Tullow Oil plc
2022 Climate Risk and Resilience Report

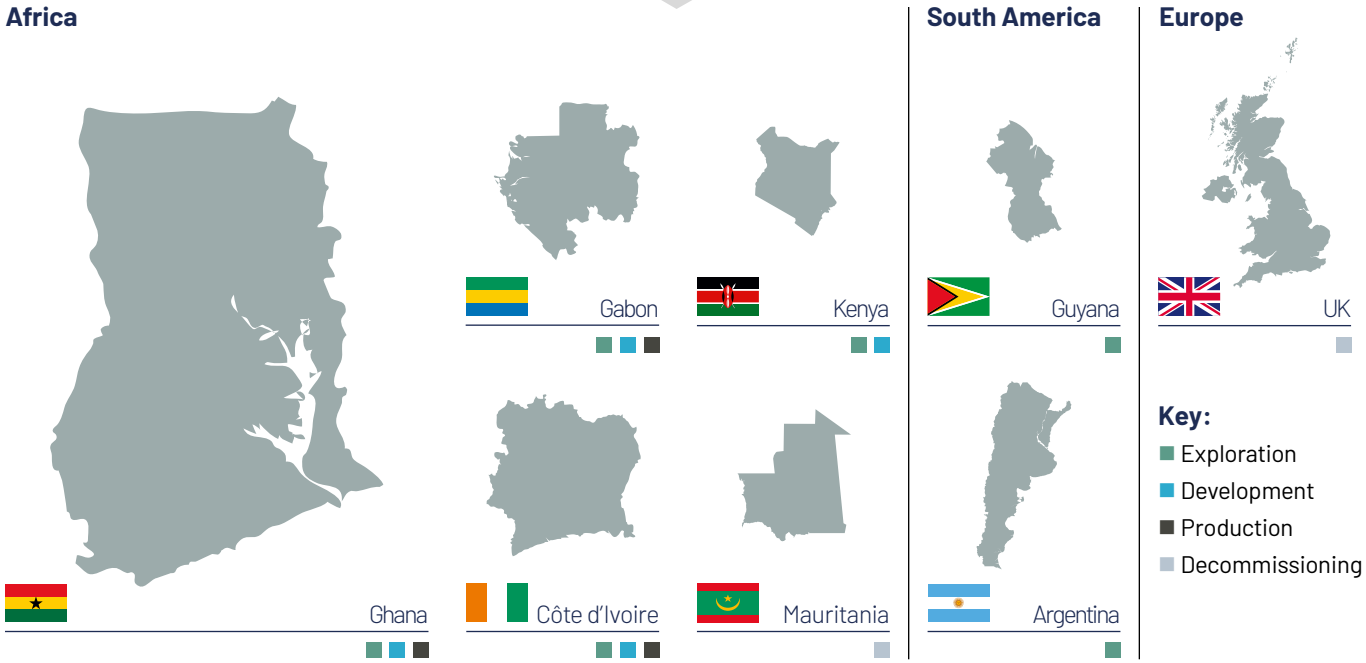
Building a better future
through responsible oil and gas development

About Tullow Oil

Tullow's purpose is to build a better future for our host nations through responsible oil and gas development. We believe the oil and gas industry can, and should be, an engine of economic development for emerging African economies.

Tullow is an independent oil & gas exploration and production company with a focus on Africa and South America. We are a full cycle upstream oil and gas company, operating assets through the lifecycle of exploration and appraisal, development, and production to decommissioning at end of life. Through our activities, we help to address global energy demand, contributing to our host nations' sustainable growth by unlocking value from their resources through reliable, safe, cost-effective and carbon-efficient operations.

Our focus is on managing the exploration, development and production of oil and gas resources safely, efficiently, collaboratively and transparently. Our portfolio of over 30 licences spans 8 countries; we have producing assets in West Africa, with material positions in discovered resources in Kenya and emerging basins in Latin America. We are headquartered in London and our shares are listed on the London and Ghana Stock Exchanges (symbol: TLW).



Note: countries are not to scale

About this report

Tullow is committed to providing investors and other stakeholders with clear, useful information on the potential financial impacts presented to our business by climate change. This report sets out Tullow's assessment of the risks and opportunities from climate-related transition and physical risks and outlines how we are responding to them. Our Climate Risk and Resilience report supplements our annual disclosures, demonstrating the breadth of our considerations in alignment with the recommendations of the Taskforce on Climate-related Financial Disclosures (TCFD). Our assessment is focused on our portfolio of producing, development, exploration, and decommissioning assets.

Executive summary

At Tullow, we believe that reliable, accessible energy supplies are critical for sustaining human progress and ensuring political stability.

The past year has brought today's energy system into sharp focus, with the war in Ukraine affecting energy markets and causing economic impacts across the globe. Climate action also took a step forward, as a 'loss and damage' agreement was advanced at this year's United Nations Climate Conference (COP27) to assist nations who have contributed least to global greenhouse gas emissions yet are most vulnerable to the impacts of climate change.

As the governments of wealthy and emerging economies alike establish their strategies to meet global climate goals, they must continue to strike a balance between reducing their respective emissions and advancing equitable and sustainable development. Access to reliable and affordable energy is foundational to economic growth and social advancement; the path through the energy transition will therefore be anything but simple and clear cut.

The oil and gas industry will continue to meet energy needs across the world for some time, in particular for those nations who seek to use natural resource revenues for development.

The complexity and uncertainty of the energy transition requires a robust understanding of the drivers of government decision making and policy, geopolitics, global markets and ultimately the climate-related risks associated with them. The strategic decision making required to navigate this path will only increase, linking climate with biodiversity and nature-related risks, sustainable development objectives, stakeholder pressure and government policy. Successful companies will need to integrate these interlocking issues into the core of company strategy and financial planning.

Tullow is well positioned to navigate the energy transition, with a clear strategy to continue to meet the needs of our host nations while taking accountability for the impact of our operations. Our commitment to eliminate routine flaring by 2025 and to become a Net Zero Company on our Scope 1 and 2 net equity greenhouse gas emissions by 2030 (from a 2020 baseline) supports the ambition of the Paris Agreement, to hold the increase in the global average temperature to well below 2°C and pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels.

Over the last year we continued to make progress in implementing decarbonisation initiatives on our operated production assets in Ghana, demonstrating a transition from commitment to delivery to achieve our target to reduce our absolute emissions by at least 40% by 2025 (from a 2020 baseline) and eliminate routine flaring. To mitigate our hard to abate, residual emissions, we have further progressed our partnership with the Forestry Commission of Ghana and Terra Global to identify high quality, nature-based carbon offset projects and have identified a project in the forest/savannah transition zone that would conserve and restore threatened ecosystems and meet Tullow's carbon offsetting requirement. The feasibility study on the project area was completed in Q2 2022 and a decision was made to progress the project towards Final Investment Decision (FID) by the end of 2023. We have also broadened our assessment of climate-related risks, working across the business to better understand the potential transmission channels, or avenues through which climate risk may affect our operations, strategy or performance, and to further embed climate risk management in our existing business processes.

Contents

Our commitment to become a Net Zero Company on our Scope 1 and 2 net equity emissions by 2030

Net Zero

Governance

Committed to integrating climate-related transition and physical risk management throughout our business with strong oversight from the Board

p. 7

Strategy

Responding to climate change and the energy transition, challenging our strategy to ensure the resilience of our business

p. 10

Risk management

Identifying, assessing, and managing climate-related risk, and integrating this across our organisation

p. 21

Metrics & targets

Aiming for Net Zero by 2030, with clear GHG emissions disclosures and performance targets

p. 23

Our approach: Delivering our purpose

Tullow is steadfast in our approach to building a better future for our host nations, local communities, employees, and investors through responsible oil and gas development. We integrate climate-related considerations in our decision-making and strategy, addressing global energy demand in a safe, cost-efficient, and transparent way, and take responsibility for the emissions generated by our operations. Our Climate Policy sets the foundation for our approach, with thorough analysis of the carbon emissions associated with our operational activities and planned developments. Our Net Zero commitment is underpinned by robust independent analysis and technical evaluation of decarbonisation options, utilising a Levelised Cost of Carbon[1] approach to inform decision-making on decarbonisation initiatives and ensure capital allocation requirements are captured in our business plan to meet our targets. We remain committed to supporting our host governments as they seek to use oil and gas revenue to promote sustainable and inclusive economic development, and we will continue to align with actions they take to manage climate change. We also remain committed to supporting the United Nations Sustainable Development Goals (SDGs), including SDG13 on Climate Action through our focus on emissions reductions, through decarbonising our operations and seeking to invest in high quality, nature-based carbon offsets.

