Climate Change Committee

The UK's independent adviser on tackling climate change

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The Rt Hon Kwasi Kwarteng MP
Secretary of State, Department for Business, Energy & Industrial Strategy
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24th February 2022

Dear Kwasi,

I am writing to you in connection with the ongoing consultation on the proposed Climate Compatibility Checkpoint for oil and gas licensing in the North Sea.

My Committee welcomes the proposal to apply a climate checkpoint to North Sea oil and gas production. We encourage you to set stringent tests to the licensing of exploration. Equivalent tests should also apply to later development stages, such as consenting of production. These tests will provide a useful complement to UK plans to cut emissions through policies that reduce consumption of fossil fuels, as embodied in your Net Zero Strategy.

We provide this advice in the context of the recent spike in fossil fuel prices and consequent energy affordability crisis. Oil and gas prices faced in the UK are set internationally. The best way of reducing the UK's future exposure to these volatile prices is to cut fossil fuel consumption on the path to Net Zero – improving energy efficiency, shifting to a renewables-based power system and electrifying end uses in transport, industry and heating. Any increases in UK extraction of oil and gas would have, at most, a marginal effect on the prices faced by UK consumers in future.

We have not been able to establish the net impact on global emissions of new UK oil and gas extraction. UK extraction has a relatively low carbon footprint (more clearly for gas than for oil) and the UK will continue to be a net importer of fossil fuels for the foreseeable future, implying there may be emissions advantages to UK production replacing imports. However, the extra gas and oil extracted will support a larger global market overall. Whereas the evidence against any new consents for coal exploration or production is overwhelming, the evidence on new UK oil and gas production is therefore not clear-cut.

We would support a tighter limit on production, with stringent tests and a presumption against exploration. An end to UK exploration would send a clear signal to investors and consumers that the UK is committed to the 1.5°C global temperature goal. That would also help the UK in its diplomatic efforts to strengthen climate ambition internationally. However, we recognise that there are additional important considerations, such as on energy security, that extend beyond the statutory remit of my Committee.

In reaching our position the Committee have considered five areas. The rest of this letter sets out our assessment in each of these areas, with further details and charts included in the attached Annex.

1. The declining role of oil and gas in the global climate transition
2. Evidence on the emissions impacts of UK extraction of oil and gas
3. Impacts of North Sea development on consumers and the UK economy
4. The signalling effect of UK decisions on oil and gas extraction
5. The role of a climate compatibility checkpoint

1. The declining role of oil and gas in the global climate transition

Tackling climate change requires a very significant reduction in the unabated combustion of fossil fuels, including oil and gas.

- The Glasgow Climate Pact strengthens focus on the goal of limiting global temperature rise to 1.5°C. IPCC scenarios for 1.5°C show reductions in global oil consumption of 20-78% by 2035 and 32-90% by 2050. For fossil gas, changes in global consumption range from a reduction of over 80% by 2050 to an increase in scenarios where it is used in combination with carbon capture and storage (CCS) on a widespread basis.*

- For the UK, our scenarios for meeting the Sixth Carbon Budget and Net Zero in 2050,† and those of your government,‡ require large and rapid reductions in consumption of oil and gas. CCC pathways see oil consumption fall by 46-62% by 2035 and 84-98% by 2050, while unabated consumption of fossil gas (i.e. use without CCS) falls by around 65% by 2035 and is virtually eliminated by 2050. Even with a significant role for CCS, total UK gas consumption must fall by 50% by 2035 and 75% by 2050.

Current NDCs, submitted to the United Nations, are insufficient to deliver the global 1.5°C pathways. Abrupt constraint of global oil and gas extraction, before demand has adjusted, would imply global shortages, with resulting price spikes and risks to energy security. The current global gas crisis demonstrates the sort of problems this could lead to – increased coal consumption as a cheaper substitute for gas and escalating consumer bills that in turn could divert attention from climate action.

Generally, therefore, our advice has focused on the role of policies to limit the consumption of fossil fuels in the UK, for example by supporting the roll-out of electric vehicles, heat pumps, renewables and nuclear, with a supplementary role for fossil gas with carbon capture and storage in electricity generation and hydrogen production. This approach was replicated in your Net Zero Strategy, which used similar pathways to those of the Committee.

In theory, these actions to reduce consumption could be enough. Suppliers of fossil fuels would anticipate the reductions and reduce their own supply and investment in new extraction. Additional policy aiming to limit supply or extraction would be unnecessary.

In reality, these questions of supply and demand are not so easily separated. Expectations can be self-fulfilling and through history markets have not fully 'priced in' policy commitments to tackle climate change.

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* Intergovernmental Panel on Climate Change (2018) *Special Report on Global Warming of 1.5 °C.*
† CCC (2020) *The Sixth Carbon Budget – The UK's path to Net Zero.*
‡ HM Government (2021) *Net Zero Strategy: Build Back Greener.*

With no policy on the supply side there is a risk that extraction would far exceed the amount of fossil fuels that could be burnt under climate commitments – leading either to stranded assets or to a breach of climate goals. This is not a theoretical risk – the UN Environment Programme's Production Gap report identifies current plans for expanding global fossil fuel extraction that go beyond levels compatible with countries' climate pledges, which in turn are far above levels compatible with limiting warming to well below 2°C, and even further above trajectories consistent with 1.5°C (see Figure 3 in the annex to this letter).

My Committee therefore welcomes the premise of a Climate Compatibility Checkpoint, to ensure compatibility of oil and gas licensing with the UK's climate objectives. We see a role for policy to limit extraction of oil and gas on climate grounds, alongside policies to reduce the burning of these fuels. Your consultation rightly proposes an evidence-based approach to identifying how far extraction should be limited. The remit of the CCC insists that our advice also should be based on the evidence.

2. Evidence on the emissions impacts of UK extraction of oil and gas

As the UK cuts fossil fuel consumption in line with the carbon budgets and Net Zero, there remains a question over how our falling fossil fuel consumption should be met. The UK is a net importer of oil and gas and will continue to be for the foreseeable future, so it is important to consider the emissions impacts of new fields, as against higher oil and gas imports.

New oil and gas fields would involve emissions (both carbon dioxide and methane) in their development and operation that would count towards the UK's carbon budgets. The scenarios used in our analysis for the Sixth Carbon Budget allow for some emissions from new fields, as new fields are included in the Oil and Gas Authority's output projections, which were an input to our analysis. The scenarios in your Net Zero Strategy involved higher emissions from the oil and gas sectors, so could also accommodate new fields.

It follows therefore that the UK carbon budgets can still be met if new UK fields are developed, provided additional actions are taken to reduce emissions, such as electrifying offshore platforms and addressing methane leakage. However, there is also a wider question: whether developing new UK fields would help or hinder efforts to reduce emissions globally.

