

Living in the present, making the future:

UK scenarios for the phase-out of oil and gas

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About this report

The Oil and Gas Transitions (OGT) is an evidence-based programme which aims accelerate just transitions from oil and gas in Denmark, Norway and the UK.

Our Approach:

- **Evidence-driven**, with leading researchers providing credible, academically verified recommendations on scenarios for oil and gas just transitions.
- A **trusted neutral convener**, able to effectively bring pluralistic positions to the table for effective exchange.
- We catalyse action by **empowering** key players in the oil and gas ecosystem with the evidence they need to **develop their own visions**, priorities, and interventions (e.g., campaigning, advocacy, institutional planning, policy design).

This report presents findings from research undertaken by the University of Edinburgh to gather evidence on the state of the oil and gas just transition in the UK, and to co-create transition scenarios alongside diverse stakeholders from academia, industry, civil society, the financial sector, government, and community-led organisations. The authors strove to engage a representative cross section of relevant stakeholders in the co-creation process. The conclusions herein are the result of the first stage of such process. Further ongoing and iterative engagement, particularly with groups that may have been underrepresented in the first stages of the co-creation process, is intended to continue developing and building upon the research findings presented in this report.

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For more information visit: www.oilandgastransitions.org.

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¹ <https://jennyleonardart.com/>

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Executive Summary

In May 2021, the International Energy Agency's (IEA) roadmap for the global energy sector to reach net-zero emissions by 2050 highlighted that decarbonisation levels aligned with the Paris Agreement do not permit investment in new oil and gas fields. The value chain transitions required as a result will have large-scale implications for the labour forces in a range of sectors and related communities. In the United Kingdom (UK), despite early ambition towards the phase-out of oil and gas, debates remain heated and practical action is slow and scarce. There is, therefore, a pressing need to consider the scenarios by which transitions away from these fossil fuels in the UK might be achieved.

The pathways for any transition must be co-created to ensure stakeholders' buy-in. Through co-creation, we emphasise that while urgent action is required to meet climate targets and ensure 'just transition' outcomes, research and practice need to inform the increasingly important policy mechanisms, which need to have high degrees of both policy efficacy and social acceptability.

This report presents the results of a scenario workshop which took place online via Teams over two half days in early May 2022. The research team considered two scenarios for the phase-out of oil and gas: (1) the "median anticipated pathway" and (2) "rapid exit". The workshop discussed the milestones needed to achieve these visions, the actors responsible for their realisation, the main opportunities and bottlenecks and the cross-cutting debates around (1) the incumbent actors and lock-in that could delay or disable the transition and (2) what the just transition means and whom it affects.

This workshop and report represent a first step rather than a final outcome and reinforces the need for future engagement with opportunities and bottlenecks in the phase-out of UK oil and gas. Although limited in the capacity to draw concrete conclusions and milestones, particularly given the lack of consensus amongst workshop participants, in light of the discussions the research team identified 12 key intervention points that should be realised under government leadership and oversight:

1. Foster collaborative **intergovernmental relations** between Westminster and the devolved administrations of Scotland, Wales and Northern Ireland, which are effective at driving change and action
2. Strengthen the governance of the transitions process
3. Require the government to **quantify and publish the estimated implications of continued oil and gas exploration, appraisal and production** along with the median anticipated pathway and rapid exit scenarios
4. Note proposals from the North Sea Transition Authority for a **Climate Compatibility Checkpoint (CCP)** test on new oil and gas offshore developments
5. Make a firm decision to rapidly consent, construct and operate **Carbon Capture and Storage (CCS)**, one project of which could be a **Carbon Takeback Obligation**, a mechanism for placing responsibility for an increasing portion of CO₂ storage or disposal on fossil fuel extractors and importers

6. Standardise **labour force qualifications**, to facilitate workers' migration between employers and sectors

7. Actively coordinate and foster **participatory processes** between various levels of government (local, devolved, national) and diverse oil and gas industry stakeholders

8. Support **readiness to deploy low-carbon technologies and supply chain diversification**

9. Implement mechanisms such as **Scotland's 'National transition training fund'** across the UK to enable re-skilling and up-skilling of a large portion of offshore workforce

10. Develop quantitative, binding targets for the phase-out of oil and gas

11. Elaborate a **just transition** and its stated aims and audiences to enable ongoing, open debate

12. Inform the above through identified **just transition principles**.

This report and its recommendations contribute to an ongoing package of work as part of Oil & Gas Transitions², an international research project that maps opportunities and bottlenecks for restructuring the petroleum sector in the North Sea.



² <https://oilandgastransitions.org/>

2. Introduction

In addition to the Paris Agreement, which states the need to “achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second-half of the century” (UNFCCC, 2015) the Intergovernmental Panel on Climate Change (IPCC) Special Report on Global Warming of 1.5°C raised the significance of globally striving for net zero by 2050 in order to prevent the devastating impacts of climate change. In May 2021, the International Energy Agency’s (IEA) net-zero 2050 roadmap highlighted that Paris-aligned decarbonisation does not allow for investment in new oil and gas fields (IEA, 2021). Further, driven by the decline of many oil and gas fields in Europe, the growing priority placed on national security of energy supplies, net-zero ambitions and the widespread declaration of a climate emergency, rapid change is required. This change must be supported by ambitious, stepwise, and considered policy action towards key milestones, targets and dates.

The extraction, production and delivery of oil and gas is, of course, not limited to the oil tankers, platforms and pipelines that initially come to mind. Oil and gas value chains encompass a vast range of activities including but not limited to exploration and production, trading, refining, distribution and retail, marketing and consumption. All of these must also transition to net-zero carbon, which is essential to facilitate and reach net zero greenhouse gas (GHG) emission targets. These value chain transitions will have large-scale implications for a range of labour forces and communities. The required transformation,

therefore, is radical, systemic and driven by technical and just transition concerns.

Although definitions and principles of the just transition vary, including a set of indicators developed by the International Labour Organisation (ILO, 2015), their summary aims are to:

1. Actively encourage decarbonisation.
2. Avoid the creation of carbon lock-ins and more “losers” in these sectors.
3. Support affected regions.
4. Support workers, their families and the wider community affected by closures or downscaling.
5. Clean up environmental damage and ensure that related costs are not transferred from the private to the public sector.
6. Address existing economic and social inequalities.
7. Ensure an inclusive and transparent planning process.

These principles act as guidelines that will “ensure environmental protections and restoration, diversify industry and other economic activities, and tackle socio-economic inequity and gender inequality” (Atteridge and Strambo, 2020: pg. 6).

In the United Kingdom (UK), despite some early ambition towards the phase-out of oil and gas – i.e., ambitions signalled at COP26 (Andrews, 2021)³, a rising just transitions agenda in Scotland in particular (Scottish Government,

³Though we would not that this is not a commitment that has been echoed in policy action.

2022), and the decision to end the sale of new petrol and diesel cars by 2030 (UK Government, 2020) – the debate on future production and use remains heated, particularly in a time of economic and geopolitical crisis. There is, therefore, a pressing need to consider the

scenarios by which transitions away from oil and gas in the UK might be achieved and both the role of just transitions and respective just transition outcomes. This is the need underpinning our scenarios work and the findings of this report.