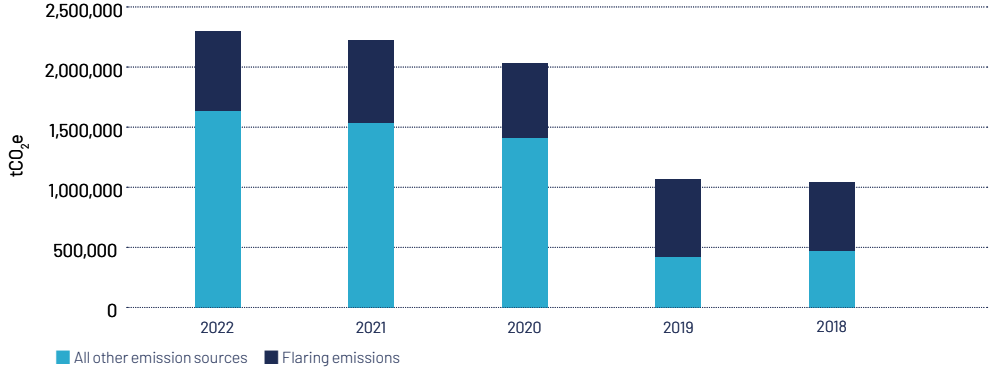
Decarbonising our production assets in Ghana

In creating our pathway to Net Zero, our primary focus remains on our operated production facilities in Ghana, where we have the greatest ability to influence the efforts required to reduce the carbon intensity of our production. An essential step on our pathway to Net Zero is the elimination of routine flaring, which we have committed to achieve by 2025. Flaring is an established method of disposing of gas that is generated through oil production in quantities that exceed our capacity to process it either for sale or for use as an energy source. By increasing our gas processing capacity at our Jubilee and TEN fields through our committed investment programme, we will avoid the need for routine gas flaring.

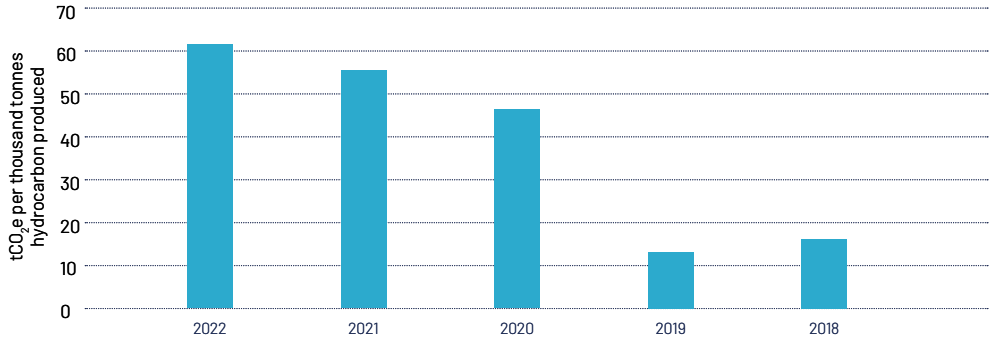
During 2022, we made progress on implementing the changes necessary to achieve this, which required as part of the projects the shutdown of operations at each site to allow for switching out of core equipment and other upgrades. This activity is scheduled to occur during planned maintenance shutdowns to avoid disruption to production and supply. For further detail please see our Sustainability Report.

The capital required to make these investments on our producing assets is allocated in our business plan and corporate budget. We will spend up to $45 million to deliver the projects required to eliminate routine flaring and significantly reduce greenhouse gas (GHG) emissions on our Ghana production assets by 2025. In addition to eliminating routine flaring, investing in the gas debottlenecking and compression expansion projects will also have a corresponding impact on the reduction of methane emissions, as well as enhanced production uptime. By identifying solutions to reduce the carbon intensity of our assets, we have also identified an opportunity for improving production efficiency, positively impacting future cash flow once these projects are fully implemented.

Operated/Group Scope 1 and 2 emissions from flaring



Operated/Group flaring intensity



1. Levelised Cost of Carbon is a widely accepted approach which enables comparison between technologies or initiatives based on the cost of carbon abatement. This allows us to calculate how much a given decarbonisation option will cost per tonne of emissions reduced considering specific infrastructure, technological constraints and other factors for each of our assets.

Decarbonising our assets

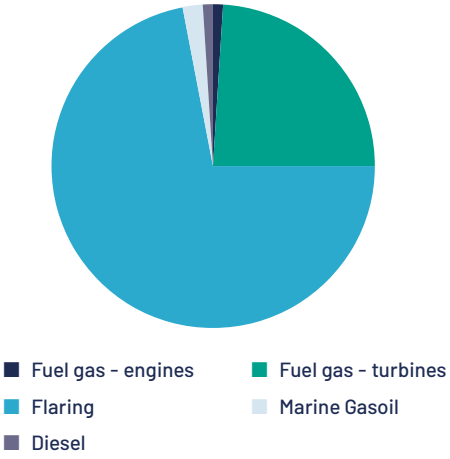
Our FPSOs are located approximately 60 km offshore of Ghana. Our decarbonisation efforts are currently focused on topside gas handling modifications on each vessel to enable our operations teams to reach our target of eliminating routine flaring by 2025. Elimination of routine flaring will also enable us to achieve at least a 40% reduction in emissions from a 2020 baseline.

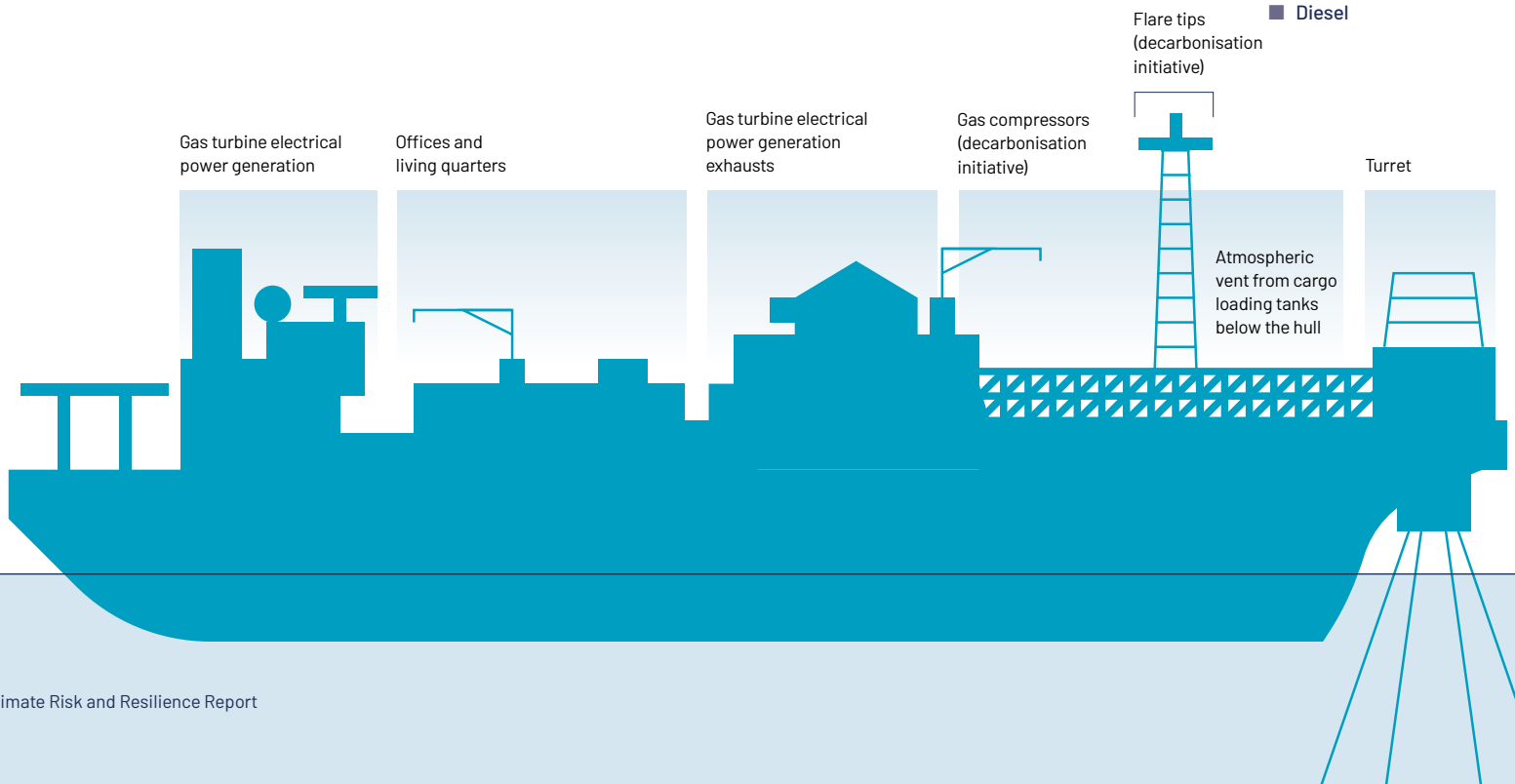
We also continue to assess additional decarbonisation projects for our production assets, informed by a Levelised Cost of Carbon assessment undertaken by an independent engineering consultancy to identify NPV-positive projects which will have a material impact on our emissions profile. The focus on emissions reductions is therefore balanced with responsible financial investment decisions.

The most significant contribution to emissions on our FPSOs, after flaring, is the power generation requirements of the vessels. Power is currently generated by gas turbine generators and/or diesel on both of our FPSOs. We have investigated various electrification options, including shore-based energy supply. However, it is not currently feasible to fully electrify our vessels largely because of:

- **physical constraints**—our FPSOs are in remote, offshore locations;
- **market constraints**—the lack of renewable supply options and a prohibitive cost of biodiesel which would require retrofits of all generators on the vessels; and
- **technical constraints**—our FPSOs would require electric cabling to connect to the vessels via the turret system, which limits electrical import options. Limitations of the turret system means that only a small percentage of the overall power requirements could be met by onshore electrical power generation (approximately 10MW) and we would need to make up the shortfall in power generation through on-board power generation facilities (50-70MW per day).