Publicly available estimates of the emissions footprint of producing both oil and gas in the UK currently are lower than the global average, particularly for gas. As your consultation notes, there would be a further advantage to UK production where it can be used locally in the UK and displace liquefied natural gas at the margin. Over time this advantage may be reduced as other markets also decarbonise extraction (including tackling methane leakage), but we expect some advantages to remain (see Figure 4 in Annex).

Given this emissions advantage for UK oil and gas extraction, there are at least two potential emissions effects, which offset each other, of further extraction from the UK continental shelf:

- At present, UK production has an emissions footprint that is lower than the current average for international extraction, by 14% for fossil gas and by 3% for oil.* Emissions from UK extraction are also within the UK's legal carbon budgets, meaning any additional emissions from UK oil and gas

* Note that these include upstream and combustion emissions but exclude emissions associated with refining or transport.

production must be managed properly through greater emissions savings in other sectors of the economy.

- However, the extra gas and oil extracted would support a larger global market overall. The size of this effect is very hard to predict, particularly as it will interact in future with countries' climate commitments under the Paris Agreement and the complexities of global oil and gas markets. Some academics have attempted to estimate this effect and suggested that 20-60% of the additional production would lead to additional consumption (rather than reduced production elsewhere), but this is highly uncertain.*

Given the range of uncertainties on both sides, it has not been possible for my Committee to determine the net effect of these offsetting impacts on global emissions.

The first of the two effects set out above relies on the UK's production having a smaller emissions footprint of supply than the imported fossil fuels that would otherwise be required. We note that policies could be implemented to lower the emissions footprint of fossil fuels imported to the UK. This would be valuable regardless of decisions on new UK fields, but increases in importance if no new fields are developed in the North Sea. The main policy options to minimise upstream emissions from imported fossil fuels are the establishment of a carbon border adjustment mechanism (CBAM) or implementation of standards.

3. Impacts of North Sea development on consumers and the UK economy

My Committee is required to consider economic and social circumstances under Section 10 of the Climate Change Act, including impacts on fuel poverty and energy supplies. We must therefore consider the wider implications of decisions on whether or not to continue with oil and gas licensing.

The prices paid for fossil fuels by UK consumers are determined by international markets. The best approach to reducing consumers' exposure to fossil fuel prices is to make systematic efforts to reduce UK demand for fossil fuels, through policies that enable and encourage a cost-effective switch to low-carbon alternatives and improved efficiency. For example, recent public estimates showed that had rates of household energy efficiency improvement continued in the past decade at the rate achieved until 2012 and the zero-carbon homes standard come into force in 2016 as originally planned, UK households would face annual energy bills from April 2022 around £1 billion lower (~£40 per household) than they will be under the recently announced price cap.†

Mature renewables such as wind and solar are already being contracted at prices that were cost-competitive with gas-fired electricity generation even before the recent surge in gas prices. If high fossil fuel prices were to be sustained on a long-term basis, decarbonisation of electricity supply would reduce bills significantly. For example, were the Government's target for 40 GW of offshore wind by 2030 in place now, that would save around £100 per household under the current price cap.‡ There is also further potential for low-cost generation from onshore wind and solar to reduce emissions and energy bills.

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* Taran Fæhn et al. (2017) Climate Policies in a Fossil Fuel Producing Country: Demand versus Supply Side Policies, *Energy Journal*, 38(1); Peter Erickson et al. (2018) Limiting fossil fuel production as the next big step in climate policy, *Nature Climate Change* 8, pp.1037–1043.

† Carbon Brief analysis - https://www.carbonbrief.org/analysis-cutting-the-green-crap-has-added-2-5bn-to-uk-energy-bills.

‡ CCC analysis based on a wholesale electricity price of £132/MWh under the summer 2022 price cap, and assuming an offshore wind strike price of £48/MWh from CfD AR3 and £23/MWh cost of intermittency.

We acknowledge the potential economic advantages of North Sea fossil fuel extraction, but we note that these are also considerably lower than they have been historically:

- **Support for existing well-paid jobs that are important locally.** We note that oil and gas extraction are not the only routes to new North Sea jobs – these will also be created in the Net Zero transition, for example in offshore wind or carbon capture and storage (CCS). Furthermore, as the world moves away from oil and gas there is a significant risk that new oil and gas investments become stranded assets, making a smooth transition more difficult in those areas where new investments have been made.

- **Potentially some insurance against high fossil fuel prices, such as those currently being experienced.** We would not expect increased UK extraction to materially affect global oil or gas prices, as the UK energy market is highly connected to international markets and the potential supply relatively small. Even extracting all proven UK reserves and resources from new fields would only meet about 1% of European gas demand each year to 2050.* There could in theory be scope to use windfall taxes to capture some of the increased profitability at times of high prices and return these to UK consumers, if the Government was prepared to use such an instrument. Historically, UK oil and gas production has yielded relatively high tax receipts, but this advantage has been much reduced in recent years.

- **Reduced energy imports may also be seen as improving UK energy security.** However, we note that the UK's net imports of oil and gas are expected to fall if consumption falls in line with the Committee's Net Zero pathway or the Government's, and production follows the OGA projection (Figure 5).

Weighing these advantages is an inherently political decision, which goes beyond climate policy and sits rightly with Government, not with my Committee.

4. The signalling effect of UK decisions on oil and gas extraction

It is hard to gauge the signalling impact of UK decisions on further oil and gas extraction, but it is likely to be material. In particular, continuing to allow extraction may weaken UK diplomacy to encourage other countries to adopt ambitious climate policies. It is also important on a domestic stage for there to be a perception that Government policy is fully aligned with Net Zero, rather than being undermined by questions such as seen over the last year with the proposed coal mine in Cumbria and the Cambo oil field.

- **The UK can cement its commitment to 1.5°C internationally.** The International Energy Agency's Net Zero scenario for the global energy system on a 1.5°C path involved no new oil and gas fields being developed globally. Having strongly backed 1.5°C at COP26 in Glasgow and beyond, and with the only national emissions target judged as consistent with 1.5°C by Climate Action Tracker, the UK could further cement that commitment to 1.5°C by committing to develop no new oil and gas fields, in line with the IEA 1.5°C scenario.

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* OGA (2021) *UK Oil and Gas Reserves and Resources*. Based on production from up to 50% of offshore proven reserves and all contingent resources in new developments with a 50% probability of being producible compared to current European gas demand, assuming a 70% recovery factor.

That could help with the UK's diplomatic push as COP President to strengthen targets around the world – which is necessary if the Paris Agreement goals are to be met.

- **There may also be a signalling effect at home.** The UK has developed a strong Net Zero Strategy, but has not yet implemented all of the required policies. Businesses are still making decisions on adapting their business models for the Net Zero transition. Decisions from consumers are also a vital part of the transition.* A clear position on future oil and gas extraction in the North Sea is likely to convey a strong message to investors and consumers.

