



# 2021 Climate Risk & Resilience Report



# About Tullow Oil

Tullow's purpose is to build a better future through responsible oil and gas development.

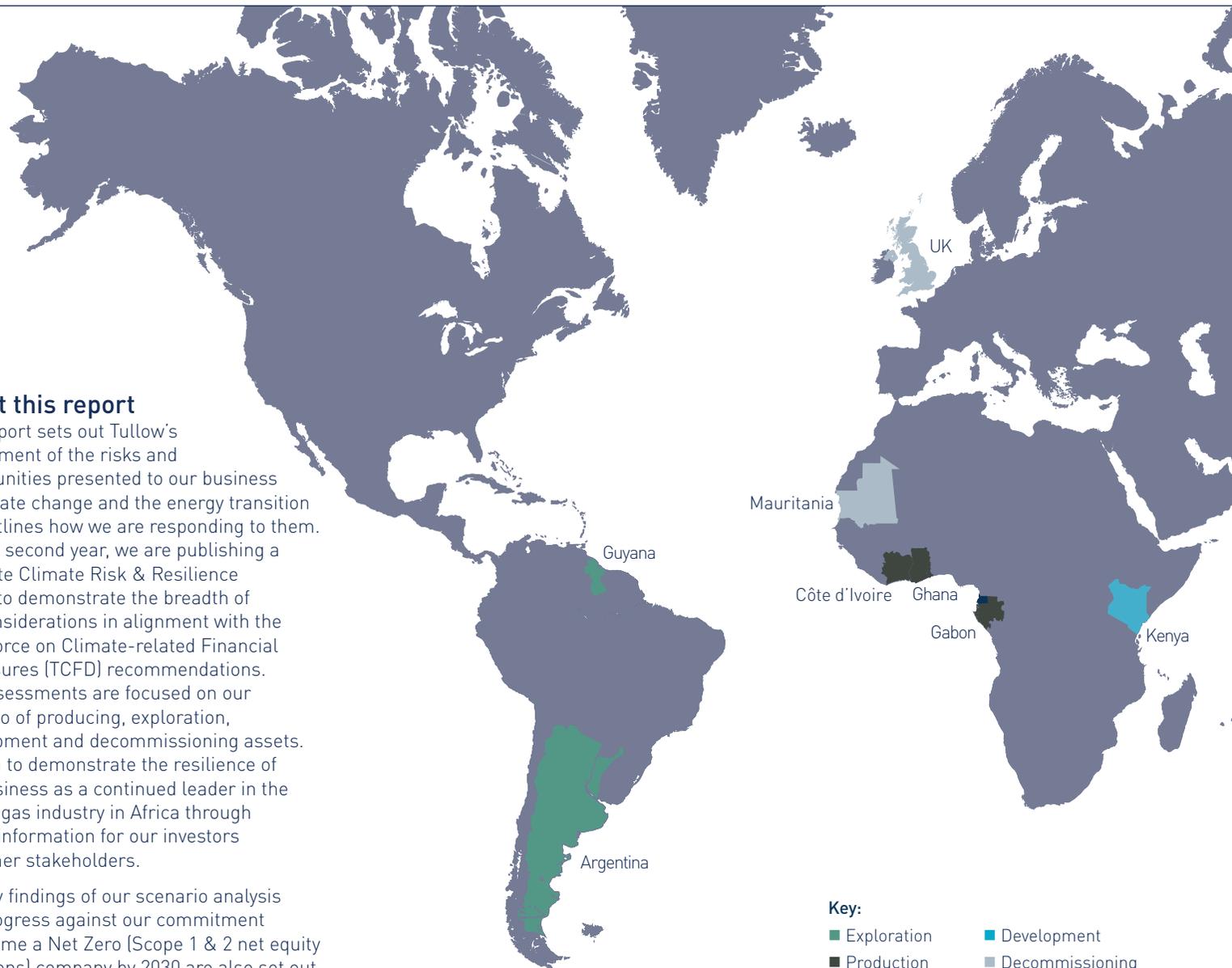
Tullow is an exploration and production (E&P) company focused on Africa and South America. We are a full cycle upstream oil and gas company, operating assets through the lifecycle of exploration and appraisal, through to the development and production phase to decommissioning at the end of life. Our business is focused on finding, or acquiring assets to extract, oil and gas which is then sold in the global commodity market. As such our business is confined to upstream oil and gas operations. We maximise value through operational excellence and technical expertise in engineering and subsurface geophysics, identifying and developing opportunities for oil and gas resources to bring value to our host nations and core stakeholders.

- Our portfolio of over 30 licences spans 8 countries. We are headquartered in London and our shares are listed on the London, Irish and Ghana Stock Exchanges.
- We produce oil and gas efficiently and safely, while minimising our environmental impact.
- We deliver tangible social and economic benefits to our host nations and offer a compelling value proposition for investors.

## About this report

This report sets out Tullow's assessment of the risks and opportunities presented to our business by climate change and the energy transition and outlines how we are responding to them. For the second year, we are publishing a separate Climate Risk & Resilience report to demonstrate the breadth of our considerations in alignment with the Task Force on Climate-related Financial Disclosures (TCFD) recommendations. Our assessments are focused on our portfolio of producing, exploration, development and decommissioning assets. We aim to demonstrate the resilience of our business as a continued leader in the oil and gas industry in Africa through useful information for our investors and other stakeholders.

The key findings of our scenario analysis and progress against our commitment to become a Net Zero (Scope 1 & 2 net equity emissions) company by 2030 are also set out in our 2021 Annual Report and 2021 Sustainability Report.



**Key:**  
■ Exploration      ■ Development  
■ Production      ■ Decommissioning



# Executive Summary

Over the past year, Tullow has continued to revisit its strategy in light of growing climate pressures.

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The Glasgow COP26 Climate Conference this year demonstrated the accelerating pace on all sectors to address this challenge. The material nature of these developments is integral to the way we run our business.

We continue to believe the oil and gas industry can, and should, be an engine of development for developing economies. As long as global demand exists, it is imperative that oil and gas assets are managed responsibly, efficiently, and transparently and that oil and gas production in developing economies creates positive and long-lasting economic and social benefits. Tullow has a long and proud history in Africa and is well positioned to continue contributing towards the continent's oil and gas industry.

Tullow also believes there is a role for the oil and gas sector to support the ambition of a fair energy transition and contribute to the realisation of the Sustainable Development Goals. Managing climate change is multi-dimensional. It goes beyond carbon emissions, as the physical and transition risks cut across many aspects of our business as well as broader social, economic, and environmental goals.