FPSO primary emission sources





Offsetting our residual emissions

Update on carbon offsets

Once our goal of eliminating routine flaring has been reached, we will have a residual carbon emissions footprint (from both operated and non-operated assets) of approximately 500k tonnes on a net equity basis. This is primarily from use of diesel to generate power for the FPSOs. To mitigate these emissions, we are investing in high quality nature-based carbon offsets informed by the Oxford Principles for Net Zero Aligned Carbon Offsetting.

We have further progressed our partnership with the Forestry Commission of Ghana ("FC") and Terra Global and have identified an offset project in the forest/savannah transition zone that aligns with Ghana's REDD+ strategy. A feasibility study was completed in Q2 2022 which identified key drivers of deforestation in the proposed project area and sought initial views from a range of stakeholders on potential intervention activities to conserve existing forest and restore degraded lands. The project would deliver Tullow's required volume of carbon offsets to meet our residual emissions target and would be registered under a leading standard, such as the Verified Carbon Standard (VCS), in addition to supporting the enhancement of social and biodiversity outcomes, certified under the Community and Climate Biodiversity Standards (CCB).

We will be investing in a new project to provide certainty to the Forestry Commission and communities within the project area of the long-term viability of the project, and to reduce our exposure to long-term voluntary carbon market prices.

Tullow's Board (through the Safety and Sustainability Committee) have been kept updated on progress on the project and the Senior Leadership Team approved the decision to proceed beyond the feasibility study. We have signed a Letter of Intent (LoI) with the FC to progress the project towards a final investment decision by the end of 2023 that would deliver offsets from 2025, ahead of our 2030 Net Zero target. The LoI commits $0.7 million for the FC to conduct initial project design including community outreach, engagement with key national and sub-national stakeholders, primary social and environmental screening and project area baseline mapping. The $0.7 million is distributed subject to certain milestones having been achieved and is included in the 2023 budget.

Our Net Zero target is based on our net equity emissions, and therefore we continue to work closely with our partners to support decarbonisation objectives on our non-operated production assets in West Africa.

Project Oil Kenya

Last year we updated the market on our re-evaluation of Project Oil Kenya, which incorporated climate-related risk mitigation measures to minimise emissions, eliminate routine flaring, enhance energy efficiency, maximise use of Kenya's renewable grid, and ensure we account for the project's water requirements while considering community water needs. We continue to support the government's ambition to utilise oil revenues to support sustainable and inclusive economic development.

We also recognise the inter-linkages between climate and nature-related risks and impacts and will incorporate this in our ongoing project evaluation in support of the historic UN Convention on Biodiversity Conference (CBD) COP15 agreement to preserve and protect nature under the new Global Biodiversity Framework. The consideration of climate and biodiversity risks, impacts and opportunities within our enterprise risk management approach will be an area of focus over the near term.

Clear sight of climate-related risk across the organisation

Governance

Board oversight of climate-related risks and opportunities

The Board of Directors oversees the identification, assessment, and response to Principal Risks annually and monitors the effectiveness of Tullow's risk management process throughout the year. This includes oversight of climate-related transition and physical risks and responsibilities, which remain a Principal Risk. Governance over climate-related risks is provided at Board, senior management and operational levels. Our CEO, a Board member, is ultimately accountable for Tullow's strategic response to climate change and the energy transition.

During the past year the Board received regular updates on climate-related risks and progress against performance targets to address these issues through the Safety and Sustainability Committee, which has been delegated governance for assessing climate-related risks which may affect our business. The Safety and Sustainability Committee meets at least three times per year; during 2022 the Committee met six times. The Audit Committee reviews our risk management and control systems, including the methodologies used to test the resilience of our business and determine potential financial impacts of climate-related risk. The Remuneration Committee ensures climate and sustainability performance, including our Net Zero target, is embedded in the corporate scorecard and annual KPIs. The Board receives reports from all three Committees at each Board meeting (pp. 54-86 of the Annual Report and Accounts).

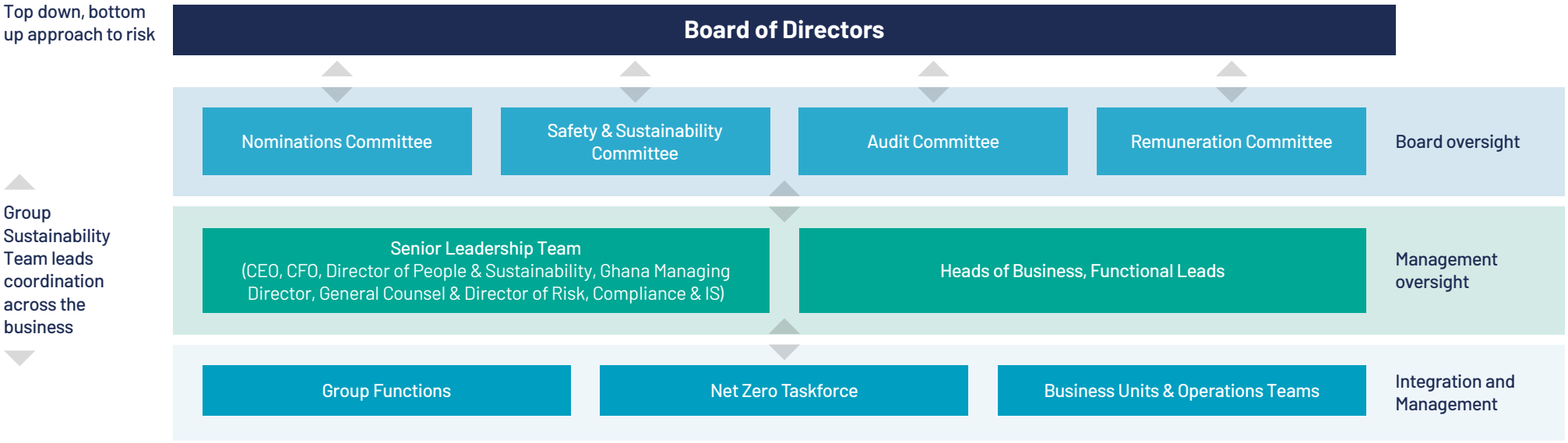
Our Board members bring a diversity of skills and experience to guide the business in climate change matters (pp. 54-61 of the Annual Report and Accounts) and are responsible for ensuring they remain sufficiently informed of climate-related risks to Tullow and the broader energy sector. The Nominations Committee ensures Tullow's Board and Committee composition supports delivery of our business strategy and provides robust corporate governance for key risks, including climate risk, unique to our business. Climate-related updates received by the Board during the year focused on: the landscape of climate and environmental, social and governance issues which may affect our sector or business resilience, the approach to embedding climate risk management across the organisation, assurance of climate-related and sustainability performance data, and climate-related scenario analysis and financial impact quantification. In addition, a dedicated workshop with external climate-risk and ESG experts was held during the annual strategy session.

The Board has responsibility for the following:

- **Accounting for the financial impact on Tullow's portfolio arising from reduced oil price and demand, and potential carbon taxes, identified in a range of climate scenarios used to test the resilience of our business**
- **Ensuring the assessment and management of climate-related risks are embedded in Tullow's strategy, decision-making on capital allocation and management compensation**
- **Monitoring indicators of any changes in Tullow's access to and cost of capital and debt stemming from shifts in investor sentiment or regulator pressure on investors towards the oil and gas sector in response to climate-related risks**
- **Approving Tullow's carbon management and performance, including targets for emissions reductions and alignment with host nations' strategies to manage climate change**

Clear sight of climate-related risk across the organisation

Governance



Safety & Sustainability Committee: provides full oversight and assurance in relation to Tullow's operational performance on carbon emissions and management of climate-related issues. The Chair of this Committee, Mitchell Ingram, has extensive experience in managing EHS and Sustainability issues through a long career in the Oil & Gas industry, and has broad oversight of Tullow's sustainability disclosures, ensuring it is balanced, complete and accurate. Sustainability performance, which includes implementation of decarbonisation initiatives and our approach to offsetting hard to abate emissions to meet our Net Zero Commitment, was a key focus for 2022. The Committee also reviewed the assurance process for our disclosures in line with the recommendations of the Taskforce on Climate-Related Financial Disclosures.

Audit Committee: responsible for ensuring the effectiveness of risk management processes and internal control systems, including for climate-related risks. The Chair of the Audit Committee, Martin Greenslade, is a Chartered Accountant with extensive experience in corporate finance, audit, risk management and public company leadership and leads the Committee in its focus on climate risk and financial resiliency. Beyond its fiduciary duties, the Committee is responsible for ensuring there is a sufficient level of assurance on our climate-related disclosures within the Annual Report, Sustainability Report and Climate Risk and Resilience Report. During 2022, this included a review of the scenario analysis and financial impact assessment undertaken to test the resilience of Tullow's portfolio.

Clear sight of climate-related risk across the organisation

Management's role in assessing and managing climate-related risks and opportunities

Tullow's approach to climate-related risk management is focused on integrating the identification, assessment and management of climate-related risk across the business and delegating responsibility for achieving climate-related performance targets. Tullow's Senior Leadership Team is responsible and accountable for overseeing and monitoring risks that fall under their remit, and for leading the incorporation of climate risks, opportunities, and scenario assumptions into enterprise risk registers. This accounts for the policy positions and regulations within our host nations.

