRY	COMPANY	COUNTRY
YPF SAARGENTINAVale SABRAZILOMV AGAUSTRIAArcelorMittal SANETHERLANDSPetroleo Brasileiro SABRAZILNovolipetsk Steel PAORUSSIAN FEDERATIONCenovus Energy IncCANADASeverstal' PAORUSSIAN FEDERATIONCanadian Natural Resources LtdEVRAZ plcUNITED KINGDOMSuncor Energy IncCANADAFerrexpo PLCUNITED KINGDOMEcopetrol SACOLOMBIATotal SEFRANCEGeneral mining and other metals	Oil, gas and coal		Iron and Steel	
OMV AGAUSTRIAArcelorMittal SANETHERLANDSPetroleo Brasileiro SABRAZILNovolipetsk Steel PAORUSSIAN FEDERATIONCenovus Energy IncCANADASeverstal' PAORUSSIAN FEDERATIONCanadian Natural Resources LtdEVRAZ plcUNITED KINGDOMSuncor Energy IncCANADAFerrexpo PLCUNITED KINGDOMEcopetrol SACOLOMBIATotal SEFRANCEGeneral mining and other metals	YPF SA	ARGENTINA	Vale SA	BRAZIL
Petroleo Brasileiro SABRAZILNovolipetsk Steel PAORUSSIAN FEDERATIONCenovus Energy IncCANADASeverstal' PAORUSSIAN FEDERATIONCanadian Natural Resources LtdEVRAZ plcUNITED KINGDOMSuncor Energy IncCANADAFerrexpo PLCUNITED KINGDOMEcopetrol SACOLOMBIA	OMV AG	AUSTRIA	ArcelorMittal SA	NETHERLANDS
Cenovus Energy IncCANADASeverstal' PAORUSSIAN FEDERATIONCanadian Natural Resources LtdEVRAZ plcUNITED KINGDOMSuncor Energy IncCANADAFerrexpo PLCUNITED KINGDOMEcopetrol SACOLOMBIATotal SEFRANCEGeneral mining and other metals	Petroleo Brasileiro SA	BRAZIL	Novolipetsk Steel PAO	RUSSIAN FEDERATION
Canadian Natural Resources Ltd EVRAZ plc UNITED KINGDOM Suncor Energy Inc CANADA Ferrexpo PLC UNITED KINGDOM Ecopetrol SA COLOMBIA COLOMBIA COLOMBIA Total SE FRANCE General mining and other metals	Cenovus Energy Inc	CANADA	Severstal' PAO	RUSSIAN FEDERATION
Suncor Energy Inc CANADA Ferrexpo PLC UNITED KINGDOM Ecopetrol SA COLOMBIA France France Total SE FRANCE General mining and other metals	Canadian Natural Resources Ltd		EVRAZ plc	UNITED KINGDOM
Ecopetrol SA COLOMBIA Total SE FRANCE General mining and other metals	Suncor Energy Inc	CANADA	Ferrexpo PLC	UNITED KINGDOM
Total SE FRANCE General mining and other metals	Ecopetrol SA	COLOMBIA		
	Total SE	FRANCE	General mining and other metals	
MOL Magyar Olajes Gazipari Nyrt HUNGARY Antofagasta PLC UNITED KINGDOM	MOL Magyar Olajes Gazipari Nyrt	HUNGARY	Antofagasta PLC	UNITED KINGDOM
Eni SpA ITALY Kaz Minerals PLC UNITED KINGDOM	Eni SpA	ITALY	Kaz Minerals PLC	UNITED KINGDOM
Petronas Dagangan Bhd MALAYSIA Teck Resources Ltd CANADA	Petronas Dagangan Bhd	MALAYSIA	Teck Resources Ltd	CANADA
Royal Dutch Shell PLC NETHERLANDS Imerys SA FRANCE	Royal Dutch Shell PLC	NETHERLANDS	Imerys SA	FRANCE
Equinor ASA NORWAY Anglo American plc UNITED KINGDOM	Equinor ASA	NORWAY	Anglo American plc	UNITED KINGDOM
Polskie Gornictwo Naftowe i Gaz. SA POLAND Glencore PLC UNITED KINGDOM	Polskie Gornictwo Naftowe i Gaz. SA	POLAND	Glencore PLC	UNITED KINGDOM
Galp Energia SGPS SA PORTUGAL Rio Tinto PLC UNITED KINGDOM	Galp Energia SGPS SA	PORTUGAL	Rio Tinto PLC	UNITED KINGDOM
NK Lukoil PAO RUSSIAN Barrick Gold Corp CANADA FEDERATION CANADA	NK Lukoil PAO	RUSSIAN FEDERATION	Barrick Gold Corp	CANADA
NK Rosneft' PAO RUSSIAN FEDERATION Polyus PAO RUSSIAN FEDERATION	NK Rosneft' PAO	RUSSIAN FEDERATION	Polyus PAO	RUSSIAN FEDERATION
Novatek PAO RUSSIAN KGHM Polska Miedz SA POLAND FEDERATION POLSKA	Novatek PAO	RUSSIAN FEDERATION	KGHM Polska Miedz SA	POLAND
Repsol SA SPAIN Norsk Hydro ASA NORWAY	Repsol SA	SPAIN	Norsk Hydro ASA	NORWAY
BP PLC UNITED KINGDOM Zijin Mining Group Co Ltd MAINLAND CHINA	BP PLC	UNITED KINGDOM	Zijin Mining Group Co Ltd	MAINLAND CHINA
Woodside Petroleum AUSTRALIA AngloGold Ashanti Ltd SOUTH AFRICA	Woodside Petroleum	AUSTRALIA	AngloGold Ashanti Ltd	SOUTH AFRICA
Santos Ltd AUSTRALIA Anglo American Platinum Ltd SOUTH AFRICA	Santos Ltd	AUSTRALIA	Anglo American Platinum Ltd	SOUTH AFRICA
CNOOC Ltd HONG KONG Sibanye Stillwater Ltd SOUTH AFRICA	CNOOC Ltd	HONG KONG	Sibanye Stillwater Ltd	SOUTH AFRICA
Banpu PCL THAILAND	Banpu PCL	THAILAND		
PTT Exploration and Production PCL THAILAND	PTT Exploration and Production PCL	THAILAND		
PTT PCL THAILAND	PTT PCL	THAILAND		