5. The role of a Climate Compatibility Checkpoint

We welcome the proposal for a Climate Compatibility Checkpoint. However, we are concerned that the test – as currently defined – is too narrow and does not provide appropriate grounds fully to assess the climate impacts of new UK developments.

The consultation proposes three design principles for the Checkpoint: evidence-based, transparent and simple. We endorse these, but note that simplicity may be difficult to achieve, given the complexity of the considerations highlighted in this letter.

The proposed Climate Compatibility Checkpoint set out in the consultation is for the licensing of oil and gas exploration. Historically, the timeline from the issuing of an exploration license to production commencing ranges from under a decade to several decades, with an average of around 28 years.† In most cases, exploration occurring as a result of a new licensing round would therefore likely not lead to new production until the 2030s or 2040s, and possibly post-2050.

On these timescales, we would expect UK oil and gas consumption to be much lower than current levels and continuing to fall rapidly. Our Net Zero pathways see even low-carbon use of fossil gas with CCS to produce 'blue' hydrogen peak by the late-2030s as 'green' hydrogen production from renewables increasingly takes over.

This highlights the limitations of a Checkpoint that applies only to licensing of new fields for exploration. There remain a number of fields that have received licenses but not yet been consented for development. These should be subject to similar considerations.

The process of exploration, consenting and production has emissions implications at each stage. We therefore recommend that the Oil and Gas Authority is tasked with developing a broader assessment of progress in constraining emissions, which would provide a more appropriate evidence base for Ministers' assessment on the climate checkpoint.

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* For example, analysis for our Sixth Carbon Budget report showed that over half of the abatement to meet the budget involved low-carbon choices or behaviour changes.
† OGA (2021) *UKCS Projects Insights report.*

In developing your proposed tests for whether further extraction can be licensed we encourage you to set a high bar:

- When assessing the sector's emissions (tests 1 and 2) you should base this on the Committee's scenario (-68% by 2030) rather than the level in the North Sea Transition Deal (-50%). And when comparing to international benchmarks, these should allow for progress in future, such as implied by the Global Methane Pledge.

- You should consider not just whether the UK will be a net importer (test 3), but whether its imports are set to increase – current projections suggest they would not if the carbon budgets are met, and UK demand would be even lower if there is slow progress with CCS (test 4).

- We agree that the Global Production Gap and global scenarios such as the IEA's, and forthcoming from the IPCC, should inform the judgement (tests 5 and 6). However, as the consultation highlights, it may be challenging to formulate a simple and satisfactory question to assess these issues.

- We also encourage you to consider the signalling effect of your decision, both in the UK and internationally.

Yours

Lord Deben
Chairman, Climate Change Committee

Annex

1. The declining role of oil and gas in the global climate transition

The Glasgow Climate Pact reinforced the ambition set out in the Paris Agreement that committed countries to limit global average temperature rise to well below 2°C and pursue efforts to achieve 1.5°C. In this context, the burning of fossil fuels, including oil and gas, must sharply decline to keep within these targets.

Indeed, IPCC scenarios for 1.5°C show reductions in global consumption of fossil fuels as does the Net Zero scenario from the IEA (Figure 1):

- Global oil consumption needs to reduce by 20-78% by 2035 and 32-90% by 2050, across the range of IPCC scenarios, with median reductions of 34% by 2035 and 65% by 2050. Similarly, the IEA scenario shows a decline of 39% by 2035 and 76% by 2050.

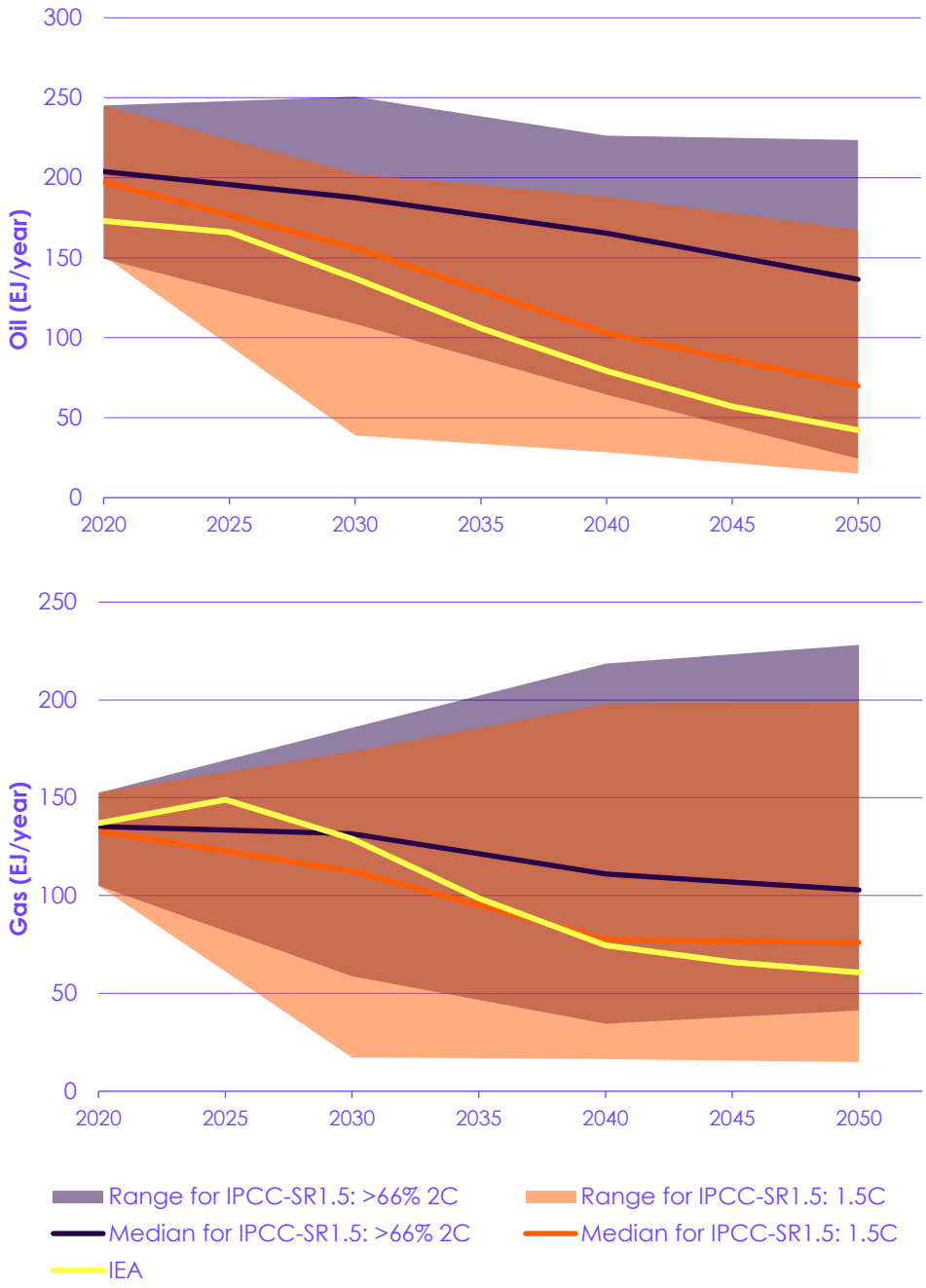
- Global gas use in IPCC scenarios varies widely, ranging from declines of over 80% to an increase in gas use by 2050. Both the IPCC median and IEA scenarios see a decline of 28% by 2035 with further decreases of 43% and 56% by 2050, respectively. The increased fossil gas consumption in some 1.5°C model runs is due to its potential to displace coal as well as its potential use with carbon capture and storage (CCS):[1]