The Group Director of People & Sustainability, a member of the Senior Leadership Team (SLT) who reports to the CEO, is responsible for ensuring we test the resilience of our business using various climate modelling scenarios and that the mitigations to manage our Climate Principal Risk are effective. The Director has responsibility for ensuring Tullow's activities are aligned with host governments' long-term economic growth and energy transition strategies, and for setting the climate-related performance targets in the corporate scorecard. The Director also leads discussions with investors and other stakeholders specific to our net zero strategy and management of climate-related risks, ensuring information is fed back into and upward within the organisation.

The Ghana Managing Director also holds a critical role as a member of the SLT, as he is responsible for driving performance to achieve the decarbonisation targets for our operated production facilities in Ghana which are responsible for the vast majority of our emissions (>98%). This includes the implementation of decarbonisation initiatives on our FPSOs and elimination of routine flaring by 2025 to achieve at least a 40% reduction in emissions from a 2020 baseline. The Managing Director also reports to the CEO and holds relationships with key stakeholders in Ghana to inform our understanding of government strategy in managing climate-related risks and opportunities. This includes Ghana's Energy Transition Framework, released at the end of 2022 that supports Ghana in meeting its Nationally Determined Contribution (NDC) under the Paris Agreement. The framework provides the foundation for decarbonising the energy sector and reaching net zero emissions by 2070, whilst balancing today's needs of providing essential services, ensuring socioeconomic growth underpinned by the use of Ghana's natural resources.

The Group Sustainability function, which reports to the Director of People & Sustainability, is responsible for leading the integration of climate-related risk management across the business. The function works closely with Group Internal Audit & Risk, Finance, Legal, Commercial and business teams to enhance the identification, assessment and management of climate risk and lead business teams in understanding the transmission pathways which could affect our business. During 2022, this included one-on-one discussions and group learning sessions to enable a deeper understanding of climate-related risks and opportunities, as well as the application of scenario analysis tools such as an internal carbon price or the International Energy Agency's oil and carbon price forecasts (see pp. 11-14).

> "Integration is fundamental to robust management of climate-related risk at various transmission points, closing the gap between strategic and tactical mitigations to support decision making, and working toward collective responsibility of climate risk as a result."

The Net Zero Task Force (NZTF) a multi-functional team, including representatives from our corporate sustainability team, EHS, engineering and operations, continues to lead the delivery of our key commitments in respect of climate change: Zero routine flaring by 2025 and Net Zero by 2030 (Scope 1 & 2 net equity emissions). This target pathway comprises a range of activities, including decarbonisation initiatives on our FPSOs in Ghana to eliminate routine flaring, and continued engagement with the Forestry Commission and Government of Ghana in identifying nature-based opportunities to offset hard to abate GHG emissions.

A responsible and resilient business

Identifying climate-related risks and opportunities

Our strategy is focused on generating maximum value from our producing and development assets, including an infrastructure-led exploration approach to identify new resources near existing infrastructure. The Tullow Board and Senior Leadership Team hold an annual review of our strategy, which incorporates an assessment of our current portfolio to inform forward looking plans to ensure the business maintains its resilience and is positioned for growth. During 2022, the annual strategy sessions included a dedicated workshop on Environmental, Social and Governance (ESG) risks for the private sector and our industry in particular, including climate-related risks. The workshop, led by external experts, was a key avenue for informing the Executive and Non-Executive Directors' consideration of climate-related transition and physical risks in strategic planning and risk management activities this year.

Our approach to identifying risk is consistent for all types of risk, relying on a systematic approach which is informed by a wide range of information sources. Our approach to identifying climate-related risks and opportunities will continue to evolve as the depth of understanding grows across our organisation and we continue to embed consideration of transition and physical risk exposure in our business planning and decision making.

A responsible and resilient business

Assessing the impact of transition and physical risks on our business

This year we continued to test the resilience of our business using scenarios published by the International Energy Agency (IEA) in this year's World Energy Outlook (WEO-2022), which are a widely used source for the global energy sector. The IEA updated its core scenarios in September 2022 with revised oil price projections and assumptions. All of the scenarios now adopt a hybrid modelling approach which was initially applied to the IEA's landmark Net Zero by 2050 (NZE) scenario in 2021, allowing for comparison of different possible versions of the future energy system given varying policy, market and socio-economic drivers. The oil price forecasts within IEA's Announced Pledges (APS) and NZE scenarios are more challenging in comparison to last year's outlook, though the Stated Policies (STEPS) scenario reflects an increase in oil price. This year the IEA did not update the Sustainable Development Scenario (SDS), which we previously used in our analysis, because the pledges and commitments captured within the Announced Pledges Scenario (APS) provide a very similar outcome in terms of global temperature.

In reviewing the NZE, APS and STEPS scenarios, we assess the range of assumptions underpinning them in addition to projected energy market and cost data, and therefore whether they continue to be useful tools for testing the resilience of our portfolio. As an Upstream Exploration and Production (E&P) company, we consider the IEA's scenarios to be well suited for exploring potential pathways for the energy sector more broadly and the role of the oil and gas industry within it.

The scenarios assess the impact of the energy transition across industries and economies, with varying impacts on energy demand and mix across global markets. In all three scenarios, the pace of the energy transition is chiefly affected by government policy assumptions, with government decisions the main factor influencing the various future energy system outcomes with a corresponding impact to oil price over time.

As an E&P company, we remain sensitive to oil price fluctuations and thus maintain a tight focus on capital discipline. This year we continued to assess the impact to Operating Cash Flow (OCF) on our currently producing assets using the oil price assumptions within the IEA scenarios. We focus our assessment on impacts to OCF for our existing production portfolio over 1, 5, and 10 years consistent with our Viability Statement (p. 50 of the Annual Report and Accounts). The percentage of impact to our OCF per annum is calculated for each period and reported against three broad bands of income (p. 12).

We have chosen to assess the potential impact of future oil prices on OCF in order to align with our Group Scorecard and guidance given to investors about our future financial performance in our Trading Statements. Using the OCF KPI is an explicit way for us to demonstrate the impact to cash flows under the different scenarios, to analyse the impact of oil price on our ability as a company to generate the cash we need to invest in and finance the activities of our business.

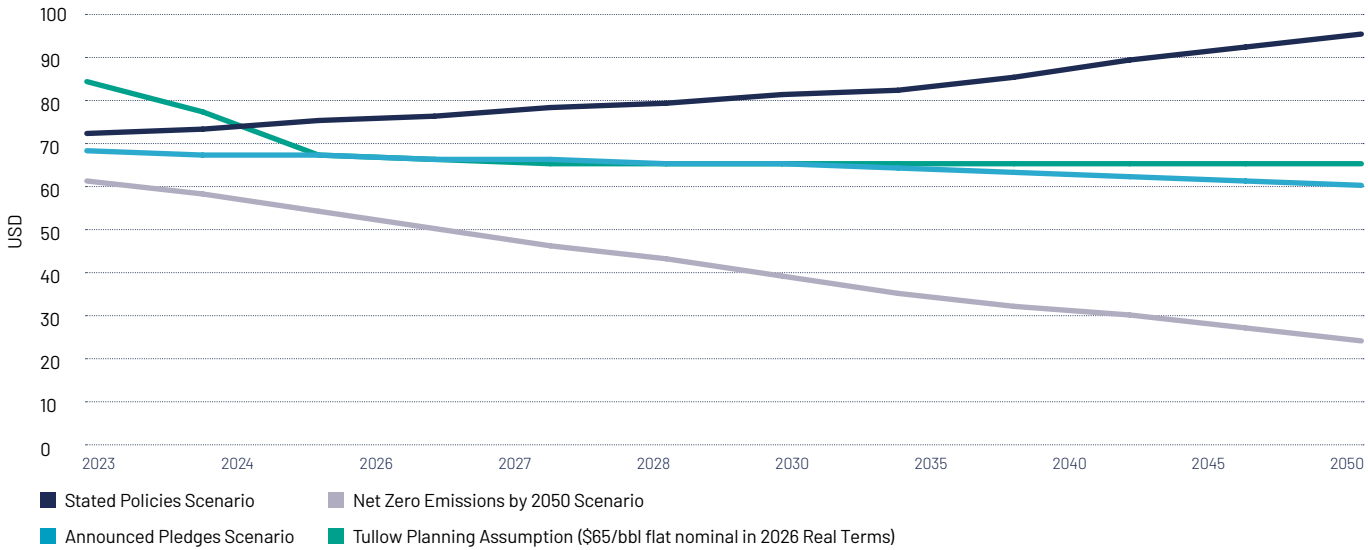
Our scenario analysis is based on Tullow's existing reserves and resources from our producing fields and does not consider growth from future developments or from Exploration. It is difficult to be specific about the impact of the scenarios on our future development and exploration growth opportunities due to the high degree of uncertainty associated with future growth, however it is clear from the oil price trajectories in the revised APS and NZE scenarios that the IEA predicts a more challenging oil price environment should the assumptions within these scenarios come to pass. Tullow's corporate oil price planning assumption is generally higher than the IEA Scenarios, with the exception of the STEPS scenario from 2024 onward. Our oil price assumptions are informed by a range of broker and consultant forecasts as well as in-house expertise to determine an appropriate planning assumption. Given the STEPS scenario is a conservative benchmark for future oil prices, reflecting global policies and implementing measures adopted as of the end September 2022, we consider our current planning assumptions to be a fair consideration of oil market conditions over the medium term.

