



# Climate Risk & Resilience Report 2020





Tullow is a well-established, recognised oil and gas explorer and producer

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## Our focus

is on producing low cost oil and gas in a safe, efficient and environmentally and socially responsible way.

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## Our key activities

include generating material value for host countries, creating local business opportunities and building a compelling proposition for investors, as well as a great place for employees to work.

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## Our portfolio

of over 50 licences spans 11 countries. We are headquartered in London and our shares are listed on the London, Irish and Ghana Stock Exchanges.

## About this report

This is Tullow's second year of reporting in alignment with the recommendations of the Taskforce on Climate Related Financial Disclosures and the first year we have pulled together these disclosures into a separate Climate Risk and Resilience 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. Our direct engagement with investors and other stakeholders also informs this report. The key findings of our scenario analysis and commitment to become a Net Zero company by 2030 is also set out in our Annual Report & Accounts and Sustainability Report.



# Executive Summary

Tullow is reporting for a second consecutive year in alignment with TCFD, ahead of regulatory requirements and in line with best practice reporting. This disclosure reflects the Company's recognition of the threat posed by climate change and the need to reduce global greenhouse gas (GHG) emissions. As stated in its Climate Policy, Tullow supports the goals of Article 2 of the Paris Agreement, "holding the increase in the global average temperature to well below 2°C and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels". We also recognise that meeting the goals of Article 2 of the Paris Agreement requires global carbon emissions to peak as soon as possible and then to decline to reach net zero in the next 30–50 years.

The Strategy section discloses our asset-level climate change scenario analysis, conducted to assess the resilience of our portfolio against future climate change scenarios. Tullow uses the two scenarios published by the International Energy Agency (IEA) – the Stated Policy Scenario, which assumes the climate policies and targets announced by governments (prior to 2018) are enacted, consistent with a temperature rise of at least 2.7°C and the Sustainable Development Scenario, in which the world succeeds in the internationally recognised goal of meeting the Paris agreement to limit global warming to below 2°C.

Our current portfolio is resilient under both scenarios. The COVID pandemic significantly impacted global demand for oil and hence oil prices, forcing all oil companies to lower their corporate price decks. This brought Tullow's long-term view more in line with that of the Sustainable Development Scenario. All our current projects and assets have a positive economic value, including under the Sustainable Development Scenario. This demonstrates a resilient portfolio that we expect will continue to provide profitable barrels through to at least 2040. Farming down our Uganda asset and reducing our exposure to frontier oil exploration assets has further strengthened the resilience of our portfolio since this analysis was first undertaken in 2019.

Oil and gas continue to both underpin much of how our world runs today and will continue to bring significant wealth and social and economic development to oil exporting countries. At Tullow we believe that oil and gas will play an essential role in the global energy mix for the long-term, even if oil demand peaks in the coming decades. Whilst recognising the energy transition is underway, at Tullow, we believe that host governments around the world will continue to greatly value the capability, connectivity and capital that IOCs provide. Therefore, our focus for the foreseeable future will be oil and gas. Tullow plans to invest billions of dollars over the next 10 years, generating significant revenues for our host countries, creating local business opportunities,

reducing our carbon footprint and building a compelling proposition for investors and a great place to work for employees. Nevertheless, the decarbonisation of the global economy presents oil exploration and production companies with fundamental new challenges, which our TCFD disclosure addresses.

We are also keenly aware of Tullow's current carbon emissions performance and the fact that emissions in 2020 have doubled compared to the previous year due to elevated levels of flaring. See the adjacent box for an explanation as to why flaring at elevated levels was required in 2020.

Actions that we have taken to manage and mitigate the risks to our business from climate change are:

- making a commitment to become a Net Zero business (Scope 1 and 2 emissions) by 2030;
- understanding decarbonisation opportunities across our operations and implementing appropriate reduction initiatives while maintaining safety and reliability standards;
- ensuring our business strategy is responsive to evolving climate-related legal and regulatory developments; and
- increasing transparency in our performance reporting and openness in our engagement about climate change risks.