2.1 ON THE NEED FOR CO-CREATION

Given the divisiveness of a transition away from oil and gas, the broad spectrum of implications it will carry and the scale of actor networks, interests and infrastructures involved, the pathways to achieve it must be co-created. This research work is therefore a guided blend of expert input. Co-creation, or co-production, here, signals a collaboration between a sample of the diverse stakeholders in the oil and gas sector and related industries, who jointly identify the scope and context of the problem and develop strategies for overcoming it or

achieving particular outcomes (Beir et al., 2017). It reveals areas of consensus, ensuring that the knowledge produced is useful, usable and taken-up, and areas where consensus is lacking and therefore further action is required. Overall, it emphasises that while urgent action is needed to meet climate targets and ensure a just transition, research and practice need to attend to the increasingly important policy mechanisms that have high degrees of policy efficacy and social acceptability.

2.2 STRUCTURE AND AIMS OF THE REPORT

This report presents the results of a UK oil and gas phase-out scenario workshop, where we consider: (1) the “median anticipated pathway” and (2) a “rapid exit”. The aim of the exercise was to facilitate conversations between all participating actors. The research team was led by the objective to:

- Develop narratives for net-zero emissions and the oil and gas phase-out by 2050 as the desirable visions
- Identify key considerations for the scenario co-production process (e.g., key actors and stakeholders, relevant ongoing policy processes and/or dialogues, sensitive

themes, gaps or under-researched aspects of the transition, alternatives etc.)

- Identify areas of change and transformation (policy, finance, technology, behaviour change etc.) and challenges to accelerate the transition
- Identify concrete actions and measures to operationalise the transformations needed
- Map key actors and their responsibilities and commitments to lead and implement agreed actions and measures
- Identify key opportunities and challenges or barriers that may enable or hinder regional collaboration and cross learning.

The result was the initial formation of three scenarios: (1) **Slow-to-no transition**, with many climate laws, policies and approaches to net-zero emissions ignored, (2) the **median anticipated pathway**, where by 2050 the net-zero target is achieved with a focus on people, a pivot of skills and greater emphasis on the just transition, and (3) a **rapid exit**, a short-order shut down of oil and gas in the North Sea where UK emission targets are met but imports of hydrocarbons may increase and rapid action on a just transition must be taken in light of significant labour force upheaval. These phase-out scenarios were developed on the basis of a literature review of the current landscape, including estimates from the Climate Change Committee and BP plc. The research team synthesised and extended previous UK transition scenarios to develop bespoke articulations. Scenarios were selected because they were sufficiently distinct and thought provoking, therefore enabling stakeholder dialogue and debate. Pursuing a description of a “rapid exit”, which

referred to a very quick transition away from oil and gas across the whole value chain, enabled discussion of particularly ambitious and wide-ranging policy measures, including opportunities and barriers, and allowed to differentiate between these and more incremental steps discussed through the median anticipated pathway.

The report discusses the milestones needed to achieve these visions, the responsible actors, the main opportunities and bottlenecks and the cross-cutting debates around (1) the incumbent actors and lock-in that could delay or disable the transition and (2) what the just transition means, and whom it concerns. The report outlines the discussion points and provides a summary of the significant takeaways from the working groups and larger sessions, highlighting areas of consensus and disagreement between stakeholders. The methodology for the workshop is detailed in Appendix 1.



3. The scenarios

This section describes the approach used by the research team to interact with the participants in the exercise and the outcomes, outlining the scenarios presented during the two-day workshop and the debates they provoked. At the start of each day, there was an open discussion ('setting the scene') to garner initial reflections. This was followed by short facilitated sessions focused on particular questions or circumstances. The facilitator in each case would introduce the general topic and receive comments from participants on the online panel. The facilitator would also ensure that all participants were called on to voice their opinions at least once. Sessions were recorded to help and ensure accuracy of the transcripts. During a group session, a group then worked jointly to populate a digital interactive and collaborative whiteboard, known as a Miro board, with comments and

topics (Figure 1 – in Appendix 1), followed by plenary discussion. Day 1 addressed Scenario 1, the median anticipated pathway, with talks about milestones, key actors and barriers to the transition, as well as main opportunities and bottlenecks. Day 2 focused on Scenario 2, the rapid exit, following a similar structure to Day 1 but also including a discussion on just transitions. Each session was also recorded by conceptual visual cartoons, generated live during the workshop, providing a lay understanding of what had been discussed (Figure 2 – Figure 7).

In this regard, Appendix 1 details the format arrangements, Appendix 2 records the delegates who attended the workshops by video link and Appendix 3 records the scenarios used and the timetable for each day of the workshop.

3.1 SCENARIO 1 – MEDIAN ANTICIPATED PATHWAY (MAP)

Within this scenario, the net-zero target is reached with a managed decline of the oil and gas industry. The importance of the oil and gas industry in the economy and culture of the UK is acknowledged and emphasis is placed on retaining the skills, expertise and knowledge gained through this sector. Therefore, subsurface industries continue, but rapidly pivot away from oil and gas extraction and turn towards CO₂ and energy storage. Demand falls significantly for oil and gas, being phased out in domestic settings and buildings as electrification and the use of hydrogen increase. In this scenario, the energy mix becomes more diversified and the skilled labour pools move to a new climate-positive sector that can be globally replicated, thereby fulfilling many of the criteria for a just transition. Governance and regulation are key to drive change and set commercially viable objectives. There should also be volunteer action or legislative pressure from government to change companies' culture and insist on holding CEOs and board members accountable on environmental responsibility and transparency.

3.1.1 Scenario 1 - Setting the scene

The workshop built upon a series of reports published in 2021 as part of the project that analysed the oil and gas transition in Norway, Denmark and the UK. All three jurisdictions have made significant commitments in terms of greenhouse gas emissions reductions which demand deep changes to economic systems, infrastructures (e.g., power and gas networks) and technology advancements in hydrogen and carbon capture and storage (CCS).

The MAP scenario considers several major policy options and prompts questions, including:

1. A 'carbon take-back obligation' akin to existing producer responsibility obligations (e.g., the Waste of Electrical and Electronic Equipment - WEEE - regime, which imposes producers to take back electronic waste), to require oil and gas firms to take charge for the storage of Scope 3 greenhouse gas emissions, the indirect emissions that occur in a company's upstream and downstream value chain

2. What the substance of a 'just transition' is for the oil and gas sector
3. Whether company directors of high emitting firms should be subject to personal liability if their companies' emissions are not compatible with MAP scenarios.

Discussions revealed a clear divide between participants. Some emphasised the need for a decline of oil and gas driven by progressively lower demand. These drew comparisons with the Covid-19 pandemic and the potential of demand management to change behaviours. Participants also mentioned the risk of displacing production from the North Sea to less well-regulated regions and the complexities of African nations, for example, being pressured not to exploit their own resources. Others focused on the supply side and used arguments which were often related to the just transition, especially for workers, and the need for fundamental change in the financial and energy systems.