Smaller companies sample – oil, gas and coal companies from the London Stock Exchange

COMPANY	LISTING	MARKET CAP £M	ACTIVITY
Borders and Southern Petroleum	AIM	4.6	Offshore oil and gas exploration in the Falkland Islands
Providence Resources	AIM	39.5	Offshore oil and gas exploration in Ireland
Edenville Energy	AIM	6.5	Coal development in Tanzania
Zephyr Energy	AIM	74.7	Onshore oil exploration in Western USA
Nostrum Oil & Gas	Full	21.3	Gas production in Kazakhstan
Gulf Keystone	Full	358.5	Oil production and exploration in Kurdistan
Tullow Oil	Full	661.3	Exploration and production in Africa and South America

The market capitalisations above are as at 23/7/2021.

APPENDIX B: Instrument for annual report analysis: Front end

RESERV	ES AND RESOURCES REPORTING (RRR)/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?
SCENA	RIO 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?
BUSINE	SS 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?
CLIMAT	E 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?
TASK FO	DRCE ON CLIMATE-RELATED FINANCIAL DISCLOSURE (TCFD)
TCFD	Does the company follow the recommendations of the TCFD?

APPENDIX B: Instrument for annual report analysis: Back end

ACCOU	NTING POLICIES NOTE
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?
IMPAIRM	MENT TESTING NOTE
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-CI	JRRENT ASSETS NOTE
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?
PROVIS	IONS AND CONTINGENT LIABILITIES NOTE
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?
AR	Does climate change give rise to key audit matters?

APPENDIX C: Results

		2020 RESULTS				2019 RESULTS		
CODE	QUESTION	OIL, GAS & COAL	IRON & STEEL	MINING	TOTAL	%	TOTAL	%
FRONT	END							
RR1	Reserves – numerical analysis	19	4	12	35	74	36	60
SA1	Scenario analysis	15	3	7	25	53	14	23
BM1	Discuss business model	22	6	13	41	87	46	77
BM2	Includes climate change	21	6	12	39	83	36	60
BM3	Refers to international agreements	11	5	5	21	45	15	25
KPI1	Climate change KPIs	22	6	14	42	89	51	85
KPI3	Climate change KPIs linked to executive remuneration	11	3	7	21	45	26	43
TCFD	Follows TCFD recommendations				31	66	26	43
FRONT-I	END AVERAGE				32	68	31	52
						_	_	_
BACK E	ND	1	1	1		-	_	-
	Climate change in accounting judgements							
AP2	Tangible and intangible assets				3	6	1	2
AP3	Exploration & evaluation of assets				4	9	1	2
AP4	Impairments				14	30	11	18
AP5	Provisions & contingencies				15	32	19	32
IT1	Climate change affecting future cash flows	5	0	1	6	13	6	10
IT2	Climate change shown as a factor in impairments	2	0	1	3	6	3	5
NCA3	Separate investment portfolio for environmental liabilities	3	0	5	8	17	14	23
NCA4	Carbon allowances recognised as assets	8	1	2	11	23	10	17
PCL1	Climate change affecting provisions	4	3	5	12	26	17	28
PCL2	Climate change affecting contingencies	4	1	0	5	11	6	10
KAM	Climate change as a key audit matter	6	1	3	10	21	9	15
BACK-E	ND AVERAGE				8	18	9	15

APPENDIX D: Examples

Evraz – Annual Report and Accounts 2020, page 64

Climate-related KPIs in the iron and steel sector



<https://www.evraz.com/upload/iblock/f81/EVRAZ_AR2020_final_pages_lowres.pdf>

Total Energies – Universal Registration Document 2020, page 330 Extract from accounting principles for asset impairment

The oil and gas price trajectories adopted by the Group are based on the following assumptions:

 Following the deep recession caused by the health crisis in 2020, which strongly impacts the oil demand in 2020 and 2021 before reverting to a pre-crisis level, the oil demand should continue to grow until 2030, in a context of sustained growth in global energy demand, due to population growth and improved living standards, and despite the gradual electrification of transport and efficiency gains in thermal engines.