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# History behind 2020 elevated flaring levels

## Jubilee



The original Development Plan, further supplemented in 2017 by the Greater Jubilee Full Field Development Plan, set out an optimised field development requirement for, on average, 30 per cent of the produced gas to be re-injected into the reservoir with the remaining 70 per cent to be exported. A reduction in the required export levels will have a significant impact on oil reserves recovery.

During Jubilee's first four years of operation there was no onshore gas processing facility to export to, and all excess gas was injected into Jubilee reservoirs, significantly increasing the fieldwide Gas Oil Ratio (GOR). The onshore Gas Processing Plant, was commissioned in 2014 and exported gas slowed down the rise in fieldwide GOR. However, in the first four years of the gas plant commissioning GNGC take up of Foundation Volume Gas was below minimum requirement to maintain the GOR at the required levels. This caused a further rise in fieldwide GOR with further requirement for additional gas handling capacity, with the field regularly reaching maximum

compression and processing capacities with some wells having to be choked back so as to not exceed these installed capacities. These higher GOR levels have required Tullow to apply for permission for Jubilee to flare to produce for 2020/2021 to allow time for required projects to increase gas handling capacity projects to be engineered and procured and installed whilst also further encouraging GNGC to increase their gas offtake nominations. Tullow expects to be in a position to cease flaring to produce on Jubilee during 2022 when a 2021 project to replace gas compressor motors/compression wheels and add gas compression capacity is installed.

Separate to gas offtake, there have also been ongoing Jubilee FPSO operational issues such as those relating to the Gas Dehydration unit, and issues with the main gas compressor seal, motor and aftercooler, all of which have resulted in the need for sustained periods of high gas volume flaring.

## TEN



The TEN development plan for the Enyenra reservoir assumed reservoir pressure maintenance by water injection to permit optimal flow to the FPSO for processing would be successful. Since field start up in 2016 the water injection into parts of the Enyenra reservoir has not sustained its local reservoir pressure, resulting in a localised drop/reduction in reservoir pressure and a subsequent lack of adequate flowing pressure from Enyenra wells to reach the pressure requirements for processing in the FPSO High Pressure

Separator. To maintain production these wells were instead routed via the FPSO's Multi-Functional (MF) Separator vessel and then routed to flare. To maintain production these wells were instead routed via a separator on the vessel and then routed to flare. An EPA permit was granted for this operation. Tullow expects to be in a position to cease flaring to produce on TEN during 2022 when these low pressure wells will be re-routed to an alternate separator which will be able to process the lower pressure gas.

Tullow takes its impact on the environment very seriously and the decision to produce to flare from both our FPSO's has been a very difficult decision to take, but, after almost 10 years of excessive gas injection on Jubilee a request to flare was made to protect the reservoirs and to maintain our oil production at our business planned levels. We are also working with GNGC on a firm gas offtake agreement.

# Board oversight of climate-related risks and opportunities

The Board recognises that climate change and the decarbonisation of the global economy represent fundamental strategic risks to Tullow. Climate-related risks have been designated as an enterprise level risk and a distinct principal risk category, with the Board as a whole assuming direct responsibility for overseeing the identification and assessment of, and response to, these risks.

Directors have responsibility for ensuring they remain sufficiently informed of climate related risks to Tullow and the broader energy sector to be able to meet their fiduciary duties under the UK Companies Act 2006. The Board will take 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 associated with scenarios aligned with the goals of the Paris Agreement. The Board will also use these scenarios to evaluate the commercial viability of new development projects and exploration campaigns.

The Board will monitor 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. The Board will agree Tullow's carbon management and performance, including targets for emissions reductions. In addition, the Board will receive updates relating to host governments' Nationally Disclosed Contributions in support of the Paris Agreement.

The main Tullow Board is supported by its four Committees – Audit, Nominations, Safety and Sustainability and Remuneration – to ensure governance related to climate change is implemented through the Company's existing governance structure.



## Audit Committee

The Committee oversees the process of evaluating the financial impact of scenario analysis on our portfolio and ensure it is appropriately and transparently reflected in our financial disclosures.