A responsible and resilient business

While the IEA scenarios assume a reduction in oil demand at different points in the future, oil continues to play an important role in the global energy system for decades to come. Both the APS and STEPS scenarios project a decline in oil production between now and 2030 with additional investment required to meet demand—typically through new conventional projects with shorter lead times and quick payback periods, including projects to extend production from existing fields. Even under the NZE scenario continued investment in existing upstream assets is needed to meet demand. This outlook is well aligned with Tullow's strategy, which is focused on maximising value from our existing assets and is supported by an infrastructure-led, near-field exploration strategy to minimise payback periods.

IEA scenarios oil price assumptions

Real Terms 2022 $/bbl		2023	2024	2025	2026	2027	2028	2029	**2030**	2035	2040	2045	**2050**
STEPS	Stated Policies Scenario	72	73	75	76	78	79	81	**82**	85	89	92	**95**
APS	Announced Pledges Scenario	68	67	67	66	66	65	65	**64**	63	62	61	**60**
NZE	Net Zero Emissions by 2050 scenario	61	58	54	50	46	43	39	**35**	32	30	27	**24**
	Tullow Planning Assumption	84	77	67	66	65	65	65	65	65	65	65	65



A responsible and resilient business

In addition to testing the impact on Operating Cash Flow from future oil prices under the three scenarios, we also utilise the most ambitious scenario (NZE) to quantify potential financial impacts that would arise if the oil price projections within the NZE scenario were to occur. The material impacts we have identified are outlined herein.

We assess acute physical climate impacts on our existing assets and incorporate meteorological and climate conditions into operational design considerations. Our assessment of acute physical risk has identified a potential exposure related to consumables onshore Ghana. To support our offshore operations, equipment and other consumables are stored in various supply hubs onshore. Acute physical risks, such as flooding or fire, could impact our ability to access or use this equipment—which could thereafter impact delivery of operations or result in an increase in underwriting costs. While we have insurance policies in place to mitigate this risk, we believe it is important to be transparent in our disclosure of the potential financial impacts of climate-related risks that we have considered, including those which arise in relation to our supply chain. For further detail on the assessment of financial impacts, see pp. 158-159 of the Annual Report and Accounts.

	Risk	Timeframe	Financial impact	Methodology
Transition risks	**Market** – the NZE Scenario would trigger reductions in cash flows resulting in a potential write off of part or all of the net book value of intangible exploration and evaluation assets.	Medium (5 years+)	$253 million	Write offs under the NZE Scenario are determined by an assessment of the impact on net book value due to the difference between Tullow's internal and IEA's lower projected oil price.
	Market – the NZE Scenario would trigger reductions in cash flows resulting in an additional impairment to property, plant and equipment.	Medium (5 years+)	$666 million	Impairment of physical assets under the NZE Scenario is determined by calculating the impact of reduced oil price on the net book value of Tullow's producing assets.
	Market – in the NZE Scenario the energy transition could result in decommissioning taking place earlier than anticipated.	Medium (5 years+)	Cessation of production assumptions would accelerate Ghana by 0-7 years; Gabon 0-8 years; Espoir 7 years. Risk on timing is limited, supported by production plans to fully produce plans in the foreseeable future.	Decommissioning timelines could be brought forward under the NZE Scenario as a result of decreased cash flows from the reduced oil price. Quantification of this impact is via an assessment of the economic cut off point for each asset when using the lower IEA's projected oil price.
Physical risk	Onshore facilities which support Ghana production operations may be impacted by acute physical risks including an increased risk of flooding or fire associated with more intense weather events.	Acute climate-related physical risks.	In a worst case flood/fire event the business could experience an increase in premium or lost production primarily arising from supply chain risks (increased length of time to fabricate spares/ critical equipment). Insurable loss of $223 million: items are split between circa 11 onshore warehouse or storage facilities, so the accumulation per site is much smaller (largest site circa $60 million).	The value of consumables in our onshore Ghana Supply Hubs which may be affected by an increasing frequency of flood events or other natural catastrophes, e.g. fire. Storage locations and values are regularly checked to ensure appropriate insurance cover is in place. The impact to our business would be realised via an increase in premium and/or lost production with a corresponding impact to OCF, primarily as a result of length of time to source and replace critical spares and equipment. While these risks are considered to be unlikely, an inventory of critical spares and equipment required to maintain production is underway for 2023 to further mitigate this risk.

Tullow uses a risk matrix to classify impacts from a range of indicators; climate-related financial impacts would be considered substantive where financial impacts >£50 million. However, from a strategic perspective climate change could have major financial, regulatory, existential and reputational issues for the business.
See our summary risk table on pp.15-19 for further detail.

A responsible and resilient business

To complement our assessment of oil price impacts on OCF, transition, and acute physical risks, we also reviewed our assessment of carbon price using the IEA NZE scenario for emerging markets and developing economies. While we don't foresee carbon pricing mechanisms having a substantive impact in any of our core geographies within the medium term, we continue to maintain a watching brief as both compliance-based and voluntary carbon pricing mechanisms continue to evolve. This is a key regulatory risk for our industry, which has the potential to develop in an unpredictable manner and through varying instruments over the medium to long term.

While there continues to be low likelihood that compliance-based carbon pricing mechanisms will be formalised in Tullow's core production geographies in West Africa, and not before Tullow's Scope 1 and 2 emissions have peaked (by 2025), utilising the NZE carbon price for *other emerging markets and developing economies* as a scenario analysis tool is a helpful means of incorporating shadow carbon pricing into investment considerations. It is therefore a helpful tool for further understanding, managing, and embedding climate risk in decision making and capital allocation.

Based on the forecast emissions profile of our portfolio in 2030, the earliest year IEA provides a carbon price for *other emerging market and developing economies,* we calculate a potential carbon price sensitivity of $12.5 million. We see the NZE carbon price for emerging market and developing economies ($25/t$CO_2$) as a robust but realistic carbon price assumption for host nations where we have producing assets[4]. Guyana is currently Tullow's only host nation with a carbon tax ($50/t$CO_2$ flared at the well head), which we will take into account as part of our ongoing exploration and portfolio evaluation activities. We also realise the urgency of action which will need to take place this decade to drive a reduction in global emissions and minimise the worst impacts of climate change. We will therefore maintain a watching brief on carbon price regulations and the development of regional markets or pricing mechanisms, utilising shadow carbon price as a tool to support the decisions necessary to ensure we deliver our purpose and business strategy and meet our Net Zero target.

We will continue to further assess the transmission pathways of climate-related risks to our business over time, and incorporate these aspects into decision making, focussed mitigations and stress testing.

Carbon price	Net Zero Emissions by 2050 Scenario (NZE)	Announced Pledges Scenario (APS)	Stated Policies Scenario (STEPS)
Emerging markets and developing economies with net zero emissions pledges[1]	USD per tonne CO_2 2030 – 2040 – 2050 **$90 - $160 - $200**	USD per tonne CO_2 2030 – 2040 – 2050 **$40 - $110 - $160**	n/a
Other emerging market and developing economies	USD per tonne CO_2 2030 – 2040 – 2050 **$25 - $85 - $180**	USD per tonne CO_2 2030 – 2040 – 2050 **n/a - $17 - $47**	n/a

1. Ghana has a national Net Zero emission target for 2070, and thus we could take the IEA carbon price forecast for emerging markets and developing economies with net zero emission pledges. However, it is Tullow's view that $25/t$CO_2$ is a more realistic carbon pricing assumption associated with our operated production in Ghana for 2030. In addition, Gabon's Strategic Investment (Sovereign Wealth) Fund joined the Net-Zero Asset Owner Alliance which has a 2050 Net Zero target. However, Gabon is currently considered a 'net carbon sink' and therefore carbon neutral. As such it is Tullow's view that $25/t$CO_2$ is also a realistic price to use as a scenario analysis tool for emissions associated with our non-operated production in Gabon.