During the past year, Tullow's strategy and capital allocation process has completed the shift from a frontier exploration-led company to one focused on generating maximum value from its producing and development assets and infrastructure-led exploration.

In line with our Net Zero commitment, we have also:

- deepened our understanding of climate related physical and transition risks for our portfolio;
- progressed our Net Zero strategy and developed plans to decarbonise our Ghana assets, de-bottlenecking facilities and paving the way for eliminating routine flaring across our operations;
- developed our understanding of the contribution of methane in our emissions; and
- continued to test the resilience of our portfolio against International Energy Agency scenarios.



## Governance

Commitment to integrating environmental, social and governance performance throughout the business with a focus on climate risks and opportunities

Pages 7–8



## Strategy

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

Pages 9–11



## Risk Management

Integrating top-down, bottom-up climate risk management across our business

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## Metrics & Targets

Commitment to be a Net Zero company (Scope 1 & 2 net equity emissions) by 2030, with clear and transparent GHG emissions disclosures

Pages 17–18

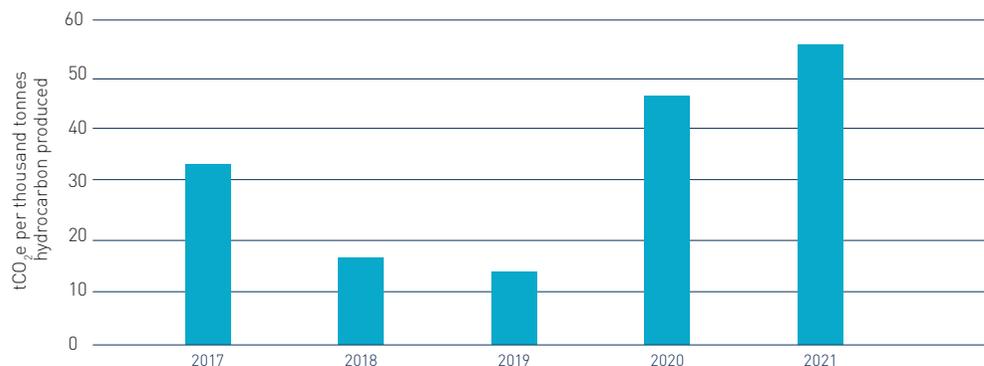
# Our approach to climate resilience

Our effort to progress further toward our goal of eliminating routine flaring by 2025 is on course albeit with some delay.

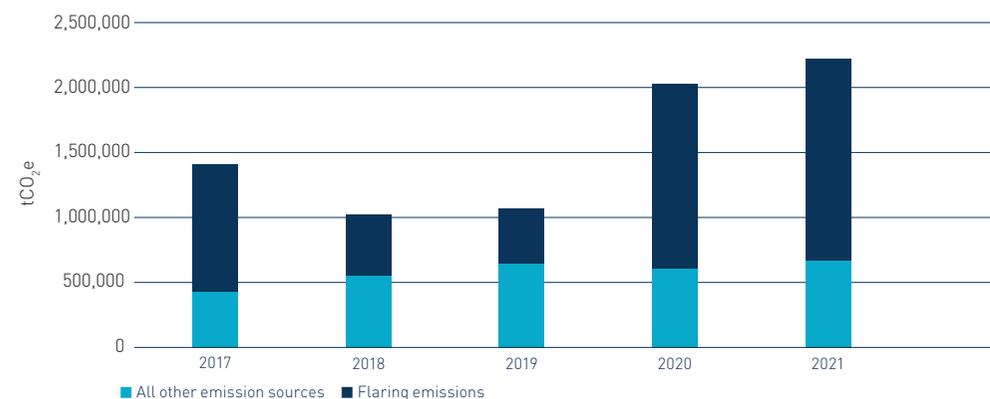
## Flaring

We continue to drive carbon efficiencies through our operations, however flaring remains a significant contributor to our total operated emissions. Implementation of the changes necessary to eliminate routine flaring for our Ghana assets requires the shutdown of operations at each site to allow for switching out core equipment and other upgrades.

### Operated/Group flaring intensity



### Operated/Group Scope 1 and 2 emissions from flaring



## Jubilee Flaring

Routine flaring elimination and flare reduction rates on the Jubilee FPSO in Ghana will be achieved in discrete phases through (i) the implementation of the compressor re-motoring/re-wheeling project, which will also include a refurbishment of the High Pressure B compressor; and (ii) implementation of the FPSO capacity expansion project (higher gas compression and processing capacity, and higher produced water treatment capacity). The re-motoring/re-wheeling project has progressed in 2021 and is due for completion in 2023. The FPSO capacity expansion project is in execute phase and is expected to be completed during 2023. We are pleased to report that, in 2021, two (2) out of the six (6) new, bigger compressor motors to drive the gas compression system were successfully installed with the other four (4) deferred to 2022 with all new motors. The re-wheeling materials are procured and in storage in Ghana.

The challenging operational issues on our FPSOs in Ghana were compounded by COVID-19 related supply chain bottlenecks and varying gas offtake levels from GNGC under the existing offtake agreement. The main constraint in delivering our implementation plan this year was the deferment of the planned maintenance shutdown for Jubilee from 2021 to 2022, which was required to prioritize the urgent

completion of critical asset integrity work, resulting in an accommodation shortage on board the Jubilee FPSO. The delay in Jubilee had a corresponding knock-on effect for the TEN FPSO, with a deferment of the planned maintenance shutdown from 2022 into 2023, resulting overall in slowing down the implementation of key flare reduction projects during the respective planned shutdown periods. While some of the gas compressor re-motoring and re-wheeling program has been deferred to 2022/23, the FPSO is on course to be ready for a dual train gas compression operation when the FPSO capacity expansion scope is completed in 2023.

In addition to the planned initiatives on Jubilee and TEN, we have made significant progress in the reduction of non-routine gas emissions arising from unplanned incidents. We achieved this primarily by expanding our preventative equipment monitoring and maintenance work. Over the period of 2020-2021 we achieved a year-on-year reduction of >65% in non-routine flaring associated with unplanned outages on Jubilee. Not only has this work led to a reduction in un-planned emissions but also led to improved equipment uptime. For 2022 we intend to continue this work focusing on opportunities arising from our preventative equipment monitoring and maintenance programme.