  - Increased use of fossil gas can displace use of coal, especially in power generation. As power generation from gas is around half the carbon-intensity of coal-fired generation, extra use of fossil gas for this purpose can be consistent with the stringent emissions limits under 1.5°C.

  - Use of fossil gas can be relatively low-carbon when used in conjunction with carbon capture and storage (CCS), although its carbon-intensity is still significant (e.g. at a UK level we estimate that hydrogen produced from fossil gas with CCS saves 60-85% of lifecycle emissions compared to unabated combustion of gas[2]).

  - The model runs with the net increases in fossil gas consumption relative to today contain widespread deployment of CCS in combination with fossil gas. Nonetheless, it remains uncertain whether the timely deployment of CCS at the scale required in these scenarios will be achievable given the limited progress to date in developing the technology.

Figure 1 Global oil and gas consumption in Paris-compatible decarbonisation scenarios



Source: IPCC (2018) Special Report on Global Warming of 1.5°C, IEA (2021) *Net Zero by 2050.*
Notes: The range and median level of oil and fossil gas consumption in model runs presented in IPCC scenarios represent a 66% chance of keeping global temperature rise below 2°C and a 50% chance of keeping warming below 1.5°C. The shaded range in the middle is the overlap between the two ranges.

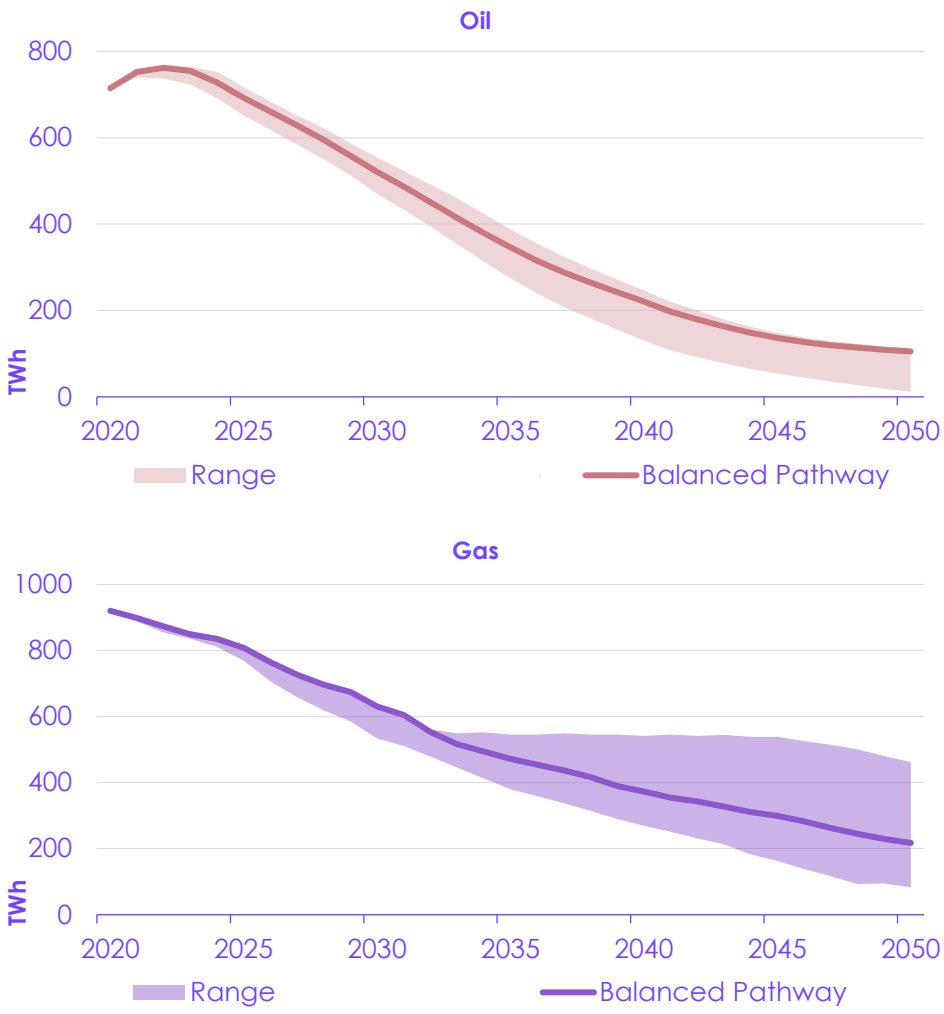
The UK is an international leader in its ambitions on emissions reduction, with the legislated targets in line with CCC recommendations judged by Climate Action Tracker as the only domestic emissions targets consistent with 1.5°C.[3] The Committee's scenarios for meeting the Sixth Carbon Budget and Net Zero in 2050, and the Government's Net Zero Strategy, require large and rapid reductions in consumption of oil and gas:[4]

CCC pathways see oil consumption fall by 46-62% by 2035 and 84-98% by 2050 from today. In the Balanced Net Zero Pathway that underpinned the Committee's recommendation for the Sixth Carbon Budget, oil consumption falls by 52% by 2035 and 85% by 2050.* The Net Zero Strategy's delivery pathway is within the CCC's range to 2037, with a reduction of 54% by 2035.

Unabated consumption of fossil gas (i.e. use without CCS) in CCC scenarios falls by around 65% by 2035 and is virtually eliminated by 2050, with almost all fossil gas use at this point being with CCS. Including use with CCS, total UK gas consumption in the CCC's scenarios falls by 41-59% by 2035 and 50-91% by 2050. In the Net Zero Strategy, fossil gas consumption falls by 60% by 2035.

* Note that oil demand in the Balanced Pathway includes feedstock use, notably in the petrochemical sector, which has a lower emissions intensity than combustion.

Figure 2 Consumption of oil and gas in the CCC's Sixth Carbon Budget analysis



Source: CCC analysis.
Notes: The shaded ranges shown in the charts represent the lowest and highest demands across five scenarios developed in the CCC (2020) *The Sixth Carbon Budget – The UK's path to Net Zero*. Note that oil consumption accounts for a return to higher pre-pandemic levels in the early 2020s in the aviation and shipping sectors.