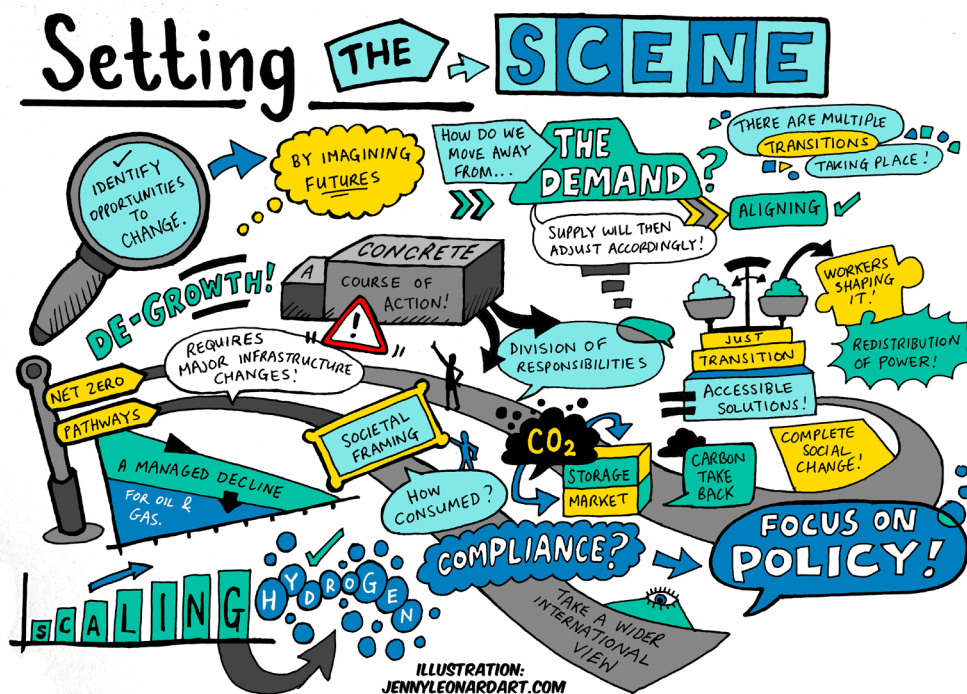


Figure 2: Setting the scene for the median anticipated pathway (Source: Jenny Leonard Art)

3.1.2 Achieving the median anticipated pathway

What are the milestones required to meet the vision?

The discussion began around several well-known themes, including limits on incentives for oil and gas investment, tax relief on investment to support electrification of platforms and CCS, the electrification of new infrastructure as part of the climate compatibility for new explorations licences, government emission targets formally aligned to Climate Change Committee⁴ recommendations and the carbon takeback obligation.

More detailed discussions followed, identifying issues which could take the form of milestones but were not sequenced. These included fleshing out institutional elements such as the creation of a new independent body to coordinate oil and gas infrastructure needs, decommissioning, assets decline and skills 'passporting', which refers to plans to create a training and standards framework transferrable across oil and gas, offshore wind, hydrogen and carbon capture, utilisation and storage, so that infrastructure development can be rolled out at speed. Workforce training was identified as an essential need, but participants also noted the role of schools and colleges in the transition, supporting young people education in the industries of the future. In addition, participants discussed quantitative targets for renewable energy generation (i.e. reaching 30GW of onshore wind by 2030), the commensurate need to upscale community-owned energy and the need to shorten deployment time for wind turbines from ~10 years to an unspecified, but shorter time period. Similarly, energy efficiency, domestic insulation and the installation of heat pumps emerged as priority areas among milestones.

Three principles were identified in the development of milestones:

- **Certainty** to incentivise the creation of and investment in new markets. By contrast, initiatives such as the North Sea Transition Deal⁵ were considered to have the potential to set clear milestones to have "kicked the can down the road" to date.
- **'Fast start'** and near-term dates ("the next two, three years"), favoured by some, to reduce oil and gas subsidies and the damage they cause to the competitiveness of renewables. Other participants, however, were concerned that moving dates closer could be "civilly unobtainable in the UK", given the necessary investment needs and cost of living implications. The research team notes that after this workshop, changes of international gas and oil supply have increased energy prices in the UK more than in any other European country. A greater policy connection to ensure better balance between international imports and resilient domestic sources, such as gas storage, to meet demand, with much more renewables, was felt to be long overdue.
- Genuine **transformational change**, in contrast with milestones that are merely transitional. As one stakeholder noted, "We are living in a rolling fantasy in which we continue to paint pictures of the future with no actual change in the present."

⁴ The Climate Change Committee is an independent, non-departmental public body formed under the Climate Change Act to advise the United Kingdom and devolved Governments and Parliaments on tackling and preparing for climate change.

⁵ The North Sea Transition Deal articulates the government's plan for how "the UK's offshore oil and gas sector and the government will work together to deliver the skills, innovation and new infrastructure required to meet stretching greenhouse gas emissions reduction targets". More details are available here: <https://www.gov.uk/government/publications/north-sea-transition-deal>

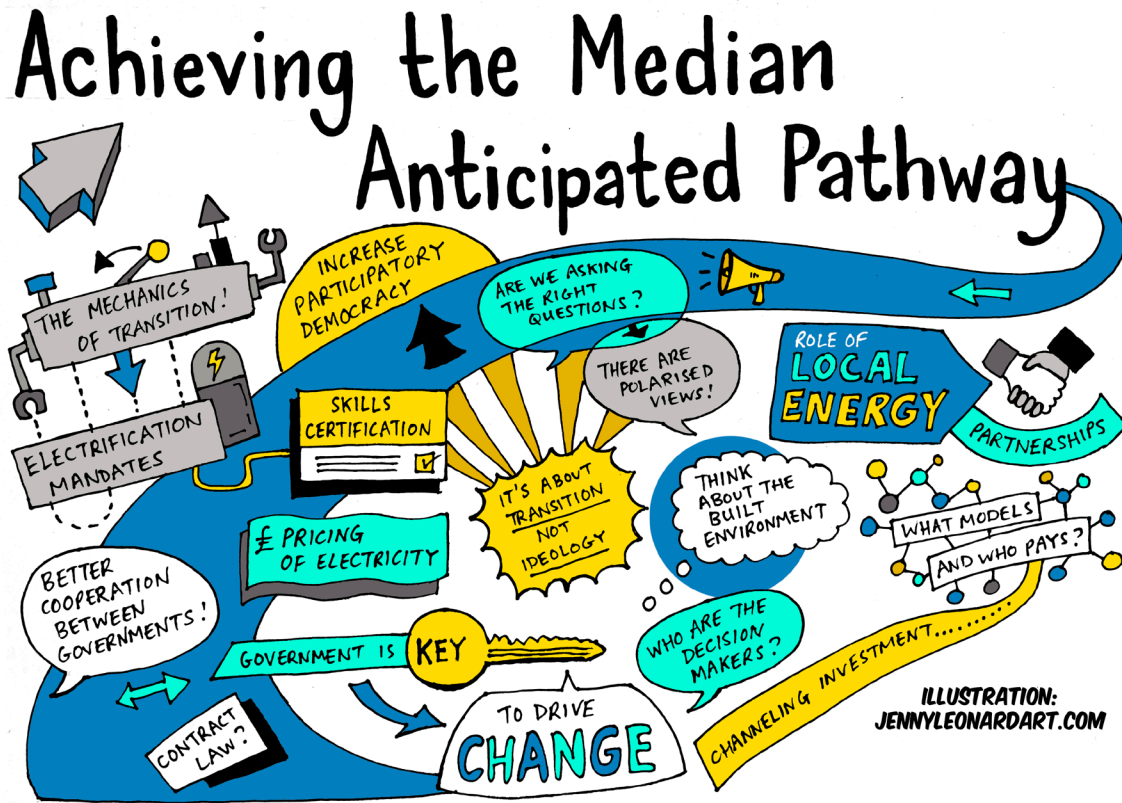


Figure 3: Achieving the median anticipated pathway (Source: Jenny Leonard Art).