# Our approach to climate resilience

## TEN Flaring

Routine flaring elimination and flare reduction rates on the TEN FPSO in Ghana will be achieved through the implementation of a tie-in project which will route low(er) pressure separated gas from a Multi-Functional (MF) Separator vessel operating as a low-pressure separator (to receive production from low pressure Enyenra wells) away from flare and back into the gas processing section of the FPSO. When the MF Separator is operated at a lower pressure, its separated gas must be flared as it currently cannot be comingled with the higher pressure separated gas from the FPSO's main High-Pressure (HP) Separator. A flare reduction project will install tie-ins to instead route the separated gas into a Low-Pressure (LP) Gas Compressor section. Recently completed engineering study work has confirmed the feasibility of routing the Multi-Functional Separator low pressure gas into the Low-Pressure Gas Compression System. The execution phase of this project is planned to kick off in early 2022 and will initially focus on engineering and procurement of long lead tie-in valves in 2022 and will be fully installed during a planned maintenance shutdown in 2023.

Once completed, these projects will allow Tullow to cease the bulk of its flaring for the Jubilee field. The Jubilee FPSO capacity expansion project scheduled for 2023 completion will allow Tullow to discontinue flaring while maintaining the Jubilee production profile. Implementation of the gas compressor tie-in project will allow Tullow to cease all routine flaring on TEN. Full completion of the planned decarbonisation work in 2022 and 2023 will enable us to remain on track to meet our strategic target of ending routine flaring by 2025.



# Our approach to climate resilience



**Minimising emissions for Project Oil Kenya**  
Eliminating routine flaring and using gas for power generation and gas reinjection

## Responsible Development of Project Oil Kenya

Tullow recognises the increasing challenge and enhanced ESG requirements to finance hydrocarbon projects, and fundamental impacts that oil price volatility and the drive toward low carbon solutions have on project development considerations. Over the last year, we have re-evaluated Project Oil Kenya in line with our purpose to responsibly develop oil and gas resources and support the Government of Kenya’s vision for development. Working with our Joint Venture Partners, we tested the development concept at a range of oil price outcomes and determined engineering solutions to optimise the project design to maximise import from Kenya’s highly renewable grid and expect material reductions in the cost of power and CO<sub>2</sub>e emissions intensity.

We also have sought to optimize the design of our Project Oil Kenya infrastructure in order to eliminate routine flaring. We are confident that through this new design approach, which included the installation of heat recovery units on all upstream gas turbines, the increased use of recovered gas, its storage and excess waste heat, the project is expected to reduce the CO<sub>2</sub>e emissions intensity and the cost of the project’s power requirements. Beyond this we continue to explore opportunities for wind and solar as auxiliary load supply units to further reduce the grid power requirements and GHG emissions associated with the transport of the product to the Lamu port terminal.

Beyond the project’s emission considerations, we have also considered the water requirements. Turkana is an arid region, with many communities historically struggling to access sufficient water to meet their needs. Our objective is to utilise a sustainable water source which will support the project’s water requirements while also supplying water to local communities, assisting with a key climate adaptation risk for communities in this arid region.

## Methane

The Global Methane pledge announced at the COP26 Climate Conference demonstrates the importance of reducing this potent greenhouse gas. Methane as a proportion of Tullow’s gross emissions is small, <1%, but has a greater impact in terms of our gross emissions of CO<sub>2</sub>e. By eliminating routine flaring in our Ghana operations, we will also reduce our methane emissions.

The crude oil we sell from our fields in Ghana does not contain a high methane component due to the way we process it. However, we are presently unable to recover our vent gas on the Kwame Nkrumah FPSO (Jubilee field). We undertook laboratory analysis of the vent gas composition on this FPSO which revealed a much lower methane composition than we had previously accounted for, representing a 98% decrease in the methane emissions

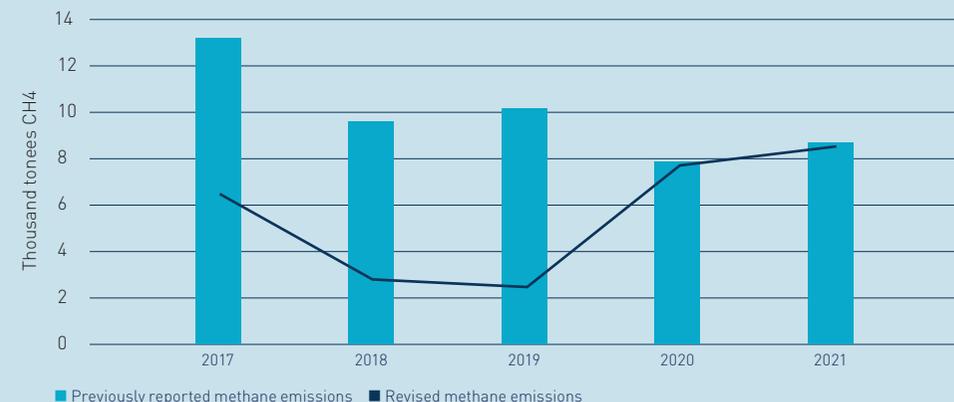
previously reported for vent gas between 2017-2020. As a result, we are revising the total methane emissions we previously disclosed for that time period and have corrected our vent gas emission factor for 2021 going forward.

Nevertheless, we have had an overall increase in our total methane emissions between 2017-2020 due to increased flaring.

**53%**  
reduction in total methane emissions between 2017-2020

**98%**  
reduction in reported methane emissions for vent gas between 2017-2020

### Group revised methane emissions

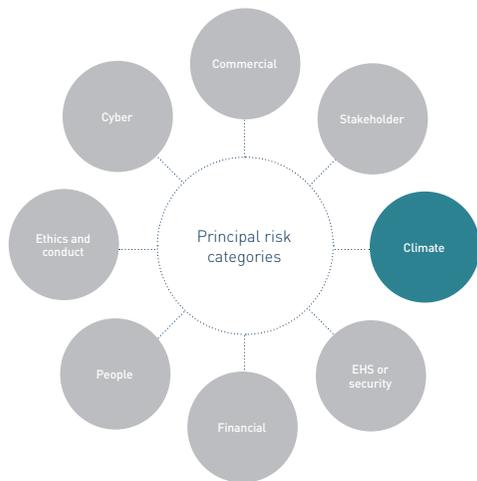




# Board oversight of climate-related risks and opportunities

Climate change remains one of Tullow’s eight Principal Risks with governance over climate-related risks provided at Board, senior management, and operational levels.

The Board has ultimate accountability for ensuring Tullow maintains sound climate risk management and internal control systems; Directors are responsible for ensuring they remain sufficiently informed of climate related risks to Tullow and the broader energy sector<sup>1</sup>.