The UN Environment Programme's Production Gap report identifies current plans for expanding global fossil fuel extraction that go beyond levels compatible with countries' climate pledges, which in turn are far above levels compatible with limiting warming to well below 2°C, and even further above trajectories consistent with 1.5°C (Figure 3).

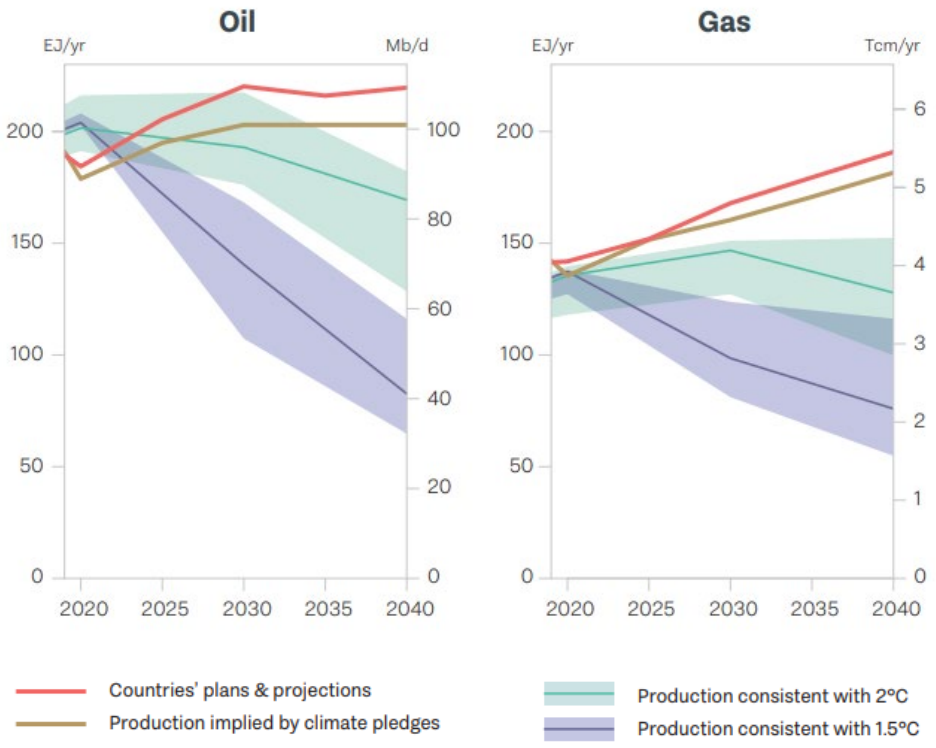
Similarly, the publication of new evidence on the role of fossil fuels in transitioning to meet a 1.5°C goal have put into question the need for developing new fields.

- The International Energy Agency (IEA) published Net Zero by 2050 – A Roadmap for the Global Energy Sector, which presented a global energy pathway compatible with 1.5°C that saw demand for oil and gas fall rapidly, avoiding the need for investment in new and oil and gas fields after 2021. This analysis also emphasised the need for continued investment to extend the lives of existing fields, so that the declining demand can be met.

While this scenario shows investment in existing fields is preferable to new exploration for the global energy system, it is unclear how producing countries will interact in a dynamic international energy market in this context.

- Welsby et al (2021) similarly show that despite the availability of new reserves and resources, 60% of oil and gas need to remain in the ground to have a 50% probability of keeping within 1.5°C.[5]

Figure 3 Gap between planned fossil fuel production and levels consistent with keeping within 1.5°C or 2°C



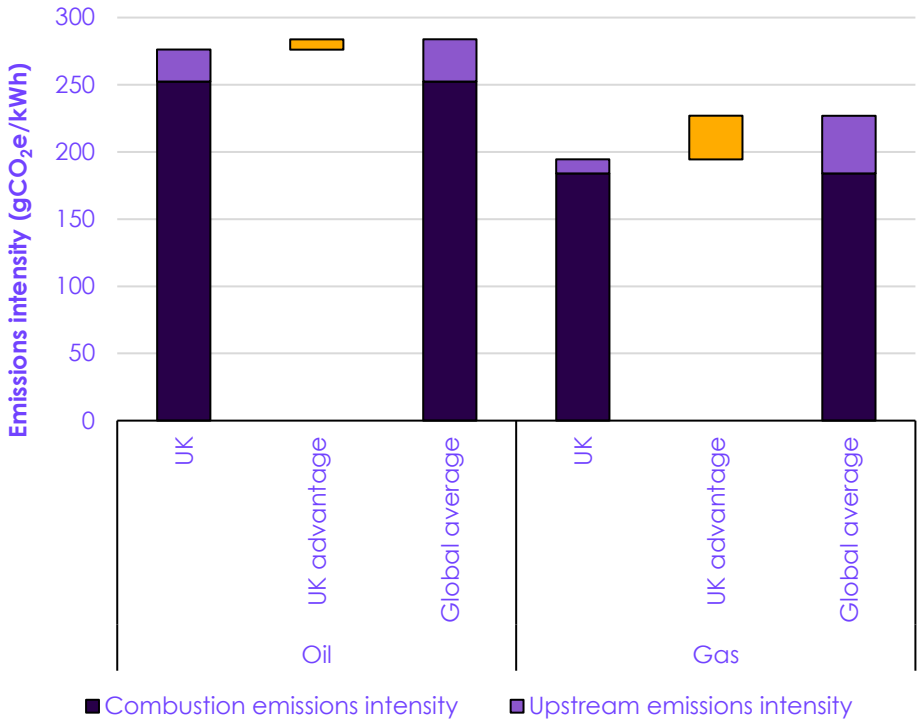
Source: As seen p.16 in SEI, IISD, ODI, E3G, and UNEP (2021) *The Production Gap Report 2021.*
Notes: Global oil and gas production are presented in EJ/year on the primary axis and physical units (million barrels per day (Mb/d) for oil and trillion cubic meters per year (Tcm/yr) for gas) on the secondary axis. The 1.5°C and 2°C pathways show the median and 25th–75th percentile range (shaded) of all analysed scenarios.

2. Evidence on the emissions impacts of limiting UK extraction of oil and gas

In assessing the impacts of new UK oil and gas field developments on global emissions, it is important to consider the emissions intensity of UK production relative to imports in the context of declining UK demand for fossil fuels and continued net imports of oil and gas in the foreseeable future.

The UK currently holds an advantage over production overseas due to the lower emissions footprint associated with its oil and gas production. That is particularly the case for gas (Figure 4). While there would be a further advantage in using production locally to somewhat displace liquified natural gas, the UK advantage may weaken over time as other countries decarbonise their extraction. Indeed, the Global Methane Pledge that countries like Norway, the United States and Saudi Arabia have joined should contribute to reducing methane emissions from oil and gas production in the next decade.