## Nominations Committee

The Committee ensures the Board and Executives have access to the relevant skills and capabilities to assess, address and report on exposure to climate change and the energy transition.



## Safety and Sustainability Committee

The Committee has full oversight of Tullow's operational performance on carbon emissions management and how that performance translates into sustainability benchmarks and ratings scores, recognising the growing importance of these tools in investor decision making. In addition, the Safety and Sustainability Committee has broader oversight of Tullow's sustainability disclosure, ensuring it is balanced, complete and accurate.



## Remuneration Committee

The Remuneration Committee approved a KPI for the 2021 Scorecard to embed sustainability in the business, with a 10 per cent weighting. This KPI includes a target to implement our Net Zero plan.



## Board

The Board oversaw the development of Tullow's decarbonisation plans and carbon offset approach and provided final sign off. The Board has delegated the duty of overseeing the ongoing plans to embed the decarbonisation initiatives and execution of the carbon offset strategy to the Safety and Sustainability Committee.



## Senior Leadership Team

The CEO, Rahul Dhir, is currently designated as the owner of climate related risk. He is ultimately responsible for determining Tullow's strategic response to climate change and the energy transition, for identifying, assessing and managing climate related risks and opportunities and for monitoring the progress of mitigation actions.

He is supported in this by the other members of the Senior Leadership Team. The Senior Leadership Team is responsible for reviewing the commercial resilience of Tullow's portfolio against the assumptions of the IEA, at least annually and evaluating the risks to the commercial viability of new development projects and exploration campaigns.

The Senior Leadership Team will also set and monitor targets established to improve climate performance and periodically review Tullow's mitigation of climate risks. Climate change risks, opportunities and scenario assumptions (including oil demand, oil price, and carbon taxes are considered and integrated into all stages of the business cycle and into financial accounting processes. Each part of the business will evaluate climate related risks and opportunities within their areas of responsibility, bearing in mind the multi-faceted nature of climate change risk which may affect other principal risk categories including strategy risk, stakeholder risk, EHS risk, financial risk, organisation risk and conduct risk.

# Climate risks & opportunities

Tullow has identified Climate change risk as a principal risk. Julia Ross, Director of People & Sustainability is the risk owner.

Risks	Risk descriptor	Potential impact	Mitigation
<b>Transition risks</b>			
<b>Current &amp; emerging regulation</b>	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.	<ul style="list-style-type: none"> <li>• Decreased profitability due to form of carbon tax.</li> <li>• Opportunity to decarbonise business faster with stronger business case.</li> </ul>	<ul style="list-style-type: none"> <li>• Accurate emissions accounting.</li> <li>• Use of a shadow carbon price \$40/te of CO<sub>2</sub> equivalent emissions for all new investment decisions.</li> <li>• Track developments on carbon pricing mechanisms within host countries.</li> <li>• Engagement with host countries ministries responsible for Paris Nationally Determined Contributions.</li> <li>• Engagement with industry associations to keep track of developments.</li> </ul>
<b>Financial</b>	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.	<ul style="list-style-type: none"> <li>• Increased cost of capital</li> <li>• Reduced access to capital</li> <li>• Shareholder activism</li> <li>• Longer term, opportunity to tie debt to ambitions plans to decarbonise and deploy carbon offset projects/renewable energy</li> </ul>	<ul style="list-style-type: none"> <li>• A commitment to be Net Zero by 2030.</li> <li>• Set interim targets and progress updates against Tullow's decarbonisation plan.</li> <li>• Target more diversified sources of financing.</li> <li>• Cost base reduced substantially to be viable in lower oil price environment.</li> </ul>
<b>Technology</b>	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.	<ul style="list-style-type: none"> <li>• Accelerating the peak of oil demand and therefore reduced demand for our product.</li> <li>• Challenges to delivering suitable strategy to address climate change resulting in shareholder activities, reduced access to capital and reputational damage.</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> </ul>
<b>Legal</b>	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.	<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 and carbon accounting.</li> <li>• Developing plans to decarbonise operations and achieve a carbon neutral business</li> </ul>