Actors and responsibilities: who are the key actors responsible for each milestone?

The role of the more progressive European oil majors was contested at the workshop. On the one hand, participants argued that their global presence gives them an opportunity to influence the low carbon transition. At the same time, the skills required for the transition are part of their organisations and workforce, meaning that they can deploy new technologies and capabilities at a large scale and ensure that the talent already there is kept and redirected. The counter argument was that any future investment in oil and gas would amount to stranded assets given the eventual need for their decommissioning in light of the climate crisis and as such, would be both socially and financially unacceptable. It was argued that the right regime could turn “these majors, which are part of the problem, into part of the solution”, highlighting the skills and innovation of a pivoting Aberdeen – the so-called “Oil Capital of Europe”, which is now

trying to redevelop to be the “all energy” capital of Europe – and the need to “give them a market to go after.”

There was consensus around the government remaining the actor with most responsibility for the achievement of transition milestones. From planning of manufacturing and supply in WWII, to the strategic infrastructure redevelopment of east London in what is now the Canary Wharf financial district or the co-ordinated mobilisation of a national workforce during the Covid-19 pandemic, there was an acknowledgement that only government has the capacity to direct the fundamental change required for the transition. Stakeholders disagreed on what function the government should have, however. Some highlighted the facilitation role of the state in creating new measures (whether regulations or markets) to incentivise incumbents to tilt from fossil fuels

to renewables. Others saw potential in greater intervention, including in the ownership of energy assets, and in forging the transition guided by science rather than market forces. There was recognition that the transition is “not just one department’s problem”, with education, transport, industry, energy, environment and Treasury having distinct functions.

Above all, participants regarded the current situation, where major decisions such as licensing are taken solely by the Westminster government, as untenable. The Scottish government, owing to the constraints within the Scotland Act and competences reserved to Westminster, was totally excluded from decision-making processes which impact substantially on Scotland, where the bulk of the UK’s oil and gas industry is located. The North

Sea Transition Deal, crafted by Westminster and the oil industry, was a case in point. The limitations of inter-governmental relations within the UK have long been recognised as problematic. As part of the transition, there should be regular, frequent and productive collaboration between the UK and the devolved administration. The Scottish government could lead in particular on the just transition, give the detailed work of its Just Transition Commission in this area; a commissions which was established to advise the Scottish Government on a zero-carbon economy that is fair for all, including by supporting the production and monitoring of just transition plans. This would inevitably require close coordination with industry on issues such as workforce training, qualifications requirements and contractual terms.

3.1.3 Opportunities and bottlenecks

Given the scale of the challenge the transition represents, it is inevitable that participants identified more bottlenecks than opportunities. Nonetheless, they did see some positives, foremost amongst which was the collapsing cost of renewables making them ever more cost-competitive than fossil fuel alternatives. Moreover, their active (rather than passive) deployment has a track record of accelerating innovation in the energy sector, making the role of government even greater in avoiding infrastructure lock-ins, engendering a more diverse work force and forcing behaviour change. Combined with the large pool of ESG (Environmental, Social and Governance) funds looking for suitable projects to invest in, there is a strategically important public sector role in steering capital towards low carbon options.

Participants considered policies such as ‘the just transition’ or ‘levelling up’⁶ as neutral, in the sense that they could be either opportunities or bottlenecks, but were currently leaning towards the latter owing to poor intergovernmental relations and/or poor implementation. It was noted, for example, that ‘levelling up’ funds were not allocated in a way that would maximise their low carbon potential. Similarly, there is fragmentation between the governments of the UK when it comes to the just transition governance. Suggestions to ‘remove the transition from politics’ or ‘depoliticise’ it were also contentious, with political contestation seen as a way to build equity and diversity into the low carbon transition.

⁶ Levelling up is the headline to a wide-ranging but unspecific ambition to direct investment for finance, skills development, education and new business opportunity away from the economy of South-East England (including London) and into regions experiencing long-term industrial decline, lack of investment and poor social capital. These communities have often experienced a series of ‘unjust transitions’ during 80 years of de-industrialisation of the UK and voted for Brexit to recover a sense of control over their inter-generational destiny. <https://www.gov.uk/government/publications/levelling-up-the-united-kingdom>



Figure 4: Opportunities, bottlenecks and milestones for the median anticipated pathway (Source: Jenny Leonard Art)

3.2 SCENARIO 2 – RAPID EXIT

There is a rapid closure of oil and gas activities, starting with the infrastructure with the largest emissions profiles or shortest economic and licencing lifespan remaining. The industry's closure signifies the end of domestic production, but with downstream industry and consumers still dependent on fuel from oil and gas, the need for fossil fuel import would increase. A short-term shut-down of the industry triggers the loss of approximately 200,000 workers, requiring immediate intervention to ensure that the skills necessary for low carbon industries, such as offshore wind and hydrogen, are retained and re-deployed. There is a significant decrease in oil companies operating and exploring, and therefore of associated greenhouse gas emissions. This results in future targets being met, but at the risk that the opportunity for a just transition is missed, unless green investment and just transition policies are rapidly scaled up. The government would phase out fiscal benefits for fossil fuel production and infrastructure, such as tax breaks, uplift, fast depreciation and feed-in tariffs. There is sense that oil and gas is not being domestically produced, but imported and so there is no way to regulate emissions or production practises.

3.2.1 Scenario 2 - Setting the scene

The 'rapid exit' scenario entails a quick shut down of oil and gas production in the North Sea while meeting energy demands via imports and the scaling up of renewables. As with the MAP, this scenario prompts significant policy options and raises significant questions, including:

1. If offshore oil and gas industries are dismantled in the UK, how will skills be accessed to undertake the deployment of CCS, bioenergy with CCS (BECCS) and direct air CCS (DACCS)⁷ which need to be upscaled globally at significant speed?
2. How to avoid infrastructural and human capital lock-in in declining industries?
3. How best to foster emerging industries, such as floating offshore wind power and onshore electrolysis for hydrogen, where increasing demand leads innovation and increased supply leads to provision of secure and liquid markets?