## The Board:

- takes account of the financial impact on Tullow’s existing portfolio stemming from the risks of lower oil demand, lower oil prices, and potential carbon taxes identified in a range of commonly accepted climate scenarios for the energy industry;
- ensures mitigation of climate change risks is embedded in Tullow’s strategy, decision-making on capital allocation and management compensation;
- monitors indications of any changes in Tullow’s access to and cost of capital and debt, particularly stemming from shifts in investor sentiment towards the oil and gas sector related to climate change;
- approves Tullow’s carbon management and performance, including targets for emissions reductions; and
- reviews Tullow’s assessment of climate risks and opportunities including host nations’ Nationally Determined Contributions in support of the Paris Agreement.

The Board undertakes these responsibilities primarily through three sub-committees. The Safety and Sustainability Committee holds responsibility for operational performance on carbon emissions management and how this translates into sustainability performance and disclosures. Oversight of decarbonisation initiatives which underpin Tullow’s Net Zero commitment are also part of the Committee’s remit. The Audit Committee oversees the assessment of Tullow’s financial resilience considering the forecasts of various scenarios on our portfolio and ensures it is appropriately and transparently reflected in our financial disclosures. Through the Remuneration Committee the Board ensures climate and sustainability performance, including performance against our Net Zero target, is embedded in the corporate scorecard and annual performance KPIs<sup>2</sup>.

Annually, the Tullow Senior Leadership Team (SLT) support climate risk management through review of Tullow’s commercial resilience against various climate modelling scenarios. The SLT is also tasked with leading the incorporation of climate risks, opportunities, and scenario assumptions into enterprise risk registers. This process is supported by our multi-disciplinary climate risk review process, incorporating assessment of our portfolio against a range of commonly accepted climate scenarios, policy positions and regulations within our host nations. Each part of the business therefore evaluates climate related risks and opportunities within their remit as part of an ongoing risk review cycle; climate risk management reflects Tullow’s ‘top down, bottom up’ approach to risk.

For more information on Tullow’s approach to governance and risk management, please see our Annual Report and Accounts.

<sup>1</sup> Required to be able to meet their fiduciary duties under the UK Companies Act 2006.

<sup>2</sup> The 2022 Scorecard includes a 5% weighting for Sustainability KPIs



# Board oversight of climate-related risks and opportunities



Governance



## Audit Committee

Beyond its fiduciary duties in relation to the integrity of the company's Financial Statements, the Audit Committee is also responsible for ensuring there is a sufficient level of assurance being provided on the risk management and internal controls systems, including for Climate Risk, and whether it is sufficient for the Board to satisfy itself that they are operating effectively. During 2021 this included a review of the climate scenario analysis undertaken to test the resilience of Tullow's portfolio as well as review of climate risks.

**Chair:** Martin Greenslade.

**Members:** Mike Daly, Genevieve Sangudi, Jeremy Wilson.



## Safety and Sustainability Committee

Tullow modified the scope of its standing EHS Committee to include safety and sustainability in 2019 to reflect the material nature of ESG and sustainability risks. Embedding sustainability across the organisation, which includes progress against Tullow's Net Zero Commitment, was a key focus of the Committee for 2021. Among others, this included a review of the climate risk analysis process and findings of this assessment.

**Chair:** Mitchell Ingram.

**Members:** Mike Daly, Sheila Khama, and Dorothy Thompson.

For additional detail on our corporate governance framework, see pages 52-53 in the Annual Report and Accounts. Detail on composition, key strengths, experience, and attendance can be found on pages 54-59.



# Strategy

We believe that fossil fuels will remain an integral part of the energy mix for some time. But oil and gas resources need to be developed and produced responsibly. Across the world, economic development goals including widespread access to energy present a strong case for a fair energy transition where developing economies have the opportunity to benefit from the responsible development of their resources.

## Our focus

Tullow's focus has changed in recent years from an exploration-led business to a company focused on production and cashflow generation. This has been reflected in our decision to allocate in excess of 90% of our capital expenditure to our producing assets, with appropriate level of investment in our Net Zero strategy.

Within this context, the Jubilee and TEN fields in Ghana provide Tullow with multiple investment opportunities through a combination of infill drilling, facilities expansion, and new production from currently undeveloped areas of the fields and near field exploration. Tullow's non-operated production in Gabon and Côte d'Ivoire also provide infrastructure-led (ILX) exploration opportunities and a portfolio of diverse low-risk investment projects. Tullow's refreshed field development plan for our discovered resources in Kenya demonstrates further options to unlock additional value from our development assets. As many companies allocate capital away from the upstream and divest assets, Tullow also has potential to grow our business inorganically.

This year, Tullow continued to test the resilience of its portfolio against a range of scenarios including those of the

International Energy Agency (IEA), a commonly accepted source for the global energy sector. The four IEA scenarios, the Net Zero Emissions by 2050 Scenario, Announced Pledges Scenario, Stated Policies Scenario and the Sustainable Development Scenario, assess the impact of the energy transition on a wide range of industries with different regional impacts, including the impact on energy demand and energy mix in different markets. However, as a predominantly oil producing company with no downstream assets, the key financial risk for our business remains oil price and to a lesser extent carbon price.

The IEA scenarios include projected oil and carbon prices over a timeframe in which the global energy transition is expected to be substantially completed. Although all scenarios continue to see a material role for oil as part of the global energy supply mix until 2050, their assumptions envisage a clear departure from the business-as-usual approach with fundamental changes in the production and consumption of energy products across all sectors. These scenarios represent a broad range of outcomes which combined are deemed challenging but realistic tools for Tullow to understand the evolving impact of climate risks on its business case.

The biggest impact on oil and carbon prices as contained in the IEA scenarios is typically beyond 2030. The impact to Tullow's forecast CAPEX/OPEX due to climate risk is currently assessed as minor in comparison to the impact of oil price changes. Our analysis demonstrates that the impact is lowest on our currently producing assets, mitigating much of this impact, however it does have implications for new developments and exploration assets more exposed to the fall in oil prices post 2030. Similarly, while carbon prices are projected to grow there is low likelihood that carbon pricing elements will be formalised in support of Article 6 of the Paris Agreement in our core geographies, and not before Tullow's Scope 1 and 2 emissions have peaked (before 2025). Tullow's current internal shadow carbon price of \$40/tCO<sub>2</sub>e remains suitable but will be reviewed in line with IEA's emerging market and developing economies carbon price assumptions and further developments in relation to international carbon market instruments.

Allocation in excess of

**90%**

of our capital expenditure to our producing assets, with appropriate level of investment in our Net Zero strategy.

The carbon market environment in West Africa, as per the World Bank State of Carbon Pricing, demonstrates that within our current portfolio Côte d'Ivoire is currently considering the development of an Emissions Trading Scheme or carbon tax (<https://carbonpricingdashboard.worldbank.org>), supporting our assessment that there is low likelihood of carbon pricing elements becoming formalised in our core geographies in the near term. This view is further informed by ongoing engagement with key stakeholders and industry bodies.