Risks	Risk descriptor	Potential impact	Mitigation
<b>Transition risks - Continued</b>			
<b>Market</b>	The IEA's Sustainable Development Scenario sees a requirement for Oil & Gas in the energy mix out to 2050, albeit at reduced levels. In this scenario, the lowest cost, lowest carbon product will be most competitive. 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 in the years to come, heightening the threat of stranded assets. Additionally, there is market speculation that discounts/premiums will be applied to lower/higher carbon intensive products. 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.	<ul style="list-style-type: none"> <li>• Changes in supply and demand for products</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 of operations to lower the carbon intensity of produced barrels.</li> <li>• Offsetting residual emissions..</li> </ul>
<b>Reputation</b>	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.	<ul style="list-style-type: none"> <li>• Negative impact on share price.</li> <li>• Impacting ability to attract and retain talent.</li> </ul>	<ul style="list-style-type: none"> <li>• Commitment to be a Net Zero business with a clear decarbonisation plan and strategy to offset residual emissions.</li> </ul>
<b>Physical risks</b>			
<b>Acute physical</b>	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).	<ul style="list-style-type: none"> <li>• Rising temperatures and frequent heat-waves increasing operational costs</li> <li>• Threat to infrastructure through heavy rainfall and flooding</li> <li>• Conflict in water stressed regions re-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> </ul>



## Strategy

Tullow tests the resilience of its portfolio against two IEA scenarios: the Stated Policies Scenario and the Sustainable Development Scenario. These include both the projected oil and carbon price. Tullow's uses the long-term oil price of \$60/bbl real but also tests the robustness of our portfolio against \$55/bbl nominal. The Sustainable Development Scenario (SDS) – aligned to the Paris goals - projects a modest decline in prices to \$57/bbl real by 2025 and to \$53/bbl real by 2040, hence the limited negative impact on the Net Present Value in this scenario. While the majority of prospects in Tullow's portfolio remain commercially robust at \$55/bbl, the further the presumed First Oil dates are into the future, the more the NPV is impacted. In the Stated Policies scenario, Tullow's portfolio is positively impacted. Tullow intends to mature its scenario analysis in 2021 to account for additional transition risks.