There was a clear and consistent divide among the workshop participants on the need and feasibility of such a transition. Reference was made to the Russian invasion of Ukraine in 2022 and its widespread impact on oil and gas prices, which places increasing emphasis on national energy security and raises issues on the transition's resilience and affordability. For some, the current energy crisis is indicative of the high costs associated with the transition, with implications for government and consumer spending. Others stated that there are already sufficient financial reserves, as evidenced by Covid-19 investments, and the issues are not costs but balancing demand to supply. There was discussion, too, on whether the transition would be state-led or market-led and therefore debate on the role of more structural interventions such as global carbon taxes. Many echoed the idea that in order to achieve such a transition, there should have been political reforms a decade ago.

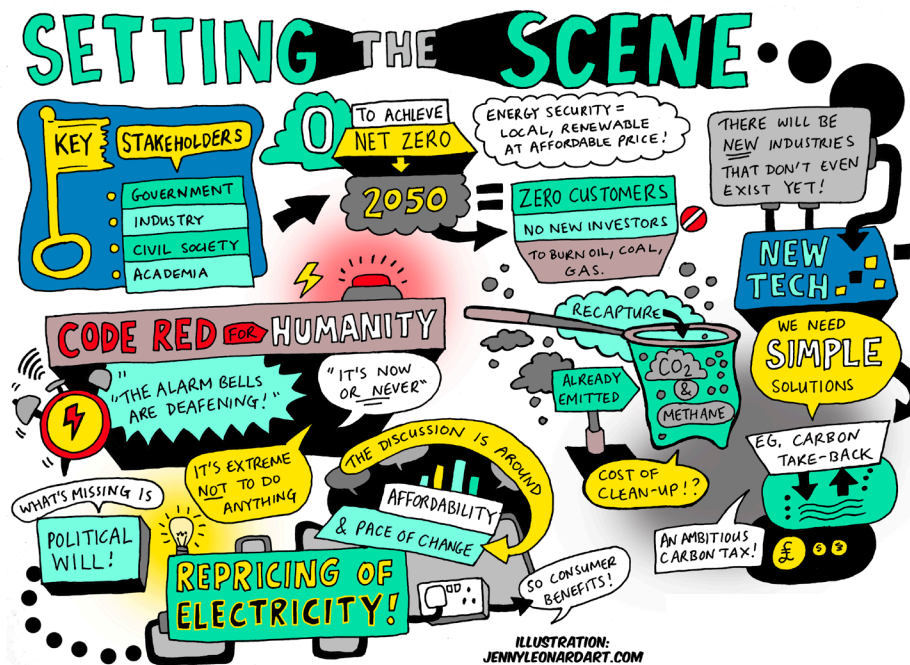


Figure 5: Setting the scene for the rapid exit (Source: Jenny Leonard Art)

⁷ CCS captures CO₂ before it enters the atmosphere. BECCS refers the growth and use of biomass for energy purposes, where the capture of biogenic CO₂ leads to a net reduction of CO₂ from the atmosphere. DACCS, on the other hand, uses the same principle, but extracts CO₂ directly from the atmospheric air.

3.2.2 Achieving the rapid exit

What are the milestones required to meet the vision?

Broad discussion began around common themes, including the need to focus on the replacement of jobs and the deployment of workers to new sectors, the end of oil and gas licencing and tensions between domestic net-zero targets and international climate commitments. As with the MAP, the group members discussed key milestones needed to meet the scenario, but did not place these in order of priority, attribute firm dates or sequence them. Milestones included the simplification and acceleration of the permitting and construction process for carbon removal and low-carbon energy technologies such as CCS, BECCS or onshore and offshore wind, as well as the use of climate compatibility checkpoints for oil and gas licensing to continually enforce best practise such as capture and storage of Scope 3 emissions (carbon take back). For some respondents, milestones are the complete removal of new licensing rounds and the acceleration of decommissioning. Decreasing and recovering emissions of greenhouse gases requires accelerating investments in research, development and innovation. That needs to be combined with clear and rapid decisions on the real construction and real use of CCS, BECCS and DACCS. Substantial upscaling, combined with continual governance reforms to “join the regulatory dots” - i.e., to streamline or harmonize the process of siting infrastructure, ensuring health and safety, or obtaining environmental permits between energy types, for instance -, can minimise the need for re-learning regulatory frameworks as oil majors look to transition to other modes of operation with very large and complex decarbonisation levelling up projects. There was consensus,

too, around the need to invest in a skilled renewables and decommissioning labour force, technologies, universities, technical colleges and apprentices for a people-centered transition. The notion is that whilst the industry tries to redefine and re-iterate itself, education and training systems also require rapid reform in order to support the ambitions of individuals to repurpose their skill, and to develop the skills needed for a green energy future.

For the development of the milestones for the rapid exit scenario, participants identified three more advanced principles:

- **Acceleration**, both in terms of identifying and implementing emerging policy priorities, and achieving more rapidly currently mandated ambitions with the roll-out of relevant technology.
- **Confidence** in state-led regulatory frameworks and business models in recognition that “what is possible is always political”. The zero-emission vehicle mandates for automobiles, including the decision to end the sale of new petrol and diesel cars by 2030 cited earlier, was seen as an example where certainty spurred industry to a change at a faster pace.
- **Inclusivity**, prioritising a people-centred transition based on lessons from the past to ensure society is brought along and engaging with a variety of bodies. The North Sea Transition Deal (NSTD) was cited as a poor example as it was negotiated without unions and without all UK governments, and therefore gathered a narrow spectrum of views preventing the more radical of ideas from being heard, considered or included.

Actors and responsibilities: who are the key actors responsible for each milestone?

The discussion at the workshop started with the view that many different types of actors, including citizens, are involved in systems promoting oil and gas provision and use. Therefore widescale, systematic stakeholder investment is required to achieve a rapid exit. This includes oil and gas majors, but also lawyers and accountants, for instance, who will play fundamental roles in reshaping regulatory and economic processes. Some participants went further, claiming that the government should be a part of an anti-capitalist agenda, but by no means this was agreed upon.

Beyond the claim that “everyone matters”, there was emerging consensus around a hierarchy of responsibility, with the government having the largest role to play, as per the MAP scenario. When it comes to developing alternative supply and fostering new industries, for instance, there was agreement that the government is responsible for setting out the conditions for business models that incentivise the “right kind” of cross-sectoral, private investment. This includes careful consideration of tax breaks and subsidies across supply chains, with concerns voiced that the government has so far failed to develop a strategic approach for securing the supply needed to meet a hypothetical “green demand” e.g., by further incentivizing innovation or supporting related secondary and tertiary industries. On a more granular scale, local planning systems, and thus smaller scale government, were also seen as key to ensure as little friction as possible in the roll-out of infrastructure such as bike paths,

chargers and heat pumps to both promote new innovations and reduce demand in line with the declining supply of oil and gas.

The notion of responsibility was not just considered in terms of who would lead the rapid exit, but also who would be affected by it, thereby linking just transition concerns. Industry workers and those who have already been deeply affected by previous rapid, “blunt” transitions, e.g., in UK coal, steel and fisheries, were mentioned. Articulations of the just transitions stemming from a rapid exit scenario were community-based, global and environmentally embedded. For local communities, this included potential failures in local engagement resulting in antagonism and pushback. Globally, several groups referred to the increase in mining of metals for the electronic components needed to support technological change, which is more often than not happening in areas where there is less protection for workers. Here, they problematised “green” futures for the UK, noting that renewables will create and present externalities elsewhere (e.g., those related to rare earth mineral mining and e-wastes) and that this, too, requires careful management. Overall, the complexities of these realities were recognised and no specific solution was identified. Therefore, there was agreement that to achieve a rapid exit, global, national and local tensions and trade-offs are inevitable, a further evidence of the need for extensive government oversight combined between central and devolved administrations.