Summary of climate risks and opportunities

Risk horizons	Likelihood
Short – 0-5 years	Remote: A rare combination of factors would be required for this incident to occur (<1% chance)
Medium – 5-10 years	Unlikely: A rare combination of factors would be required for this incident to occur (<5% chance)
Long – 10+ years	Possible: Incident could occur if a number of additional factors are present (5-25% chance) Likely: Not certain, but incident could occur with one normally occurring additional factor (25-75% chance) Extreme: Almost inevitable that the incident could occur (>75% chance)

	Description	Potential impacts	Mitigations	Progress during the year
Current and emerging regulation	Limitations on Tullow's ability to implement its strategy as a result of new climate change regulation, either in the host countries in which we operate or in the countries where we have public listings. These risks may also come from international measures to limit use of fossil fuels or curtail GHG emissions, increased costs from complying with new regulations, such as carbon taxes, restrictions on the use of carbon-intensive assets, non-financial disclosures, or enforced stranding of assets. Tullow has adopted a proactive approach to assessing ongoing climate-related regulatory impacts on the oil and gas industry in our specific regions of interest through regular engagement with industry bodies, investors, in-country representatives and other key stakeholder groups. **Timeframe: 1, 5, 10 year horizon** **Likelihood: Possible**	Decreased profitability due to implementation of carbon pricing mechanisms. Regulatory constraints on hydrocarbon commerce. Opportunity to decarbonise business faster with stronger business case.	Use of a shadow carbon price $25/t$CO_2$e emissions (for all new investment decisions where a compliance carbon pricing mechanism is not available) to maintain a resilient portfolio, aligned with IEA NZE carbon price assumptions for 'other emerging market and developing economies.' Continue to work towards realisation of our Net Zero by 2030 commitment. Engagement with host countries ministries responsible for Nationally Determined Contributions and National Energy Plans to understand and align with their long-term strategies. Track developments on carbon and greenhouse gas pricing mechanisms and understand offset opportunities within host countries. Accurate, independently assured emissions accounting. Engagement with industry associations to keep track of developments.	We continue to review regulation within our host nations, as well as assessing the potential for new regulation to occur where we have public listings. There has been no change in the regulatory environment of any licences in our portfolio during the past year, and no development of carbon pricing mechanisms. However, for UK listed companies it is now mandatory to report in alignment with the TCFD recommendations and we anticipate further development in relation to forthcoming Taskforce on Nature-related Financial Disclosures, International Sustainability Standards Board, and the UK Transition Plan Task Force recommendations. We therefore see credible, detailed mandatory disclosures on climate and nature-related risks and transition planning becoming the norm and will continue to build the data requirements, processes, systems, and expertise within our organisation to support this. We also reviewed our approach to shadow carbon price in supporting investment decisions and are working with our commercial team to refine our application of this scenario analysis tool.

Summary of climate risks and opportunities

Strategy

	Description	Potential impacts	Mitigations	Progress during the year
Financial	Access to and cost of capital and insurance, arising from a reduced willingness or inability by financial institutions and investors to continue to provide financing due to a perception of increased risks relating to the oil and gas sector, or to Tullow's strategy. **Timeframe: 1, 5, 10 year horizon** **Likelihood: Possible**	Increased cost of capital. Reduced, or more conditional access to capital and insurance. Shareholder activism. Longer term opportunity to diversify capital sources following successful decarbonisation strategy.	Continue to work towards realisation of our Net Zero by 2030 commitment and decarbonisation of our assets. Set, and communicate, interim targets and progress updates against Tullow's decarbonisation plan to investors. Target more diversified sources of financing. Reduce cost base to be competitive in lower oil price environment. Reduced carbon intensity of production to support diversification of financing.	This year we held a number of discussions with our investors to understand their position on climate-related risk management and to discuss our approach toward climate risk, our progress on reducing emissions associated with our production, and the status of our feasibility study on nature-based carbon offset solutions. We also investigated the requirements associated with various sustainable finance instruments and discussed the use of these facilities in the context of our business strategy with experts outside our organisation.
Technology	Advances in and usage of technology by competitors to help them decarbonise their businesses or transition their businesses to renewable energy sources could put Tullow at a competitive disadvantage. Acceleration of the electrification of transport, displacement of fossil fuels in power generation, enhanced energy efficiency, and behaviour change may speed up the decline of hydrocarbons demand in the energy transition. **Timeframe: 5, 10 year horizon** **Likelihood: Likely**	Accelerating the peak of oil demand and a subsequent reduced demand for our product thereafter. Challenges to our business strategy and alignment with broader energy transition goals resulting in shareholder activism, reduced access to or more costly capital and reputational damage. Reduction in supply chain Scope 3 emissions.	Benchmark against peer group carbon intensity. Monitor advances in technology to improve energy efficiency and lower carbon intensity. Continue to explore nature-based carbon-removal and other forms of offsetting projects which align with the long-term strategies of our host countries to reduce the carbon intensity of our portfolio. Continue to utilise scenario analysis and monitor global energy outlook to inform business strategy.	Our review of the IEA scenarios (NZE, APS and STEPS) underscores the IEA's view that the energy transition will be demand-led. However, technological advancement is a chief enabler in meeting global temperature goals under the three scenarios, including transition to electric vehicles, non-fossil boilers, renewable electricity generation and direct air capture, among other technologies deployed at scale. Many of these technological advancements and deployments come into play from 2030.

Summary of climate risks and opportunities

Strategy

	Description	Potential impacts	Mitigations	Progress during the year
Reputation	May arise from failure to mitigate the carbon intensity of Tullow's business, targeted shareholder activism and divestment campaigns in response to Tullow strategy or investments, or because of declining brand value, loss of revenue or declining access to and cost of capital. The Company's reputation may also suffer internally if employees become frustrated that Tullow is not proactively addressing energy transition or climate change issues, or does not meet our 2025 target to eliminate routine flaring or Net Zero by 2030 commitment. **Timeframe: 1, 5, 10 year horizon** **Likelihood: Possible**	Negative impact on share price. Impacting the ability to attract and retain talent. Reduced, or more conditional access to capital. Reduced or more conditional access to new licenses.	Communicate with regulators, investors, employees, and stakeholders in a clear transparent manner and provide financial impact information. Continue to work towards realisation of our Net Zero by 2030 commitment. Engage with host governments to ensure understanding and alignment with the decarbonisation and offset components of Tullow's Net Zero 2030 strategy. Ensure robust understanding of climate-related risks and opportunities for new investment decisions.	During the year we engaged with investors, government and non-governmental organisations, industry and professional organisations and our colleagues to understand the focus of these groups in relation to the broader energy transition. Our objective is to ensure we understand their long term strategies, to engage regularly and disclose material and decision-useful information in alignment with the TCFD recommendations, and more broadly to use this feedback loop to inform our strategy and ensure we understand the expectations of our stakeholders. Engagement is a critical tool in managing reputational risk, but it must be built on our performance and delivering on the commitments we make. We are pleased to continue to make progress toward our targets and are committed to maintaining open and honest conversations to inform our understanding and management of climate-related reputational risks.

Summary of climate risks and opportunities

	Description	Potential impacts	Mitigations	Progress during the year
Legal	In recent years there has been an increase in the number of litigation cases faced by oil companies as they are held to account over transparent disclosure of climate risks and the impact of their operations on climate change. There is a risk of legal action against Tullow from communities or stakeholders that hold the business accountable for contributing to climate change or climate-related impacts. **Timeframe: 1, 5, 10 year horizon** **Likelihood: Possible**	Increased legal costs. Reputational damage. Potential restriction of producing assets and/or exploration activity. Criminal prosecution, severe fines or penalties. Requirement to set more ambitious decarbonisation targets. Risk of legal action including class actions from communities, shareholders and/or other stakeholders.	Transparent disclosure of climate risks to investors and stakeholders. Accurate, independently assured carbon accounting. Continue to work towards realisation of our Net Zero by 2030 commitment. Engage with host governments and wide network of stakeholders to ensure understanding and alignment with Tullow's Net Zero 2030 strategy. Internal education on sustainability, and an understanding of commitments made and the likely consequences for Tullow and its stakeholders.	Our legal team continues to incorporate external views on climate-related litigation risk from leading firms, with dedicated sessions on introducing the sustainability team and their work to the legal team as well as presentations on shareholder action and climate-related litigation risk during the year. This knowledge is shared directly with the organisation through cross-functional invitations to such events, lunch and learn sessions, and collaboration with the Sustainability Team to support progress on enterprise-wide integration of climate risk information gathering, mitigation and management. The legal team plays a critical role in decision making across the organisation and are key enablers of risk identification and management.
Market	All IEA scenarios assume a requirement for oil and gas in the energy mix beyond 2050, albeit at varying, mostly declining levels. In all scenarios the lowest cost, lowest carbon product will be most competitive, particularly if discounts/ premiums are applied to less carbon-intensive products. Uncertainty in the oil market is expected to remain, particularly given the likely structural shift in oil use which is expected in the decades after 2030. **Timeframe: 1, 5, 10+ year horizon** **Likelihood: Possible**	Changes in supply and demand for Tullow's product. The repricing of carbon-intensive assets and more rapid asset impairment. Stranded assets due to impairment arising from lower oil price. Impacted liquidity due to reduced cash flow from lower oil price. Increased costs due to pricing effects on supply chain.	Stress testing Tullow's portfolio to ensure its core assets are resilient at lower oil price levels. Decarbonising operations to lower the carbon intensity of produced barrels. Continue to work towards realisation of our Net Zero by 2030 commitment. Engage with host governments to ensure understanding and alignment with Tullow's Net Zero 2030 strategy. Maintain watching brief on market conditions to assess potential pricing effects across the business.	This year we continued to stress test our portfolio using the scenarios provided by the IEA (NZE, APS, STEPS). Our analysis is available on pp. 11-14 of this report, and p.23 of our Annual Report and Accounts.

Summary of climate risks and opportunities

	Description	Potential impacts	Mitigations	Progress during the year
Acute physical risks	Based on research commissioned by Tullow and conducted by Verisk Maplecroft on the long- term physical risks to several of Tullow's key operated assets, physical risks vary depending on the location but include drought, flash flooding, coastal flooding and increased storm frequency. The analysis considered future climate scenarios to 2050 based on the Representative Concentration Pathways developed by the Intergovernmental Panel on Climate Change (IPCC). **Locations:** Ghana (offshore production, onshore logistics and office sites), Guyana (offshore licence area, onshore office site), and Kenya (onshore field development area and office site, Lamu Port). Non-operated production assets (Gabon) not included. **Timeframe: 1, 5, 10+ year horizon** **Likelihood: Likely**	Rising temperatures and frequent heat¬ waves have the potential to increase costs and impact worker health and safety. Threat to infrastructure from more extreme weather events and flooding lead to increased insurance costs. Conflict in water stressed or climate-impacted regions impacts operations, social licence to operate, political stability, and potential loss of production. Business continuity from increased storm risk at ports.	Proven, tested and successful business continuity and crisis management planning process and plans in place to aid preparedness. Periodic review and update of Tullow's vulnerability to acute and chronic physical risk in core geographies, including operated and non-operated production assets. Identification and assessment of physical risk transmission to financial and operational risk and impacts across the portfolio.	We are working to deepen our understanding of how the physical effects of climate change may affect our assets, operations and value chain. Please see an update on p.13 of this report.