### Impact on NPV\*

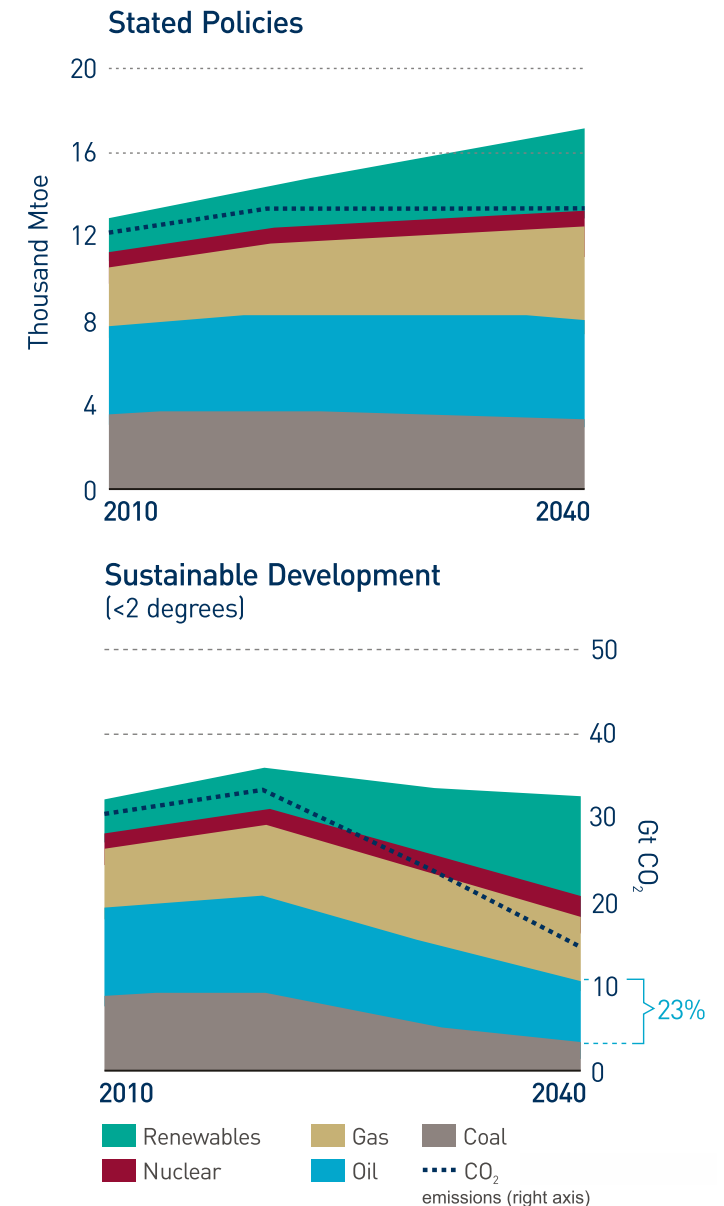
- +10 to 20%
- 0 to -9%

	Stated Policies Scenario	Sustainable Development Scenario	
<b>Ghana</b>	<span style="color: green;">●</span>	<span style="color: blue;">●</span>	Least impacted as Jubilee and TEN final production in 2034 and 2036 respectively
<b>Non-op</b>	<span style="color: green;">●</span>	<span style="color: blue;">●</span>	Producing assets see little impact to NPV over the next 10+ years
<b>Kenya</b>	<span style="color: green;">●</span>	<span style="color: blue;">●</span>	A Final Investment Decision is expected within the coming years and with a field life of ~25 years, NPV will be impacted to some extent, but not as greatly as exploration.
<b>Exploration</b>	<span style="color: green;">●</span>	<span style="color: blue;">●</span>	The lead time between a potential discovery and FID is minimum of 3-5 years and therefore NPV is mostly impacted in both scenarios in this category.

\* Tullow uses the long term oil price of \$60/bbl real but also tests our investments and Business Plan at \$55/bbl nominal.

1. SPS projected 2040 oil price is \$85/bbl – real.
2. SDS projected 2040 oil price is \$53/bbl – real.

## World Primary Energy Demand by Fuel and Related CO<sub>2</sub> Emissions by Scenario

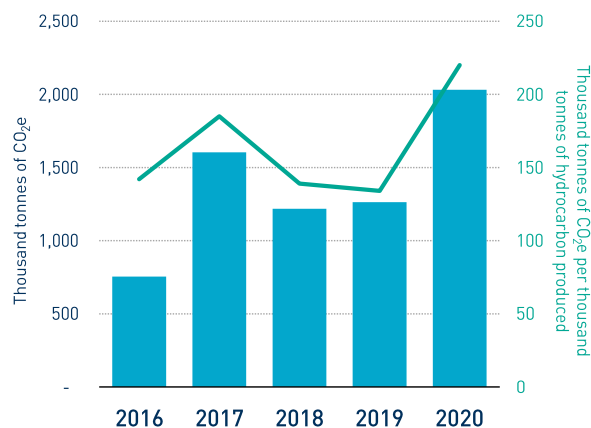


Source: IEA World Energy Outlook 2020

# Targets

Tullow's operational carbon emissions increased significantly in 2020. Tullow's Scope 1 emissions in 2020 were 2.03 million tonnes of CO<sub>2</sub> e (2019: 1.26 million tonnes CO<sub>2</sub> e), a 61 per cent increase on 2019 due to elevated levels of flaring, required for better reservoir management and sustained production levels. As a result of increased flaring, emissions intensity relative to production grew from 134 tonnes of CO<sub>2</sub> per thousand tonnes of hydrocarbon produced in 2019 to 220 tonnes of CO<sub>2</sub> per thousand tonnes of hydrocarbon produced in 2020. The carbon intensity expressed as kg CO<sub>2</sub> e/boe is 17 kg CO<sub>2</sub> e/boe in 2019 and 29 kg CO<sub>2</sub> e/boe in 2020.