Figure 6: Achieving a rapid exit (Source: Jenny Leonard Art)

3.2.3 Opportunities and bottlenecks

The scale of the transition determined by the rapid exit scenario was, naturally, even larger than that of the MAP, raising significant opportunities and bottlenecks. On a positive note, just transition and phase-out discourses seem to be progressing at all levels, with initiatives such as The Glasgow Citizen Assembly on Climate Action, a series of citizen-facing meetings held by Glasgow City Council with the aim of making decisions and prioritising recommendations for achieving net zero and a just transition, cited as a good example of youth engagement, for instance.

Despite this, there is a perceived insufficient drive to achieve a rapid exit with a lack of skills and phase-out obligations across a range of organisations and sectors. Policy contradictions were highlighted, including that of simultaneously pursuing domestic net-zero goals and measures to maximise the economic recovery of oil and gas, where the government is seen as “riding two horses at once”. Moreover, participants highlighted the need to align political will, efficient regulation and permits, effective supply chains and consideration for environmental impacts.

The need to “bring people along with you” and achieve so-called place-based solutions was identified as both an opportunity and a barrier, at present, due to the lack of prioritisation of social acceptance and solutions that work. For the rapid exit, participants said multiple times that oil and gas extraction and use is deeply embedded within communities, affecting their identity, and more work to be done to

appreciate the significance of the transition. Starkly, and reflecting back on the purpose of this scenarios workshop and the limitations expressed in Section 3.3 (Appendix 1), a lack of consensus towards the aims, objectives and outcomes of a rapid exit, or indeed any form of oil and gas phase-out, was identified as the primary barrier to the transition.



Figure 7: Opportunities, bottlenecks and milestones for the rapid exit (Source: Jenny Leonard Art)

3.3 CROSS-CUTTING DISCUSSIONS

During the workshop, two sessions transcended specific scenarios as they were designed to discuss in more depth two cross-cutting themes: (1) Incumbent actors and lock-in and (2) just transitions. The following sections summarise these discussions

3.3.1. Incumbent actors and lock-in: what can delay or disable the transition milestones?

Incumbent actors, in relation to the oil and gas energy system, are those who are significantly embedded in current infrastructural and social systems. In this context, carbon lock-in refers to the technological, economic, political and social barriers to the achievement of the scenarios (Unruh, 2000). Technological and infrastructural carbon lock-in refer to the long life of physical infrastructure and sunk costs, institutional carbon lock-in relates to decisions to reinforce the status quo or to create and stabilise a new, more favourable status quo, and behavioural lock-in relates to habits and norms of consumption of energy, goods and services (Seto et al., 2016). The discussions considered a range of actors and a series of obstacles that cut across both the MAP and rapid exit scenarios. The research team reflected on five dominant themes.

First, attention was given to the current geopolitical landscape marked by the war in Ukraine, which has caused rapidly rising domestic energy prices, has taken attention away from climate commitments and transition priorities and has exposed the risks associated with an oil and gas dependence. Making the link between incumbent actors and geopolitical challenges, participants also pointed at soaring profits for fossil fuel companies and, although this was a contentious assertion, the opportunity seized by some to increase extraction. The understanding was therefore that the policy change must be stable, resilient, responsive and accountable and that pricing needs rapid attention and potential redesign with government leadership.

Second, contradictions were perceived in policy pathways and priorities, including current UK statements around oil and gas, net-zero and the Paris Agreement, with “fiction” among them. This criticism extended to climate compatibility checkpoints, which for several group members reflected climate ambition whilst allowing oil exploration to continue, and net-zero discourses, which when compared to the comparative clarity of international 1.5oC targets, leave space for tensions between either managed decline and the cessation of growth.

Closely related to this discussion was the third theme, diversification and inter-related industries, where net-zero could also be taken as an opportunity for new forms of oil and gas production and use rather than directing efforts towards its rapid withdrawal. Some argued that oil and gas companies diversifying into new renewables may enable a situation where “one is being used to justify the other”. For instance, investments in hydrogen would potentially allow more oil and gas licencing, sunk costs would undermine net-zero targets or if oil extraction and carbon capture and storage are closely coupled and carbon take-back obligations are not properly managed. For both these themes, there was a lack of consensus. Some participants held the view that continued extraction in the North Sea oil and gas fields and continued licencing are highly problematic. Others suggested that, in a global context, the North Sea is a marginal oil and gas supplier and that the rapid phasing out of domestic energy production whilst

demand remains high would create unwanted externalities.

The flipside of the above, and theme four, is the failure to fully invest in alternative, renewable technologies, meaning that readiness to deploy low-carbon technologies is limited. This includes both supply and demand, with perceived opportunities for investing in insulation, prioritising incentives on energy efficiency uptake, reforming electricity tariffs and moving towards “fair pricing”.

Fifth, was the concern that workforce

conditions, including the existence of zero-hour contracts, workers having to pay for their own training in health and safety, and less appealing working conditions in the renewable sector compared to oil and gas, could be a barrier to the transition. If workers receive less remuneration and less secure or predictable hours of employment, they may be tempted to move country rather than stay employed in the expensive and unprotected UK energy systems. Parity of pay and conditions therefore appears as critical, including for workshop members directly employed in the oil and gas sector.

3.3.2 Defining a “just transition”: for whom and how?

Discussion across the groups focused on the just transition as a concern from global to local, and its fundamental links with the climate change crisis. This included consideration of people displaced by the effects of climate change, the necessity of global collaboration, treaties, and agreements (such as through the Sustainable Development Goals), the impacts on global biodiversity and the responsibilities of wealthier states to poorer ones, both in terms of emissions legacies and development pathways. This discussion also included more critical comments about mainstream capitalist approaches and economic systems, extending to critiques of colonialist mindsets. There was a sense, too, that reconciling global and local inequalities is a particularly thorny issue, but a very necessary one. On a national level, the just transition also relates to the cost of living for the average UK taxpayer and those living in poverty and poorly insulated homes. The just transitions was, in effect, designed as a whole systems change, from source to use.

It was clear in the discussion that the just

transition was considered **not just as an outcome or end goal, but as a process:**

‘If you only sell people on the outcome, and not the journey it will take to get there, you will lose people,’ said one of the participants in the workshop.