Figure 4 Comparison of oil and gas emissions intensity



Source: CCC analysis; OGA (2021) *Projections of oil and gas production and expenditure*; IEA (2018) *World Energy Outlook*.
Notes: The values presented in this chart represent best estimates for 2018 emissions intensity based on publicly available data. They include upstream and combustion emissions and exclude downstream emissions (e.g. LNG or refining).

The scale of production from potential new North Sea fields is unlikely to be meaningful in the context of global emissions. However, it is still important to consider whether going ahead with new fields would increase or decrease global emissions, given this emissions advantage for UK oil and gas extraction.

New UK production would have at least two effects on global greenhouse gas emissions, which would offset each other to some extent:

- **Lower upstream emissions from UK production.**

  - The lower emissions footprint of UK extraction could result in emissions relating to production that are around 75% lower than the global average for gas and around 25% lower for oil, based on publicly available estimates for current averages from the IEA and OGA. However, we note that averages disguise significant variation between countries and sites, while disaggregated data is not generally available publicly.

  - Emissions from UK extraction would also be covered by the UK's legal carbon budgets, requiring further reductions in the rest of the economy, strengthening this effect of reducing emissions.

  - As illustrated in Figure 4, the emissions from extraction are relatively small compared to the emissions from combustion.

- **Higher global fossil fuel consumption.**

  - Extra gas and oil production could lead to higher overall global consumption. The size of this effect is very hard to predict, particularly as it will interact in future with countries' climate commitments under the Paris Agreement and the complexities of global oil and gas markets. Some academics have attempted to estimate the effect on consumption related to a change in price and suggested a 20-60% increase from local production on global consumption,[6] but this is highly uncertain and could be dampened by international climate policies.

  - Changes in global fossil gas consumption are likely also to affect coal consumption with further implications for global emissions.

- It is unclear how far an increase in UK production would feed through to a larger global market. The net impact on global emissions of production from any new UK fields – including unabated combustion of these fossil fuels – would be upwards if the resultant increase in global consumption is more than 14% of new gas production and 3% of new oil production respectively.

The evidence on the size of each of these effects is not conclusive, and it is therefore not possible to conclude with confidence the net effect of new North Sea production on global emissions.

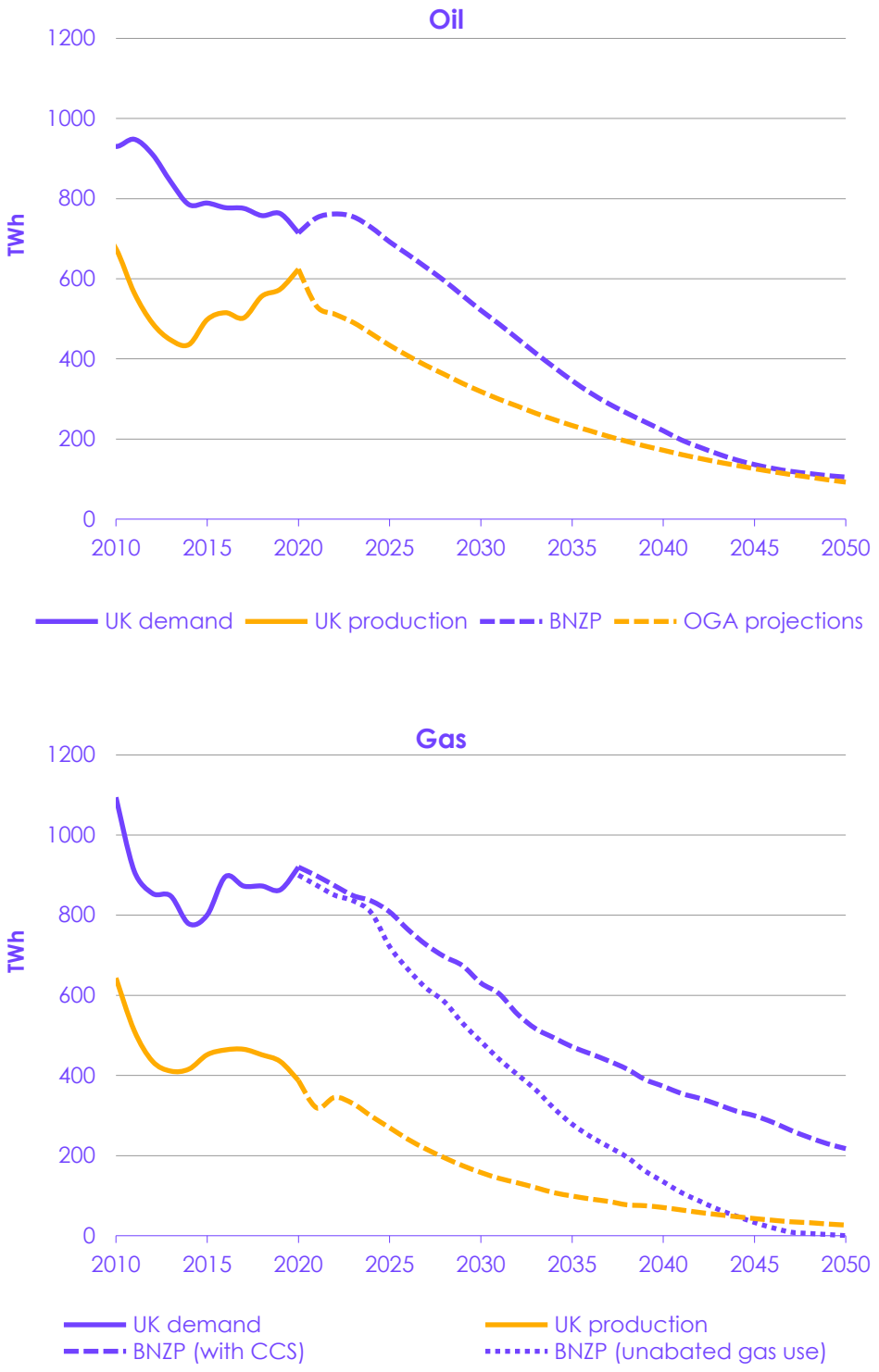
3. Impacts of North Sea development on the UK's import dependence

UK production of oil and gas will decline over coming decades, even if some new fields are developed. However, given the fall in consumption needed to meet carbon budgets and Net Zero, this does not necessarily imply that the UK's import requirements will increase.

Based on the CCC's scenarios for the Sixth Carbon Budget and projections from the Oil and Gas Authority (OGA) of North Sea production, the UK's net imports of oil and gas are expected to fall if consumption falls in line with the Committee's Net Zero pathway or the Government's Net Zero Strategy (Figure 5).