The Group thus selected the following profile of the Brent price to determine the recoverable value of CGUs: \$40/b in 2021, \$50/b in 2022, \$60/b in 2023.

For the longer term, the Group maintains its analysis, that the weakness of investments in the Oil & Gas upstream since 2015, accentuated by the health and economic crisis of 2020, will result by 2025 in insufficient worldwide production capacities and a rebound in prices, that would then reach \$70/b and remain stable for the following five years. Beyond 2030, given technological developments, particularly in the transport sector, the Group anticipates oil demand will have reached its peak and Brent prices should tend toward the long-term price of \$50/b in 2040, in line with the IEA's SDS scenario.

The average Brent prices over the period 2020-2050 thus stands at \$572020/b.

 Natural gas demand would for its part be driven by gas substitution for coal in power generation and by its role as an alternative source to mitigate the intermittent use of renewable energies. The abundant global supply and the growth of liquefied natural gas would, however, limit the potential for higher gas prices.

In this context, the gas price level selected to determine the recoverable value of CGUs stabilizes from 2025 around \$6.32020/MBTU for the NBP price (Europe) and \$2.72020/MBTU for the Henry Hub price (United States).

Total Energies (2020), Universal Registration Document 2020 including the Annual Financial Report https://totalenergies.com/system/files/documents/2021-03/2020-universal-registration-document.pdf>, accessed 29 July 2021.

bp - Annual report and Form 20-F 2020, page 28

Oil price forecasts aligned between the front end (investment strategy) and back end (impairment).

Our investment process

Price assumptions

Revising long-term price assumptions

Our price assumptions are determined for use in our investment appraisal processes. They are also used to inform decisions about internal planning processes and the impairment testing of assets for financial reporting.

What the prices are

As part of our strategy development we reviewed our portfolio and capital development plans. That work was informed by bp's views of the long-term price environment and its balanced investment criteria. Together these create a framework that seeks to ensure investments align with our strategy and add shareholder value.

Key investment appraisal assumptions

	2021	2025	2030	2040	2050
Brent oil (\$/bbl)	50	50	60	60	50
Henry Hub gas (\$/mmBtu)	3.00	3.00	3.00	3.00	2.75
RMM★	10	12	12	10	10
Carbon price (US\$/tCO₂e)					
	2021	2025	2030	2040	2050
Central case real (2020)	50	50	100	200	250

Impairment testing

As a result of the revision of long-term price assumptions used for investment appraisal, we also revised the price assumptions we use in value in-use impairment testing. These two price sets are now aligned.

BP (2020), Performing while Transforming: from IOC to IEC <https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/investors/bp-annual-report-and-form-20f-2020.pdf>, accessed 29 July 2021.

Tullow Oil - 2020 Report and Accounts, page 11

Expectations for a continuing role for hydrocarbons in energy transition

Despite great efforts to decarbonise and grow renewable energy supply, fossil fuels will continue to account for up to 50 per cent of the energy supply in 2050. The IEA's scenarios for long term oil demand range from the 'Current Policies Scenario' where oil demand continues to increase, approaching 120 million bopd [barrels of oil per day] to 2040, through to the Sustainable Development Scenario (aligned to the Paris goals) which sees a potential flattening in oil demand in the 2020s. Rising incomes in emerging markets and developing economies are expected to create strong underlying demand for mobility which will offset reductions in oil use in developed economies, where the electrification of transport and greater energy efficiency reduces demand. Despite the anticipated growth in recycling rates, oil demand as a feedstock in the petrochemical sector for production of plastics is likely to rise, especially in developing economies. In addition, growth will continue from energy and carbon-intensive sectors, such as steel, cement and heavy industry. Even under the IEA's Net Zero emissions by 2050 pathway, where demand for oil declines from 98 million bopd in 2019 to 65 million bopd in 2030, an annual average reduction of >3.5 per cent, this decline rate is slower than the underlying rate of decline in supply that we would see if there were to be no investment in new or existing fields. In this case oil supply would decline by 8-9 per cent per year. Therefore, even in a scenario aligned to the Paris goals, billions of dollars are required to sustain lower levels of production.

Tullow Oil (2020), Tullow Oil plc 2020 Annual Report and Accounts https://www.tullowoil.com/application/files/2816/1677/4099/Tullow_Oil_plc_2020_Annual_Report_and_Accounts.pdf>, accessed 29 July 2021

PI-CLIMATE-RISK-PAPER