Total Gross operated CO<sub>2</sub>e emissions and carbon intensity for scope 1 & 2



## 2030

Net Zero across our assets (scope 1 & 2 emissions)

Tullow's operational carbon emissions increased significantly in 2020. Tullow's Scope 1 emissions in 2020 were 2.03 million tonnes of CO<sub>2</sub>e (2019: 1.26 million tonnes CO<sub>2</sub>e) a 61 per cent increase on 2019 due to elevated levels of flaring, required for better reservoir management and sustained production levels. As a result of increased flaring, emissions intensity relative to production grew from 134 tonnes of CO<sub>2</sub> / thousand tonnes of hydrocarbon produced in 2019 to 220 tonnes of CO<sub>2</sub> per thousand tonnes of hydrocarbon produced in 2020. The carbon intensity expressed as kg CO<sub>2</sub>e/boe is 17 kg CO<sub>2</sub>e/bbl in 2019 and 29 kg CO<sub>2</sub>e/boe in 2020. In 2020, Tullow formed a Net Zero Taskforce to define an energy transition strategy for Tullow to achieve net zero emissions (scope 1 and 2). The Net Zero Taskforce in conjunction with an external expert consultant, evaluated several options to decarbonize our Ghana operations. Given Tullow's most material source of Scope 1 emissions is flaring produced gas to sustain oil production, the elimination of routine flaring is a key objective of the Net Zero plan and Ghana business. Over the next five years, this will

## ZERO

Routine Flaring by 2025

be achieved by managing the business' current dependency on the need for routine flaring, namely, debottlenecking of gas systems on Jubilee and TEN and achieving increased gas offtake from the Government of Ghana. Investments are being made over the next three years to increase the gas handling capacity on Jubilee and enable process modifications on TEN.