# Strategy



Strategy

## Testing our resilience

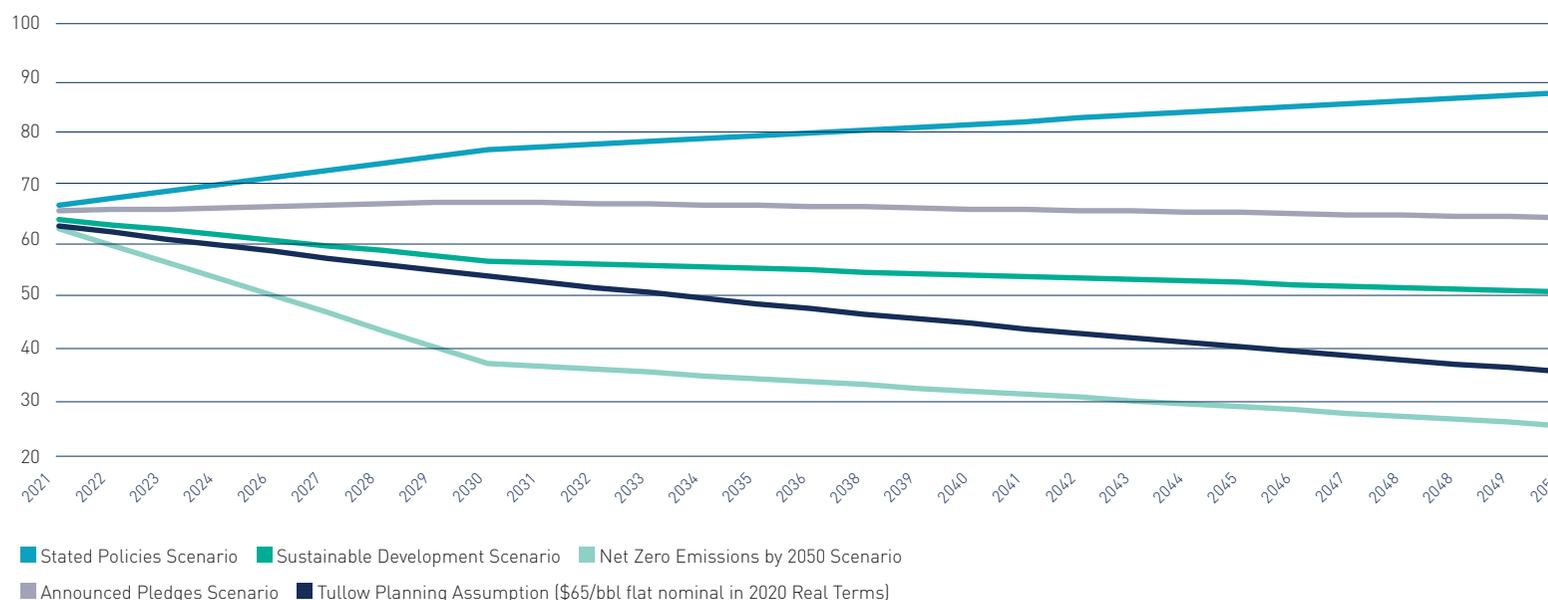
Our assessment reflects the impact of each scenario on the Group's Operating Cash Flow (OCF) over 1, 5, and 10 years, across three broad categories of assets. The choice of OCF instead of Net Present Value (NPV), which was used last year, has been made to reflect our Group Scorecard and the guidance given to investors about our future financial performance in our Trading Statements. The OCF KPI reflects our ability as a company to generate the cash we need to invest in the business and to finance the activities of the business. Whilst the discounting of cash flows in the NPV calculation implicitly captured the different impacts of the scenarios over time, we have chosen to make the changing impacts over time more explicit.

Our 2021 analysis considered macroeconomic conditions included within the IEA Net Zero Emissions by 2050 Scenario (NZE), Announced Pledges Scenario (APS), Stated Policies Scenario (STEPS), and Sustainable Development Scenario (SDS), as well as alternative socio-economic development outcomes defined within the Shared Socioeconomic Pathways framework.

See page 46 of the Annual Report and Accounts for further detail on Tullow's Viability Statement over this timeframe.

## IEA scenarios

Real Terms 2020 \$/bbl		2022	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040	2045	2050
STEPS	Stated Policies Scenario	66	68	69	70	72	73	74	76	<b>77</b>	80	83	85	<b>88</b>
APS	Announced Pledges Scenario	65	65	66	66	66	66	67	67	<b>67</b>	66	65	65	<b>64</b>
SDS	Sustainable Development Scenario	64	63	62	61	60	59	58	57	<b>56</b>	55	53	52	<b>50</b>
NZE	Net Zero Emissions by 2050 scenario	62	59	55	52	49	46	42	39	<b>36</b>	33	30	27	<b>24</b>
	Tullow Planning Assumption (\$65/bbl flat nominal)	62	61	60	59	58	57	55	54	<b>53</b>	48	44	40	<b>36</b>