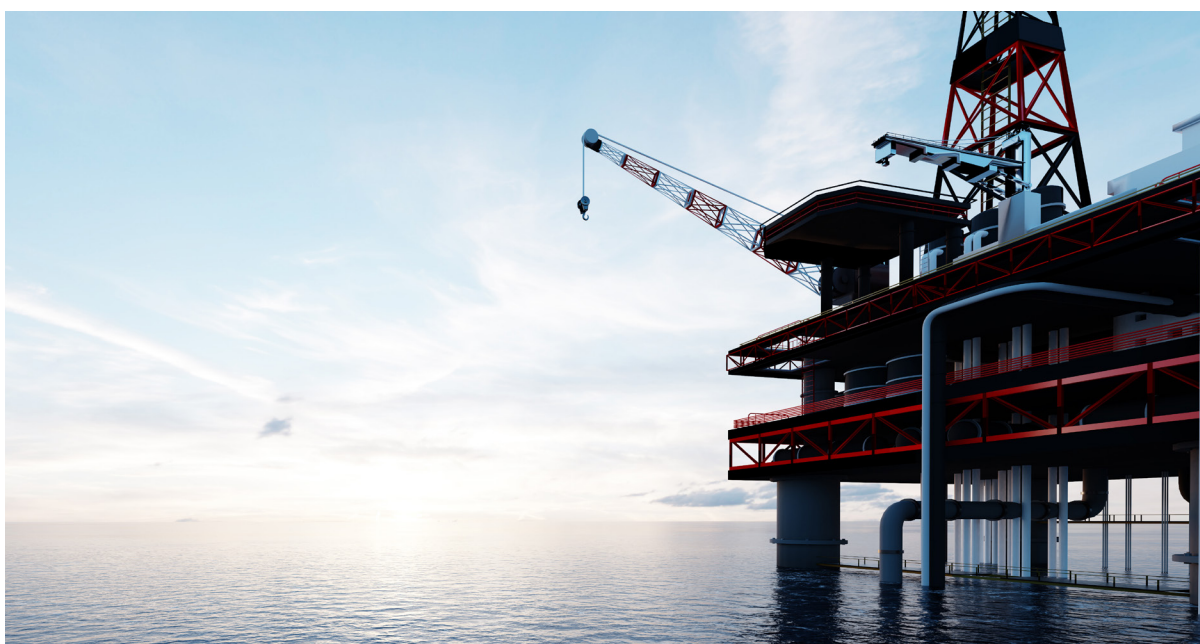
Here, consistent emphasis was placed on engaging workers and communities, those most at risk from the transition, in positive opportunities and the need for change. More broadly, it meant that the just transition was imagined in relation to participatory, democratic and decentralised initiatives, with opinions being heard and decisions being made by impacted people, and the decentralised distribution of benefits and rights. This also included more formalised processes of consultations, a slow but collaborative process where the transition is not imposed forcibly. Within this theme, transparency became a concern where there was a need to personalise

and communicate the purpose and need of the transition to society, promoting buy-in but also defending against the political ‘hijacking’ of the term. Notably there was no mention of any definitions, frameworks or approaches to the just transition.

Participants in the workshop also considered the **responsibility** for a just transition. In relation to upskilling or reskilling, there was some consensus that the employers bear the brunt of responsibility and that labour force transitions should not be down to the individual but agreed and supported by all parties. For several participants, government also plays a key role in securing autonomy and providing support for local initiatives, establishing groups such as the Scottish Just Transition Commission, and, in the case of skills, developing an oversight body which verifies the qualifications that do not require re-training while incentivising companies to provide the training for skills that do. Unions play a fundamental role in

supporting worker rights and even local media have a role in covering issues and enabling the debate. Responsibility was also placed on the renewables sector to accept skills previously gained in oil and gas, including those related to managing risk, logistics and electrical engineering, and on workers to stay and move to new energy systems rather than overseas.

As a final point, there was the sense that the just transition is a jigsaw and, potentially, a call for a more systemic and radical change, particularly in the context of rising social unrest. This meant, for some participants, the potential to overturn economic systems or destabilise political ones shaking out “problematic actors.” Overall, however, most attention was given to the incremental application of the just transition, one that does not have any defined outcome or approach, but that expresses a widespread ambition to manage the move away from oil and gas as fairly as possible, with the maximum possible benefit for all.



4. Policy recommendations

"We are living in a rolling fantasy in which we continue to paint pictures of the future with no actual change in the present."

This quote was used earlier in the report and in the same spirit, this research required both scenarios to outline what they would involve in practice and concrete measures of how to achieve the stated goals. Yet, the latter part of exercise is not easy. The workshop, scenarios exercises and what was, in effect, a backcasting approach (which starts with imagined futures and considers the pathways to achieve them), fostered broad discussion,

but no consensus emerged around the most desirable futures, most desirable pathways or concrete course of action. Nonetheless, it did raise several points for reflection in terms of policy practice, the conceptualisation of the challenge ahead and the methodological approach. These recommendations resulted from the co-production exercise and from the reflections of the research team.

4.1 RECOMMENDATIONS FROM THE CO-PRODUCTION EXERCISE

Although there was no agreement on the scenarios themselves, nor on their feasibility or the milestones and timelines to achieve them, common threads and areas of early consensus did emerge. These begin to shape potential recommendations and involve in particular:

- The centrality of state leadership, where the government, across all of its departments and agencies, remains the actor with most responsibility for the implementation of feasible milestones for oil and gas just transitions that are aligned with the Paris Agreement. Therefore, a step-change in coordinated government leadership is necessary.
- In a related ways, a sole UK leadership through the government in Westminster is seen as untenable and as neglecting the insights from partially devolved contexts. As such, greater cross-border collaboration between the UK, Scotland Wales and Northern Ireland is needed to foster inclusive, bespoke milestones and outcomes.
- There is a need to invest in education to foster the skills needed for green energy futures.
- Fiscal and regulatory reform is also essential.
- Both oil and gas supply and demand, including where demand-side shifts, can create new markets and drive innovation.
- There is neither a single nor a simple solution to the transition from a political, energy and social perspective and this can create a conflict with climate action, which requires a rapid, permanent and comprehensive cut of greenhouse gas emissions.

4.2 RECOMMENDATIONS FROM THE RESEARCH TEAM

The current approach of the UK government contains, arguably, a large amount of business-as-usual measures with hints that more ambitious change might start slowly. The scenarios presented in this report attempt to push these discourses and ambitions and, for the research team, reveal a range of possible policy gaps and areas for further engagement. The resulting policy recommendations are made in a broad sense to those who have decision-making power and leadership capacity across the full range of stakeholders in the oil and gas sector and related interest groups.