A responsible and resilient business

A resilient business, positioned for growth

We remain a resilient business, positioned to support our host nations in developing their hydrocarbon resources to promote sustainable and inclusive economic development. In line with our approach to climate-related risk management, the pricing assumptions we use to test the resilience of our business will continue to be updated in response to changes in the economic environment. We will maintain a watching brief, with strong governance on climate risk, to assess the pace of the energy transition, impact on oil demand in the energy mix, developments associated with carbon pricing mechanisms and other avenues of risk transmission which may have a financial impact on our business.

Our strategy has been influenced by climate-related risks and opportunities associated with the energy transition, and in this context, we are aware of an increasing focus and demand for company transition plans. The UK Transition Plan Taskforce launched its beta framework for consultation during COP27 this year, with the objective of driving transparency and accountability for companies and financial institutions' net zero commitments. We will continue to assess the development of transition plan guidance and regulation in relation to our purpose and strategy and remain committed to transparently disclosing our performance and progress toward meeting our Net Zero target.

Integrating climate risk across our business

Embedding the identification and assessment of climate-related risks

The climate-related risks for our business reflect the interplay between transition and physical risks and their linkage with wider socio-economic and political contexts. We recognise that companies, supply chains and markets are linked across economies and geographies at a systemic level. Within Tullow, all risks are subject to our risk management process, which provides a systematic approach of understanding, evaluating and addressing identified risks, including climate-related transition and physical risks, to ensure strategic objectives are achieved.

Climate-related risk identification is informed by common sources for our industry, such as the IEA, World Bank, International Petroleum Industry Environmental Conservation Association (IPIECA), industry and professional bodies, peer benchmarking as well as enterprise level risks identified by Business Heads and Heads of Function. We also look at the ongoing work of the Financial Stability Board, Network for Greening the Financial System (NGFS), and key stakeholders of our host countries to inform our assessment and understanding of risk in core regions of operation and for various aspects of our business. Our risk assessment process considers the likelihood, potential consequence and speed of occurrence, recognising the varying level of risk in different geographies and relative importance of physical and transition risk to different parts of the business.

Managing and integrating climate-related risks

During the last year, we assessed how well climate risk is integrated in our enterprise business controls, and ultimately how this is rolled up to the principal risk level as a reflection of our top-down, bottom-up approach to risk management. The assessment was undertaken through a review of how well climate risk is understood across the business, with a series of discussions held with functional and business leaders across our Ghana, Non-Operated, Kenya, Exploration, Decommissioning, Commercial, Environment, Health & Safety (EHS), Finance, Sustainability, Legal and Internal Audit and Risk teams. The review focused on challenging the climate-related risks we had already identified, to meaningfully engage with the systemic and operational aspects which pose a risk to our business. We see this as one part of the process to embed climate risk management throughout our business in support of our top-down, bottom-up approach to risk.

To deepen our understanding of the acute physical risks of climate change we extended our focus this year to logistical and supply chain hubs which are critical to running our operations. This requires a thorough understanding of our West African production assets, as well as the assets and infrastructure which support our operations (see p. 13 for quantification of related risk). We also initiated cross-functional discussions across the business to extend our assurance to non-operated production assets, a significant contributor to production revenue. Furthermore, we have begun to embed the assessment of carbon intensity across our portfolio and refine our approach to shadow carbon pricing in our investment considerations.

While the assessment of physical climate risk is typically an area of focus for longer time horizons, we understand that the physical impacts of climate change have the potential to cascade into policy, market, regulatory and other transition risks. A holistic approach is therefore required across our business, led by the Sustainability Team to ensure we leverage the broad knowledge, expertise and experience of our colleagues to integrate and enhance our understanding of how these risks may impact our strategy and resilience.

Assessing climate risk across our business

The physical impacts of climate change have the potential to affect infrastructure and operations in our industry. We are working to deepen our understanding of these risks across our portfolio.

South America

Guyana

Carbon pricing: Carbon tax for flaring of GHG emissions at the well head, currently set at $50/tn. Tullow has no exposure during exploration and appraisal stages.

Physical: Floods, heavily influenced by La Nina events, are a threat to the low-lying coastline which is 2m below sea level in some areas and vulnerable to sea level rise. Droughts are also identified as an annual threat, heavily influenced by El Nino events; projected temperature increases are likely to exacerbate the impacts of drought.

Argentina

Carbon pricing: Carbon tax implemented in 2018 on the production of liquid fuels. Current tax is approximately $6 /tonne of GHG emissions with exemptions for natural gas, fuel consumption in aviation and shipping, and the export of these fuels. Tullow has no exposure during exploration and appraisal stages.

Physical: Flooding, heat waves and extreme precipitation events are identified as hazards of highest concern with climate change expected to increase the intensity and frequency of these events.

East Africa

Kenya

Carbon pricing: No existing compliance carbon price mechanism.

Physical: The Greater Horn of Africa region is highly vulnerable to climate change, with the main hazards including drought and seasonal floods with significant potential to impact livelihoods and economic activities. Two-thirds of the country's inland areas are largely arid, with particular susceptibility to harsh weather conditions and poor suitability for agriculture.

Tullow's area of onshore operations in Turkana, Northwest Kenya, are anticipated to experience higher surface temperatures and more frequent and longer dry spells between rainy seasons contributing to greater aridity, dust storms, and demand on local water resources. The port of Lamu is anticipated to experience an increase in the number of days with heat-stress conditions, affecting health and safety of workers, as well as threat to infrastructure from storm impacts, flooding and coastal erosion in response to sea level rise along this low-lying coastline. Current meteorological conditions and anticipated impacts arising from climate change to the physical operating environment will be factored into project design, execution and operating considerations.

West Africa

Ghana

Carbon pricing: No existing compliance carbon price mechanism.

Physical: Ghana is most at risk of droughts, coastal erosion, floods and landslides with more of the population at risk due to increasing rural poverty, rapid urbanisation, declining ecosystem and land conditions. There is a potential for localised disasters to have greater accumulated impacts on rural livelihoods. Coastal regions are likely to be affected by sea level risk and storm surges.

Côte d'Ivoire

Carbon pricing: No existing compliance carbon pricing mechanism in place, but since 2017 Côte d'Ivoire has been supported by Partnership for Market Readiness, a World Bank initiative, for the potential design and operation of a carbon tax. The timeline is uncertain, and we will continue to engage with the government to understand the long-term implications.

Physical: Flooding in urban areas from precipitation and sea level rise may have significant impact on communities. Drought may also impact demand for food, bio-energy, and ecosystem services leaving the agricultural sector vulnerable.

Gabon

Carbon pricing: No existing compliance carbon price mechanism.

Physical: Average increase in temperatures are already observed to be increasing in Gabon, with flooding hazards (riverine, urban) a particularly high risk. Sea-level rise could lead to coastal area flooding and may impact coastal cities with significant economic losses as well as oil production assets onshore. Gabon's high degree of rainfall with high heat presents population risks including new disease vectors and impacts to water availability.

Risk key

- Increasing
- Stable
- Decreasing

Operations key

- Onshore
- Offshore

Informed by the World Bank Climate Change Knowledge Portal and Tullow-commissioned risk assessments for Ghana, Guyana, and Kenya.

Metrics & targets

2022 Metrics

2.2 million tCO_2e
Operated scope 1 and 2 emissions (1.2 million tCO_2e net equity)

6.6 million tCO_2e
Scope 3 emissions

$15.2 million
Capex on decarbonisation projects in 2022

Zero
Proportion of GHG emissions subject to carbon pricing mechanisms

Zero
Production assets in areas of water stress

$60 million
Maximum anticipated single site insurable loss to onshore facilities due to physical risk (flood, fire)

0.00127
Carbon intensity by revenue (Operated Scope 1 and 2 emissions per USD)

2.6%/5%
Sustainability KPI – corporate scorecard performance against key milestones

38 kg CO_2e/boe
Net equity carbon intensity of production

Targets

Zero
Routine Flaring by 2025

40%
Reduction in Scope 1 and 2 emissions by 2025

Net Zero
Scope 1 and Scope 2 (net equity) emissions by 2030

5%/5%
2023 Sustainability KPI – corporate scorecard performance against key milestones

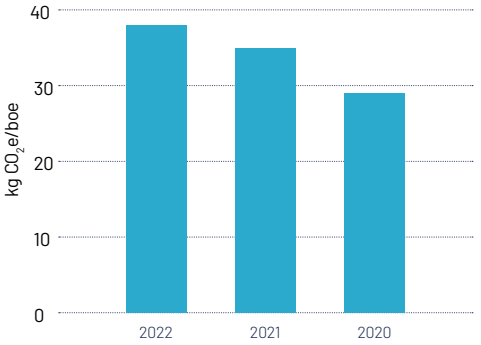
Tullow has a performance culture focused on achieving the key metrics and targets we set for the business, as reflected in our corporate scorecard. Key Performance Indicators (KPIs) are established on an annual basis to drive the organisation forward in delivering our strategy and purpose, building a better future through responsible oil and gas development. We set performance indicators in line with our performance management process, including the management of climate-related risks and opportunities.