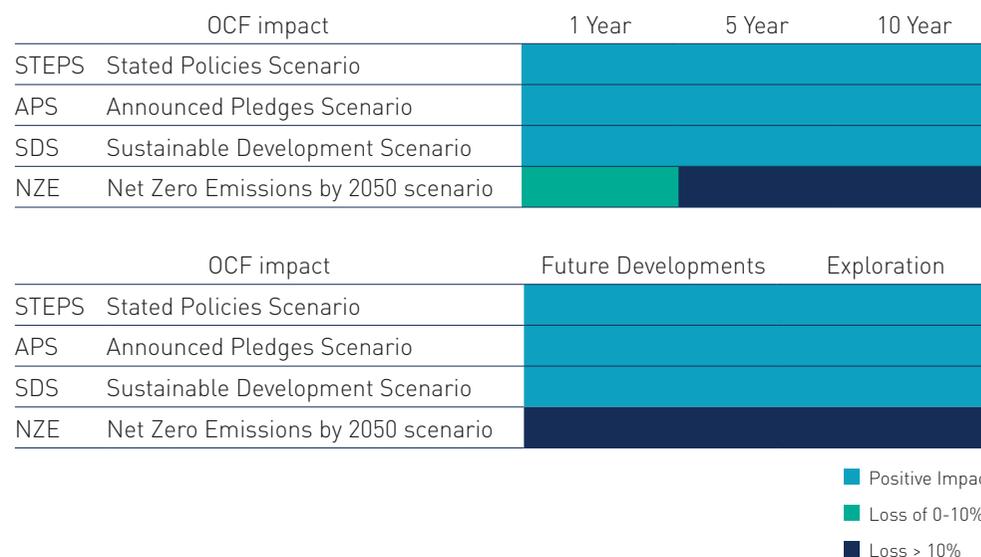
# Strategy



Strategy

Guidance given to investors has been based on Tullow's existing reserves and resources from our producing fields and does not consider growth from future developments (such as Kenya) or from Exploration (such as Guyana). It is more difficult to be specific about the impact of the four IEA scenarios on these growth opportunities because of the higher degree of uncertainty associated with future growth. It is clear from the oil price trajectories that the Stated Policies, Announced Pledges and Sustainable Development scenarios will have little adverse effect when compared to our own internal price assumptions. However, the Net Zero Emissions scenario represents a challenging oil price environment for these future investments, particularly post 2030 when the bulk of the cash flows would be generated from these types of projects.

We have taken note of the discussions at COP26 and welcome a shift from ambition to implementation across a range of decarbonisation pledges and initiatives relating to zero emissions and carbon-reduction strategies for sectors relevant to our business which may impact the wholesale commodities market. In keeping with the assumptions underpinning the IEA scenarios Tullow uses to test the resilience of its portfolio, we see that feasible fuel and propulsion alternatives exist, but research and development is still needed to create large-scale demonstration or commercial application in most uses. We also see the likelihood of carbon pricing instruments materialising in our core geographies as low. This, in combination with the scenario analysis undertaken for our current portfolio, leads us to assess the impacts to the resilience of our business as limited.





# Climate risks & opportunities

Tullow recognises climate change as a material, cross-cutting risk for our business.

The Group considers climate-related risks and opportunities as an upstream Exploration and Production company with limited exposure to impacts in the downstream and distribution component of the sector. Beyond the risks and opportunities described in this report we are looking at the connections between climate related risks and our overall risk management processes and structures in order to deepen our understanding of the challenges and opportunities and ensure our business strategy remains responsive to these risks.

This year we followed a refreshed materiality determination process to mature our understanding of climate risk on our organisation's assets and infrastructure, assessing a range of transition and physical risks and opportunities for our business strategy consistent with the time horizons considered for our scenario analysis and viability statement.

We followed a series of steps to assess the material impacts and potential risks over short, medium and long term time horizons. This materiality determination process also implicitly assessed the likelihood and impact of the identified risks, demonstrating that oil price and to a lesser extent carbon price remains the chief material financial risk to our business.

## Step 1. Risk Identification

Climate change is identified as a Principal risk for our business; effectively managing climate-related risks and opportunities is therefore essential and remains a core component of the bi-annual review of the Company's risk undertaken by the Board to provide 'top down' challenge and support. We used our existing climate risk register, informed by broader macroeconomic risks identified by IPIECA, the World Bank, IEA and other common sources for our industry, as well as enterprise level risks identified by Business Heads and Heads of Function as our foundation for scrutinizing the likelihood and impact of climate-related risks and opportunities to affect our business.

## Step 2. Peer Review

We engaged the services of third party experts to undertake a review of climate-related risk disclosures by peers and industry leaders in sustainability, to investigate potential gaps in our assessment and identify climate risks requiring more robust analysis and disclosure.

## Step 3. Climate Risk and Resilience Review<sup>1</sup>

We held a cross functional climate risk workshop with subject matter experts from various disciplines within our business and participation from the highest level of leadership. This workshop was a key step in our materiality determination process, highlighting oil price as the chief material risk for our business and confirming that other identified risks are not sufficiently material to require quantification with respect to potential financial impact. A subsequent series of smaller group discussions further interrogated our assessment of risks, mitigations and material impact specific to our business strategy. This process reflects Tullow's top-down, bottom-up analysis of risk and resilience.

## Step 4. Scenario Selection

We used the results of the risk assessment process to select the range of scenarios we would utilise to test the resilience of our business, chiefly through oil price and carbon price projections to 2050. We also considered qualitative assessments within these scenarios with respect to projected future demand and energy mix in different markets and used this to confirm our view that climate risks beyond oil price are currently not a material impact to the future profitability of our business given the core geographies where we operate and market demand for our product.

## Step 5. External Verification of Scenario Analysis

We shared the results of our climate risk assessment and scenario analysis with third party experts for assurance, and to ensure our analysis provides consistent, useful performance data and forward looking information on the material impacts of climate-related risks and opportunities, in support of TCFD recommended disclosures, for our business strategy.

<sup>1</sup> For the purpose of TCFD, we define resilience as the ability to adapt to climate transition and physical risk disruptions while maintaining our business operations and safeguarding people, assets and financial performance.



# Climate risks & opportunities



Risk Management

## Transition risks

Risks	Risk descriptor	Potential impact	Mitigation
Current & emerging regulation	<p>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; enforced stranding of assets, and legal action against Tullow from communities or stakeholders that hold the business accountable for contributing to climate change or climate-related impacts. Tullow has adopted a proactive approach to assessing ongoing climate-related 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.</p> <p><i>Time frame: 1, 5, 10 year horizon</i></p>	<ul style="list-style-type: none"> <li>- Decreased profitability due to form of carbon tax.</li> <li>- Regulatory constraints on hydrocarbon commerce.</li> <li>- Opportunity to decarbonise business faster with stronger business case.</li> </ul>	<ul style="list-style-type: none"> <li>- Use of a shadow carbon price \$40/tCO<sub>2</sub>e equivalent emissions for all new investment decisions to maintain a resilient portfolio.</li> <li>- Continue to work towards realisation of our Net Zero by 2030 commitment.</li> <li>- Engagement with host countries ministries responsible for Paris Nationally Determined Contributions to understand and align with their long-term strategies.</li> <li>- Track developments on carbon and greenhouse gas pricing mechanisms and understand offset opportunities within host countries.</li> <li>- Accurate, independently assured emissions accounting.</li> <li>- Engagement with industry associations to keep track of developments.</li> </ul>