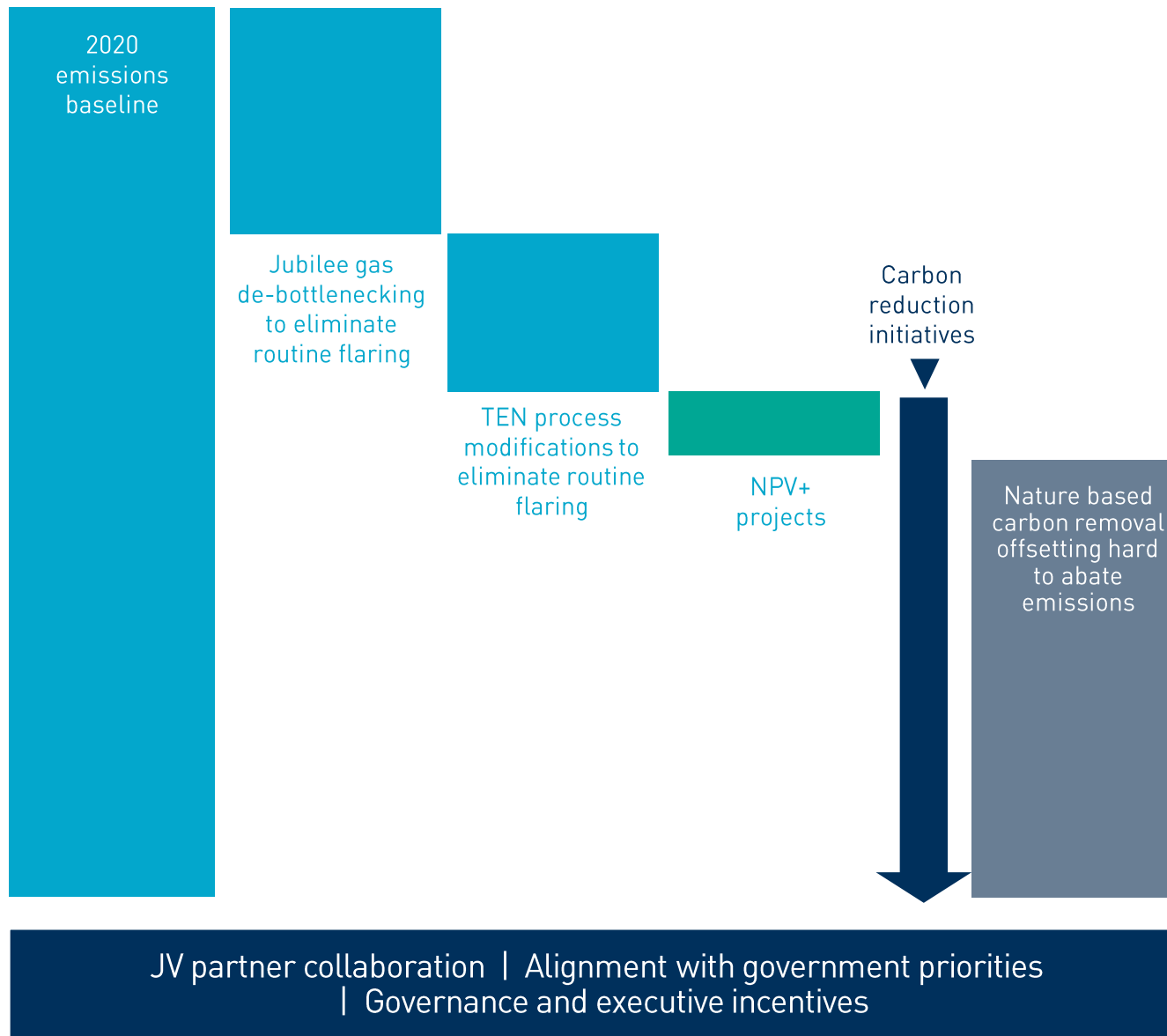
Key to eliminating the need for routine flaring is maintaining the consistency of gas supply from Jubilee and TEN fields and the corresponding offtake from the Government of Ghana. At the end of 2020, Tullow was exporting ~135 mmscf/d to shore, consistent with the Government of Ghana offtake nomination. This will need to be maintained to utilise the gas being produced from the higher number of producer wells as part of Tullow's 10-year plan. For 2021, our target is to achieve an offtake level between 100-135mmscf/d as an optimum level to support oil production. There is strong alignment and a robust commercial foundation between the JV Partners and the Government of Ghana to achieve the targeted levels.

## 40-45%

Reduction in emissions by 2025\*

Tullow and its JV partners are actively discussing a long-term firm gas supply and offtake agreement with the Government of Ghana which is anticipated to create material value to all parties involved and which underpins the projected outlook for the 10-year business plan. These decarbonisation efforts will set Tullow on a path to reduce emissions on a net equity basis by ~40 per cent by 2025 relative to 2020 levels. Further identified emissions reductions initiatives can reduce emissions by an additional 5 per cent. To offset its residual hard to abate carbon emissions, work is underway to identify nature based carbon removal projects, such as, reforestation, afforestation and conservation that Tullow will invest in to achieve its Net Zero ambition by 2030. We will also seek to align our carbon offset strategy with government priorities, emerging regulation on Article 6 of the Paris Agreement as well as our Shared Prosperity strategy, focused on creating socioeconomic opportunities for our host communities.

## Pathway to Carbon Neutrality



### Carbon accounting

Tullow has begun reporting for the first time in 2020 emissions from our non-operated portfolio across our assets in Gabon, Equatorial Guinea and Cote d'Ivoire. The equity share of emissions from these assets in 2020 was 318,271 CO<sub>2</sub>e. This is separate and in addition to the Scope 1 and 2 emissions described in the table. As a result, Tullow's indirect emissions associated with our value chain, or Scope 3 GHG emissions, increased significantly. However, given our primary area of control and influence is our operated emissions, this is where our decarbonisation efforts will continue to focus, in collaboration with our Joint Venture Partners.