While the OGA projections do include some allowance for production from new fields, the split between existing and new fields is not published by the OGA. However, the aggregate demand for each of oil and gas in the CCC's Balanced Pathway in the early 2040s is lower than the level of net imports was in 2015. Therefore, even with significantly lower than projected domestic fossil fuel production, the level of net imports of oil and gas would fall over that period.

Figure 5 Oil and gas supply compared to CCC Balanced Net Zero Pathway (BNZP) scenario



Source: CCC analysis; OGA (2021) *Projections of oil and gas production and expenditure.*
Notes: The BNZP includes demand for oil used as a feedstock rather than combusted. In addition, the OGA projections include an unspecified level of production from new fields.

4. Potential to reduce the emissions footprint of offshore oil and gas production

While we recognize that some fossil fuels may be needed while the energy system transitions towards low-carbon energy systems, meeting Net Zero and UK carbon budgets will entail transitioning almost entirely away from the unabated use of fossil fuels. To achieve this, policies must be put in place to reduce direct emissions from fossil fuel consumption across the UK energy system, consistent with the path to Net Zero set out in our Sixth Carbon Budget advice. These policies must drive substantial improvements in energy efficiency, strong deployment of zero-carbon energy sources and electrification where this is feasible, together with rapid development of hydrogen and CCS to tackle those activities that can't be electrified.

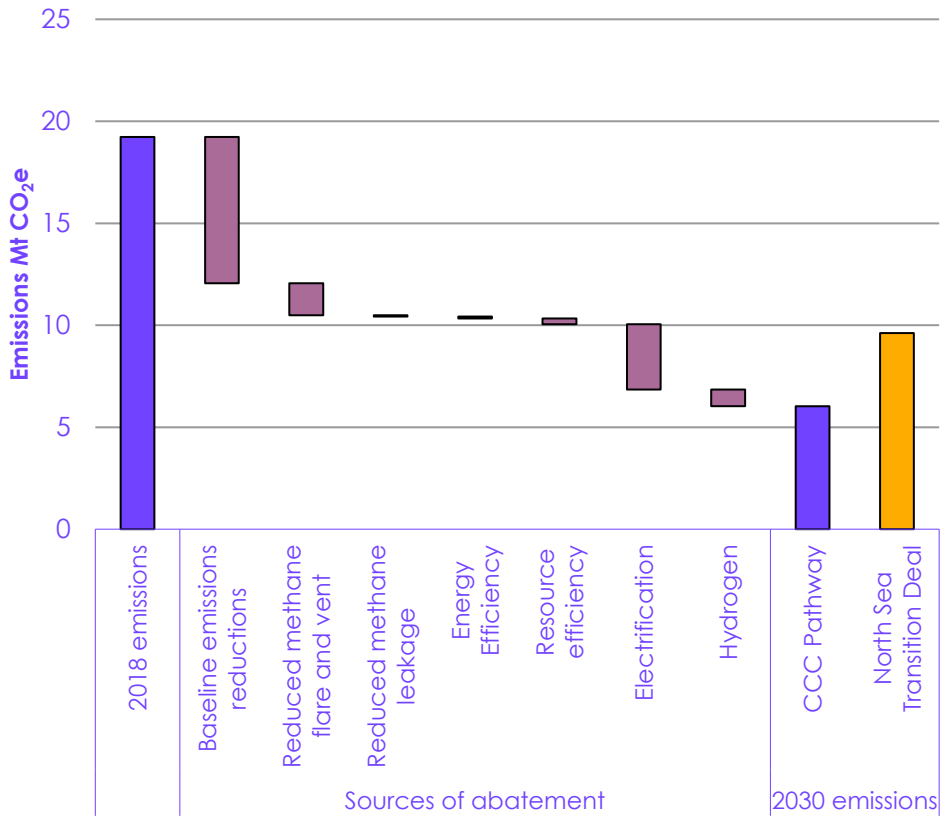
Reducing the upstream emissions associated with UK fossil fuel production will also be key. The Committee's analysis for the Sixth Carbon Budget identified opportunities to reduce emissions at reasonable cost that would achieve a 68% reduction in emissions from offshore fossil fuel production (Figure 6), through a combination of reduced methane venting, flaring and leakage, as well as use of low-carbon energy on platforms (e.g. through putting in place an electricity connection to shore or a floating wind farm to provide decarbonised energy).

These levels of emissions reductions account for some additional production from new fields based on OGA production projections to assess how emissions from North Sea oil and gas production could be reduced from those levels. As such, this could leave room for some new fields consistent with UK carbon budgets.

However, the Checkpoint consultation refers to progress in reducing emissions from offshore production of oil and gas to levels consistent with the commitment in the North Sea Transition Deal, which committed to a 50% reduction in such emissions from 2018 to 2030. A substantial proportion of this reduction will result from declines in production and offshore operations over this period even in the absence of measures to reduce emissions.

Although the precise level of North Sea oil and gas output in 2030 is subject to significant uncertainty, our assessment is that it is feasible and desirable to go beyond the 50% reduction commitment.

Figure 6 Emissions reductions in oil and gas production and processing in the CCC Pathway & the North Sea Transition Deal



Source: CCC analysis, BEIS (2021) *North Sea Transition Deal.*
Notes: Abatement in oil and gas production reflects emissions reduction from oil and gas platforms and processing terminals but does not include LNG terminals or compression stations. North Sea Transition Deal residual emissions assume 50% emissions reductions from 2018 levels.