# Climate risks & opportunities



Risk Management

## Transition risks

Risks	Risk descriptor	Potential impact	Mitigation
Financial	<p>Access to and cost of capital, arising from a reduced willingness 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.</p> <p><i>Time frame: 1, 5, 10 year horizon</i></p>	<ul style="list-style-type: none"> <li>- Increased cost of capital.</li> <li>- Reduced, or more conditional access to capital.</li> <li>- Shareholder activism.</li> <li>- Longer term opportunity to diversify capital sources following successful decarbonisation strategy.</li> </ul>	<ul style="list-style-type: none"> <li>- Continue to work towards realisation of our Net Zero by 2030 commitment.</li> <li>- Set, and communicate, interim targets and progress updates against Tullow's decarbonisation plan to investors.</li> <li>- Partnering with host countries' governments to ensure long-term gas offtake agreements where possible.</li> <li>- Target more diversified sources of financing.</li> <li>- Cost base reduced substantially to be viable in lower oil price environment.</li> </ul>
Technology	<p>Advances in and usage of technology by competitors to help them decarbonise their businesses or transition their businesses to cleaner energy sources could put Tullow at a competitive disadvantage. Acceleration of the electrification of transport, advances in recycling plastics and increasing energy efficiency will speed up the decline of hydrocarbons in the energy transition.</p> <p><i>Time frame: 1, 5, 10 year horizon</i></p>	<ul style="list-style-type: none"> <li>- Accelerating the peak of oil demand and therefore reduced demand for our product.</li> <li>- Challenges to our business strategy and alignment with broader energy transition goals resulting in shareholder activities, reduced access to capital and reputational damage.</li> <li>- Reduction in supply chain Scope 3 emissions.</li> </ul>	<ul style="list-style-type: none"> <li>- Benchmark against peer group carbon intensity.</li> <li>- Monitor competitors' adoption of technology to improve energy efficiency and lower carbon intensity and diversification of business models using new low carbon technologies.</li> <li>- Continue to explore nature-based and other forms of carbon offsetting projects which align with the long-term strategies of our host countries.</li> </ul>
Legal	<p>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.</p> <p><i>Time frame: 1, 5, 10 year horizon</i></p>	<ul style="list-style-type: none"> <li>- Increased legal costs.</li> <li>- Reputational damage.</li> <li>- Potential restriction of producing assets and/or exploration activity.</li> <li>- Criminal prosecution, severe fines or penalties.</li> </ul>	<ul style="list-style-type: none"> <li>- Transparent disclosure of climate risks to investors and stakeholders.</li> <li>- Accurate, independently assured carbon accounting.</li> <li>- Continue to work towards realisation of our Net Zero by 2030 commitment.</li> <li>- Engage with host governments to ensure understanding and alignment with Tullow's Net Zero 2030 strategy.</li> </ul>



# Climate risks & opportunities



Risk Management

## Transition risks

Risks	Risk descriptor	Potential impact	Mitigation
Market	<p>All IEA scenarios assume a requirement for oil and gas in the energy mix out to 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. Some industry commentators claim peak oil demand could have already taken place in the early 2020s, partly due to the impact of COVID-19 and therefore may have long-term implications for oil demand and pricing heightening the threat of stranded assets. Equally, the under investment in oil and gas over the last few years and particularly 2020 may lead to sharp commodity price increases by the mid-2020s.</p> <p><i>Time frame: 5-10 year horizon</i></p>	<ul style="list-style-type: none"> <li>- Changes in supply and demand for Tullow's product.</li> <li>- The repricing of carbon-intensive assets and more rapid asset impairment.</li> <li>- Stranded assets.</li> </ul>	<ul style="list-style-type: none"> <li>- Stress testing Tullow's portfolio to ensure its core assets are resilient at lower oil price levels.</li> <li>- Decarbonising operations to lower the carbon intensity of produced barrels.</li> <li>- Continue to work towards realisation of our Net Zero by 2030 commitment.</li> <li>- Engage with host governments to ensure understanding and alignment with Tullow's Net Zero 2030 strategy.</li> </ul>
Reputation	<p>May arise from failure to mitigate the carbon intensity of Tullow's business, targeted shareholder activism and divestment campaigns, or because of declining brand value, loss of revenue or declining access to and cost of finance. The Company's reputation may also suffer internally if employees become frustrated that Tullow is not proactively addressing energy transition or climate change issues.</p> <p><i>Time frame: 1, 5, 10 year horizon</i></p>	<ul style="list-style-type: none"> <li>- Negative impact on share price.</li> <li>- Impacting ability to attract and retain talent.</li> <li>- Reduced, or more conditional access to capital.</li> <li>- Reduced or more conditional access to new licenses.</li> </ul>	<ul style="list-style-type: none"> <li>- Communicate with regulators, investors, and stakeholders in a clear transparent manner.</li> <li>- Continue to work towards realisation of our Net Zero by 2030 commitment.</li> <li>- Engage with host governments to ensure understanding and alignment with the decarbonisation and offset components of Tullow's Net Zero 2030 strategy.</li> </ul>



# Climate risks & opportunities



Risk Management

## Physical risks

Risks	Risk descriptor	Potential impact	Mitigation
Acute physical	<p>Based on research commissioned by Tullow and conducted by Verisk Maplecroft on the long-term physical risks to several of Tullow’s key countries of operation, 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).</p> <p>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)</p> <p><i>Time frame: 5, 10, 30 year horizon</i></p>	<ul style="list-style-type: none"> <li>- Rising temperatures and frequent heatwaves increasing operational costs.</li> <li>- Threat to infrastructure from more extreme weather events and flooding.</li> <li>- Conflict in water stressed regions restricting operations and social licence to operate.</li> <li>- Business continuity from increased storm risk at ports.</li> </ul>	<ul style="list-style-type: none"> <li>- Business continuity and crisis management planning.</li> <li>- Proven, tested and successful business continuity process and plans in place to aid preparedness.</li> <li>- Periodic review and update of long-term physical risk profile for core geographies.</li> </ul>

# Metrics & Targets



Metrics & Targets

Tullow has a target to achieve Net Zero by 2030 on our Scope 1 and 2 net equity emissions, aligned with the 2°C goal of Article 2 of the Paris Agreement<sup>1</sup>. This is a commitment we are focused on from the Board through to our operations team in Ghana, where we have the greatest ability to influence the decarbonisation of our operations.

## Net Zero Task Force

Our Net Zero Task Force is charged with implementing our decarbonisation delivery plan, which includes an analysis of the major contributors to our operational emissions and identifies emissions abatement initiatives for implementation. This year our analysis of performance against targets included our assessment of progress in implementing projects which will address our flaring related emissions, the major contributor to our operational emissions.