Tullow is committed to achieving Net Zero by 2030 on our Scope 1 and 2 net equity emissions, supporting the 2°C goal of the Paris Agreement. This is a target we are focussed on from the Board through to our operations team in Ghana, where we are focussing on decarbonising our operated production (see our Net Zero Roadmap, p.34 of our Annual Report and Accounts). The vast majority (>98%) of our operated Scope 1 emissions are from our two producing assets offshore Ghana.

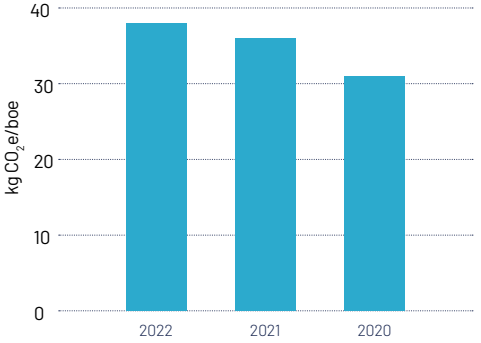
We report our GHG emissions in line with the World Resources Institute (WRI)/ World Business Council for Sustainable Development (WBCSD) GHG Protocol Corporate Standard, the most widely used greenhouse gas accounting standard for corporate GHG reporting, as well as the UK Streamlined Energy and Carbon Reporting (SECR) requirements. Our commitment to achieve Net Zero emissions (Scope 1 and 2) on a net equity basis takes accountability for emissions associated with production from our non-operated assets, including those associated with monitored operational activities that we do not have direct control over, extending the reach of our commitment across our value chain. During 2022, our net equity emissions were 1.2 million tonnes CO_2e.

In 2022, the carbon intensity of our operated activities was 37 kg of CO_2e per boe (2021: 35 kg CO_2e per boe). The increase in our carbon intensity reflects an increase in Scope 1 emissions (2.26m tCO_2e) due to reservoir management, facility blowdown and start-up flaring associated with the Jubilee FPSO maintenance shutdown during the year during which topside decarbonisation modifications were installed. The marginal increase on last year's emissions (2021: 2.23m tCO_2e) does not affect our interim target to achieve at least a 40% reduction in our emissions by 2025 once we have completed decarbonisation initiatives on our Ghana production facilities, which is ongoing. Our methane emissions during 2022 were 9,237 tonnes, a 4% increase on 2021. Flaring is the most significant source of our methane emissions, which will therefore greatly decrease once we achieve our 2025 Zero Routine Flaring target.

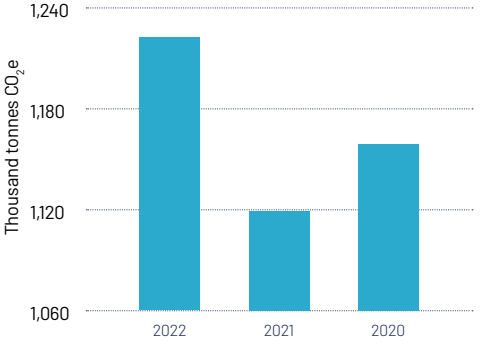
Operated carbon intensity



Net equity carbon intensity



Net equity Scope 1 & 2 emissions



Metrics & targets

Scope 3 category*	2022	2021	2020
1. Purchased goods and services	✓		
2. Capital goods	✓		
4. Upstream transportation and distribution	✓	✓	
5. Waste generated in our operations	✓	✓	
6. Business travel	✓	✓	✓
7. Employee commuting	✓	✓	✓
11. Use of sold products	✓		
15. Investments	✓	✓	✓

* We have calculated eight of the fifteen Scope 3 emission categories defined within the Greenhouse Gas Protocol Corporate Standard.

We recognise that Scope 3 value chain emissions can constitute a significant proportion of a company's overall emissions footprint. Value chain emissions have also seen an increasing amount of focus from a wide variety of stakeholders. Therefore, during 2022 we carried out a high-level materiality assessment across our portfolio of all the categories listed in the GHG Protocol to identify any material gaps within our reporting. The materiality assessment took into account several factors including the relevance to oil exploration and production activities, stakeholders' views, data completeness and availability and Tullow's ability to influence the emissions. As a result, the number of Scope 3 categories we report has expanded over the past several years, as demonstrated in the table above.

Our approach to managing Scope 3 emissions is to build stronger relationships with our suppliers by sharing best practices, identifying opportunities to co-invest, tracking emission reductions and aligning disclosures where possible.

Like other O&G companies, our emissions targets are not approved by the Science Based Targets Initiative (SBTi) because the organisation is still developing the tools to validate them for our sector. However, we consider our targets to be robust because they are underpinned by independent analysis and technical evaluation of our emissions profile, which we used to identify decarbonisation initiatives on our operated assets. We plan to address our residual, hard to abate emissions through a diverse portfolio of nature-based carbon offset projects, initially in Ghana, which will be registered under leading standards such as the Verified Carbon Standard (VCS) and Climate, Community & Biodiversity Standard (CCBS).

For more detail on our emissions performance and the methodologies associated with our performance reporting, please visit www.tullowoil.com/sustainability. Our Basis of Reporting and GHG Methodology documents as well as our 2022 Sustainability Report and performance data are publicly available, and we look forward to feedback on our disclosures.

Our UK emissions, in line with SECR requirements, are included within our performance table and also within our Annual Report and Accounts p.35.

External Verification and Assurance

This year our Scope 1 and Scope 2 emissions data was independently verified by Integrated Reporting & Assurance Services (IRAS) using the AccountAbility AA1000AS Assurance Standard. We began using the AccountAbility Standard to verify our emissions data in 2021 because the standard is the leading methodology for sustainability-related assurance engagements based on the principles of inclusivity, materiality, responsiveness and impact. IRAS apply this approach to assure our sustainability-related data and disclosures across our annual reporting suite. The IRAS assurance statement is also available on our website at www.tullowoil.com/sustainability.

IRAS
integrated reporting & assurance services
Since 2009

TCFD compliance table

	Recommended disclosure	Disclosure location
Governance	a.) Describe the board's oversight of climate- related risks and opportunities.	Annual Report and Accounts, pp. 58-59 Climate Risk and Resilience, pp. 7-8 Sustainability Report, p. 5, 10, 33
	b.) Describe management's role in assessing and managing climate-related risks and opportunities.	Annual Report and Accounts, pp. 59 Climate Risk and Resilience, p. 9 Sustainability Report, p. 10, 33
Strategy	a.) Describe the climate-related risks and opportunities the company has identified over the short, medium and long term.	Annual Report and Accounts, pp. 2-5, 44, 50, 158-159 Climate Risk and Resilience, pp. 10, 15-19
	b.) Describe the impact of climate-related risks and opportunities on the company's businesses, strategy, and financial planning.	Annual Report and Accounts, pp. 2-5, 10, 23, 158-159 Climate Risk and Resilience, pp. 11-14
	c.) Describe the resilience of the company's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	Annual Report and Accounts, pp. 23, 158-159 Climate Risk and Resilience, pp.11-14, 20 Sustainability Report, p. 33
Risk management	a.) Describe the company's processes for identifying and assessing climate-related risks.	Annual Report and Accounts, pp. 40-42, 44, 58-59 Climate Risk and Resilience, p. 21 Sustainability Report, p. 33
	b.) Describe the company's processes for managing climate-related risks.	Annual Report and Accounts, pp. 34-35, 40-42 Climate Risk and Resilience, p. 21 Sustainability Report, pp. 30-32
	c.) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the company's overall risk management.	Annual Report and Accounts, pp. 42-44, 46, 58-59 Climate Risk and Resilience, p. 21 Sustainability Report, p. 33
Metrics & targets	a.) Disclose the metrics used by the company to assess climate-related risks and opportunities in line with its strategy and risk management process.	Annual Report and Accounts, pp. 23, 34-35 Climate Risk and Resilience, pp. 23 Sustainability Report, pp. 30, 32
	b.) Disclose Scope 1, Scope 2, and if appropriate Scope 3 greenhouse gas (GHG) emissions, and the related risks.	Annual Report and Accounts, pp. 34-35 Climate Risk and Resilience, pp. 23-24 Sustainability Report, p.32
	c.) Describe the targets used by the company to manage climate-related risks and opportunities and performance against targets.	Annual Report and Accounts, pp. 14-15, 71-73, 80 Climate Risk and Resilience, pp. 23 Sustainability Report, pp. 30, 32

Tullow complies with the TCFD disclosure recommendations fully within this report.

Policies:

Climate Policy
Human Rights Policy
Safe & Sustainable Operations Policy
Code of Ethical Conduct

Information about our reporting:

Sustainability Performance Data
Basis of Reporting
GHG Emissions Scope & Calculation
Methodology
IRAS Independent Assurance Statement

Additional reports:

2022 Sustainability Report
2022 Annual Report

Produced by
designportfolio