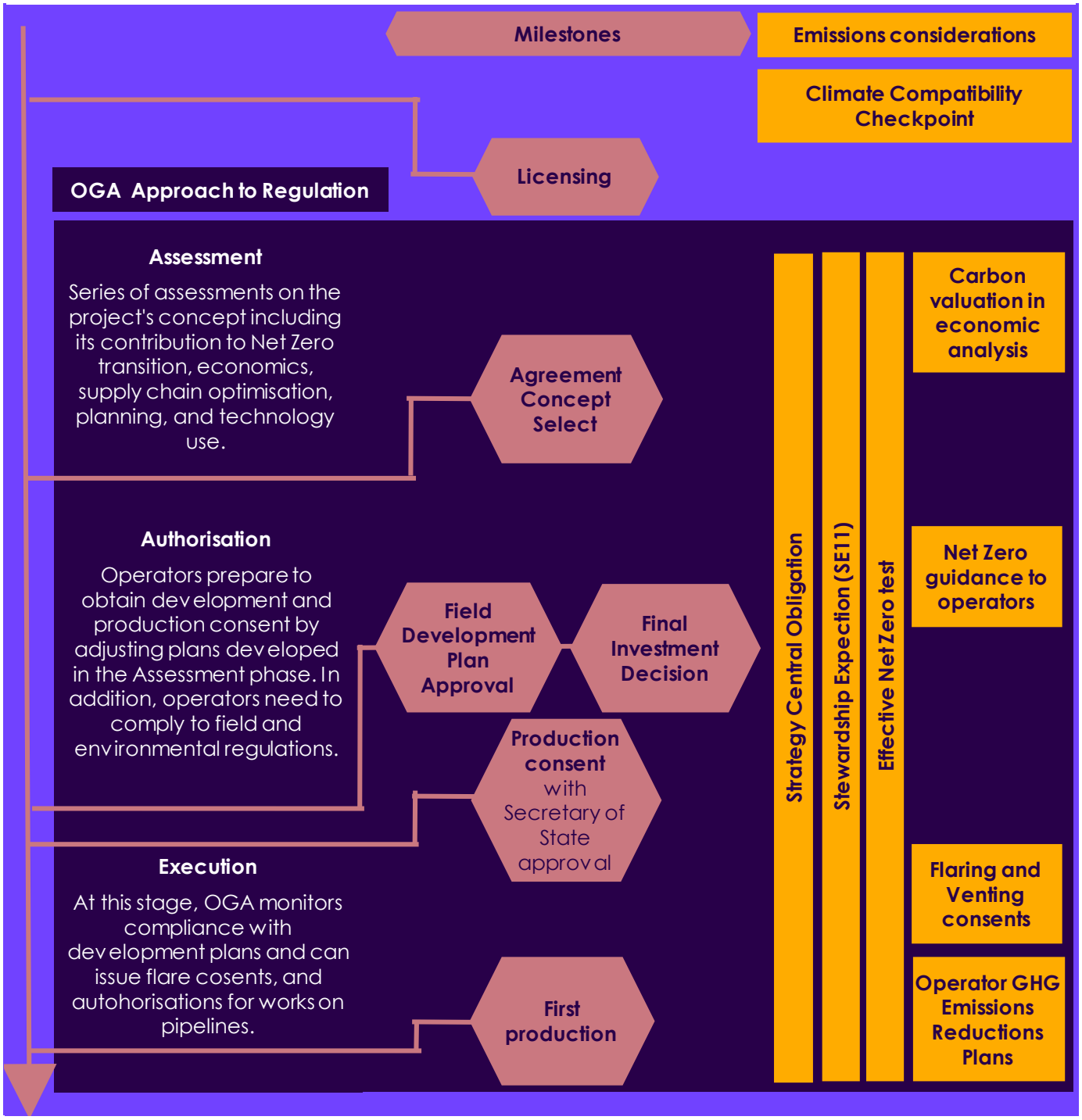
5. OGA licensing and consenting process

The licence that grants operators a right to explore for petroleum is only the first step in the process to develop a new field (Figure 7). Operators need to engage in a series of assessments to gain approval from the OGA of their development concept. This is followed by an authorisation phase during which operators finalise their Field Development Plan that considers the planning and regulations that govern the UKCS before reaching Final Investment Decision and obtaining production consent. Thereafter, the OGA monitors the compliance of projects with the planning and consenting agreements.

Historically, the timeline from the issuing of an exploration license to production commencing ranges from under a decade to several decades, with an average of around 28 years. In most cases, exploration occurring as a result of a new licensing round would therefore likely not lead to new production until the 2030s or 2040s, and possibly post-2050 (Figure 8).

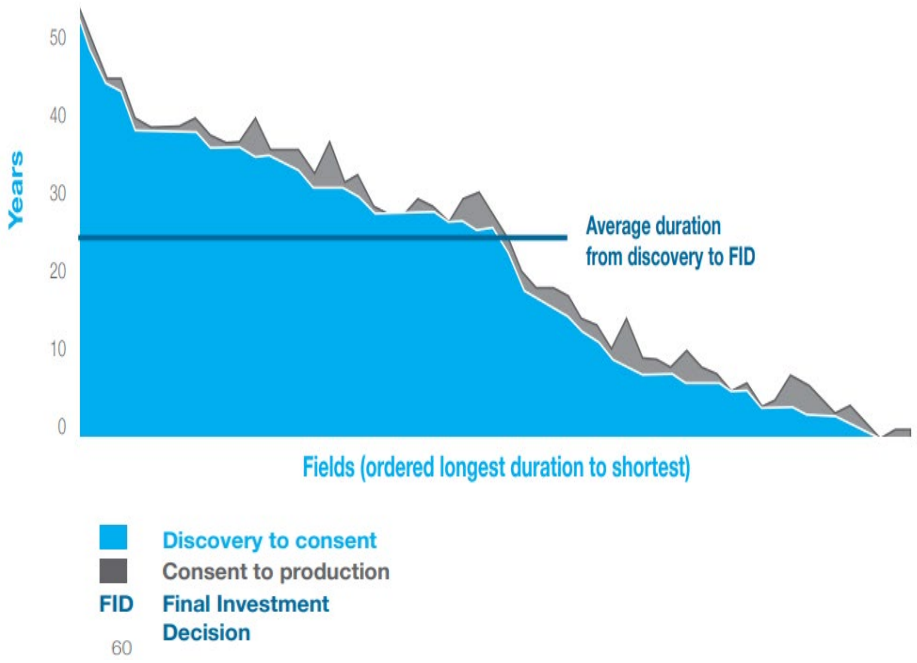
The Climate Compatibility Checkpoint is focused on licensing for oil and gas exploration, however there are other moments in this process that could enable a more thorough assessment of compatibility, particularly in providing opportunities to differentiate between oil or gas fields (noting the much smaller carbon footprint advantage of UK oil extraction). While the OGA already monitors compliance to the NSTD and supporting the transition, this is fairly narrow and there is room for further guidance from Government and tests to check compatibility with climate targets at later stages.

Figure 7 Emissions considerations in the process from licensing to production



Source: Oil and Gas Authority (2021) *Requirements for the planning of and consent to UKCS Field Developments.*

Figure 8 Timeline from discovery to Final Investment Decision



Source: As seen p.3. in OGA (2018) UKCS Projects Insights Report.
Notes: This chart shows the duration of projects in assessment and authorisation phase of the OGA planning and consenting process in 2018.

Endnotes

[1] Intergovernmental Panel on Climate Change (2018) *Special Report on Global Warming of 1.5 °C*

[2] CCC (2018) *Hydrogen in a low-carbon economy*

[3] Climate Action Tracker (2022) https://climateactiontracker.org/global/cat-net-zero-target-evaluations/

[4] CCC (2020) *The Sixth Carbon Budget – The UK's path to Net Zero*

[5] Welsby, D., Price, J., Pye, S. et al. (2021) Unextractable fossil fuels in a 1.5 °C world. *Nature 597*, 230–234

[6] Taran Fæhn et al. (2017) Climate Policies in a Fossil Fuel Producing Country: Demand versus Supply Side Policies, *Energy Journal*, 38(1); Peter Erickson et al. (2018) Limiting fossil fuel production as the next big step in climate policy, *Nature Climate Change 8*, pp.1037–1043