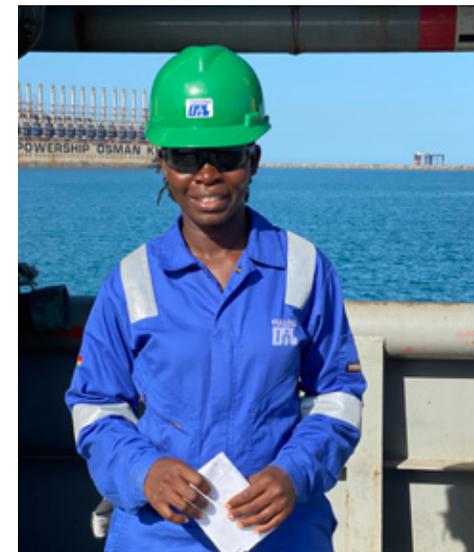
## Emissions

Our 2021 emissions are 9% greater than 2020. Tullow's gross operated Scope 1 emissions in 2021 were 2.2 million tonnes of CO<sub>2</sub>e (2020: 2.04 million tonnes of CO<sub>2</sub>e). This increase is due to the continued elevated levels of flaring on our Ghana assets, required for better reservoir management and sustained production levels. As a result, our gross Scope 1 and 2 emissions intensity grew from 221 tonnes of CO<sub>2</sub>e per thousand tonnes of hydrocarbon produced in 2020 to 268 tonnes of CO<sub>2</sub>e per thousand tonnes of hydrocarbon produced in 2021.

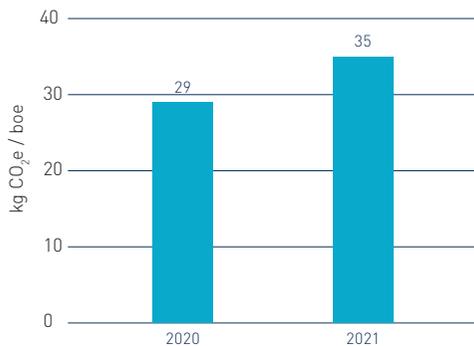
**We are focused on reducing our emissions, targeting gas handling and process modifications on our producing assets as a priority in our decarbonisation plan.**

Despite this year's increase in emissions, we are confident we will reach our interim target of eliminating routine flaring by 2025. Projects identified within our decarbonisation delivery plan have been captured within our capital allocation plans; implementation will be a core component of organisational performance KPIs. This will have a significant impact on our emissions profile and carbon intensity; as a result, we expect our emissions to reduce by at least 40% by 2025 largely as a result of our cessation of routine flaring made possible through the implementation of key decarbonisation initiatives.

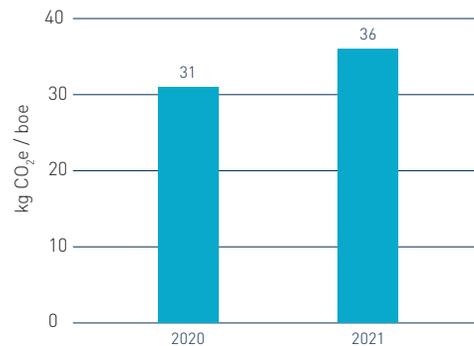
Our approach to offset our residual, hard to abate emissions currently focuses on the identification of nature-based solutions. Tullow is seeking to identify a diversified portfolio of carbon offset projects and/or jurisdictional programmes, initially within Ghana. These are likely to include a mix of Reduced Emissions from Deforestation and forest Degradation (REDD+) projects with some afforestation/reforestation (ARR) initiatives.



### Gross carbon intensity



### Net equity carbon intensity



<sup>1</sup> Net equity basis against a 2020 baseline



# Metrics & Targets



Metrics & Targets

This year we appointed Terra Global, a global leader in sustainable forest and agriculture program development, greenhouse gas quantification and finance to provide technical expertise and advise on the selection of suitable projects for financing and implementation. Terra Global will assist with the identification of potential project areas that support Ghana’s National REDD+ strategy and other natural resource management and rural development related policies. Tullow, Terra Global and the Ghana Forestry Commission have mutually identified modes of collaboration through a Memorandum of Understanding to identify ecological zones to carry out offset projects. It is expected that the feasibility phase will be completed in the first half of 2022. An investment decision and implementation is then expected to follow in the second half of 2022 through to 2023. We intend to register projects under leading standards such as the Verified Carbon Standard (VCS) and Climate, Community & Biodiversity Standard (CCBS).

We have also taken a refreshed look at our approach to carbon accounting. Tullow is committed to transparent disclosures of our emissions on both an operated and net equity basis. In 2020 we reported Scope 3 emissions from our non-operated portfolio for the first time; this year we are improving our Scope 3 emissions reporting to include emissions associated with waste generated in operations, business travel, transportation and distribution, and employee commuting. We recognise that Scope 3 emissions often represent a large component of an organisation’s total GHG emissions and are working towards understanding the emissions from our value chain to better understand and influence the total emissions associated with our portfolio.

We are also broadening our reporting of Scope 1 and 2 emissions this year to reflect our operational as well as net equity reporting boundaries. Our Net Zero target is based on our Scope 1 and 2 net equity emissions, which we had not previously reported and as such we are including our net equity figures from 2020 in this year’s disclosures.<sup>1</sup>

**Zero**  
routine flaring by 2025

Tullow’s commitment to accurate and transparent reporting is longstanding, and we continue to have our emissions data independently verified. Accurate GHG accounting enables:

- ✓ focused GHG emissions management,
- ✓ robust management of business and reputational risk, and
- ✓ participation in GHG emissions mitigation programmes, including accurate accounting for offsets and/or carbon market instruments.

We have updated the emission factors we apply to our fuel consumption in Ghana which are specific to the type of fuels we use in our operations; we have also assessed our vent gas composition based on laboratory analysis and are pleased to be able to restate a decrease in our gross methane emissions as a result (53% reduction in previously reported methane emissions between 2017 – 2020).

**Net Zero**  
**by 2030**  
Scope 1 & 2 net equity emissions

**External Verification and Assurance**  
Tullow engaged independent consultants GHD and Earth Active to assist with the development of our Climate Risk & Resilience report and to challenge our approach in testing the resilience of our business against climate transition and physical risks. Assurance of our Scope 1 and Scope 2 emissions, as well as the extent to which our disclosures meet the TCFD guidance requirements, was provided by Integrated Reporting and Assurance Services (IRAS) using the AccountAbility AA1000AS Assurance Standard. The full IRAS assurance statement is available at [www.tulloil.com/sustainability](http://www.tulloil.com/sustainability).



<sup>1</sup> 2020 is the baseline year for our Net Zero by 2030 target (Scope 1 and 2 net equity emissions) as well as our interim target to reduce net equity emissions by at least 40% by 2025.

## 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:

2021 Sustainability Report  
2021 Annual Report



Discover more about Tullow's approach  
to sustainability

[tulloil.com/sustainability/](https://tulloil.com/sustainability/)

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