These recommendations, which represent the opinions of the research team alone, target the more structural issues associated to the phase-out of oil and gas, assuming that this needs to occur as soon as possible. They extend, adapt or repeat those [presented in the earlier phase of our work](#) as part of the Oil & Gas Transition project and present recommendations connected to existing initiatives and others that need to start afresh:

- Foster effective collaborative relations between Westminster and the devolved administrations in the UK to deliver a just transition and oil and gas phase-out, drawing on good practices from each of the nations and developing national and civil society partnerships and leadership.
- Strengthen the governance of the transitions process, following the practical recommendations and the policy analysis of the Climate Change Committee (CCC) Report to Parliament 2022 (CCC, 2022), to which the government should be held accountable. Simply put, **“tangible progress is lagging the policy ambition”**.
- Extend the reasoning of the High Court Judicial Review (Royal Courts of Justice, 2022), which held that government has to quantify and publish its intended pathway to meet the carbon budgets, to the implications of continued oil and gas exploration and appraisal of production, and contrast it with the MAP and rapid exit scenarios, which require rapid and interactive policy management with less certainty of emissions reductions.
- Use the Climate Compatibility Checkpoint (CCP) test on new offshore oil and gas developments proposed by the North Sea Transition Authority. This offers an immediate mechanism by which regulators can intervene to ensure that i) future developments are necessary and designed to be low-carbon, ii) developments are conceived for immediate and optimal re-use, e.g., making pipelines and boreholes compliant to store CO₂ in reservoirs recently vacated by oil and gas, iii) a carbon take back is enforced on part or all Scope 3 emissions, to be injected into permanent storage decreasing the UK contribution to climate change.
- Make a firm decision to rapidly consent, construct and operate **Carbon Capture and Storage (CCS)**, one project of which could be a **Carbon Takeback Obligation**, a mechanism for placing responsibility for an increasing portion of CO₂ storage or disposal on fossil fuel extractors and importers
- Standardise labour force qualification, creating a skills ‘passport’, shifting the

costs of retraining and upskilling from individuals to companies.

- Actively coordinate and foster participatory processes between various levels of government (local, devolved, national), and promote partnerships between the oil and gas industry, non-oil and gas sector members, the public and government.
- Support low-carbon technological readiness and supply chain diversification.
- Implement mechanisms such as Scotland's 'National transition training fund' across the UK to support the entirety of the country's oil and gas workforce.
- Develop quantitative, binding targets for the phase-out of oil and gas with an unambiguous end goal, clear milestones and a timeline of standards and regulations.
- Clearly define the just transition and its stated aims and audience in order to enable continuous, open debate.
- Inform the above through identified just transition principles, which will maximise the economic and social benefits of transferring more than 200,000 skilled workers to energise and accelerate the

UK's net-zero emissions contribution.

- At a time when oil and gas prices are surging and the geopolitical landscape is constantly evolving, it is also critical to consider how the scenarios for the phase-out of oil and gas can remain resilient. Therefore, the research team recommends the identification of potential threats to the enactment of planned pathways in the short term, alongside measures that could keep these ambitions on track. We therefore note the potential to model each of these scenarios and pathways accounting for multiple variables. This, we believe, will combine the rich insights from deliberative exercises with measures that can direct stakeholders and structure the evaluation of their implementation.

The research team noted, too, the critical importance of determining who takes ownership of the just transition away from oil and gas, a role typically attributed to government. Difficulties associated with market-led approaches and weaknesses in the current economic model revolve around supplying enough for tomorrow whilst long-term planning in the face of significant uncertainties. Therefore, a more fundamental or radical transformation with stable pricing requires a new approach. The recommendations are a tangible start to this potentially more radical process.

4.3 FINAL NOTES ON CO-PRODUCTION

We, the organising team, are conscious of the current polarisation and conflict in the debates about the future of oil and gas in the UK. This has seen the emergence of a "them" versus "us" narrative or a "pro" versus "anti" dichotomy. This will not lead to progress in the oil and gas just transition or to deliberations in anyone's favour. Our workshop was particularly useful in this regard, revealing and analysing the problem of the existence of such an "anti"

and "pro" divide and highlighting that there were areas of common ground and mutual interest and that even positions of conflict could enable profitable discussions. Thus, we sincerely encourage all stakeholders to engage, challenge and be challenged through such "mini-publics" and hope that our early work around oil and gas phase-out milestones aligned with the Paris Agreement facilitates more detailed discussion.

5. FINAL CONCLUSIONS

Given the breadth of material discussed and recommendations given, we close with some final, summary reflections:

1. A just transition has to be enacted by collaboration between all government levels: unions representing the workforce or other groups, local, regional and devolved authorities and the central government. This can provide direct benefits in repurposing the skills of more than 200,000 jobs in the offshore supply chain and accelerate the seizing of opportunities in low carbon energies.
2. A rapid exit transition, closing the UK oil and gas activities, is desirable for climate ambitions, but is extremely hard to manage maintaining job security and business confidence.
3. A median anticipated pathway is a pragmatic way to manage fundamental change. This can be enacted now in the UK by operationalising the climate compatibility checkpoint monitored by the North Sea Transition Authority. This provides the UK with an opportunity to pilot low-carbon projects and low-carbon equipment in the North Sea, designed for the rapid and low-cost repurposing of oil and gas assets for CO₂ storage.
4. CO₂ storage via CCS, BECCS and DACCS projects represents a feasible and long-term solution for the future of the UK offshore activities. The UK government can secure offshore jobs, contributing to a just transition, by accelerating these projects with firm rules. A carbon take-back obligation could aid the attainment of emissions targets whilst increasing project's numbers and storing more CO₂ offshore.
5. Planning and leading a just transition allows to avoid the mistakes of past industrial transitions in the UK, which have 'levelled down' industrial regions and coastal communities. Choosing to legislate on the just transition away from oil and gas is an economic opportunity for the UK to rapidly and efficiently repurpose its existing offshore workforce and become a global leader in this area.

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Guide to the Co-production of Just Transition Pathways in the UK

Methods

In this section we describe the co-production methods used for this research, the activities, the rationale for the selection of participants and stakeholder groups and our experience of different engagement techniques. In doing so, we aim to provide a guide that might be used

for others running similar co-production workshops, many of which will be required to reveal the scenarios and pathways needed to transition away from oil and gas in the UK.

a) CO-PRODUCTION WORKSHOP TECHNIQUES

The scenarios workshop took place online via Teams over two half days in early May 2022. The online format was chosen to accommodate the geographical spread of participants across the UK's four nations and the ongoing challenges associated with the Covid-19 pandemic. In advance of the session, all participants were sent information forms outlining the purpose of the workshop and what their participation entailed, a consent form, a delegate list (Appendix 2) and reading material about the scenarios (Appendix 3). The latter introduced two of the three scenarios mentioned above: (1) the median anticipated pathway and (2) the rapid exit, aiming to bring out the most ambitious responses and suggestions and to identify the most pressing challenges. Whilst the written description of these scenarios was kept brief and intentionally thought-provoking, the structure of the workshop was such that each was introduced again in a more elaborated way via verbal presentations. In this format, more negative aspects of the median anticipated pathway were discussed (e.g., the potential to overshoot climate targets and the potential for stranded assets), alongside more positive aspects of the rapid exit scenario (e.g., leading in emerging industries and avoiding the risk to lock capital and human resources in declining industries).

The workshop was structured around four key activities:

- **Interventions:** introductions to the scenarios with thought-provoking input from a member of the team at the University of Edinburgh
- **Group work:** interactive Miro board exercises in small groups of 4-5 people together with more general discussion in plenary sessions. The Miro boards (one per group and per scenario) presented an initial timeline to 2050, noting current government policy priorities and milestones. Participants were able to edit and move these milestones, as well as add their own (see Figure 1 as an example),
- **Reporting:** key discussion points from each group to the plenary meeting summarised by note-takers and rapporteurs
- **Plenary sessions:** structured whole group discussion led by a volunteer.



Figure 6: Achieving a rapid exit (Source: Jenny Leonard Art)

b) PARTICIPANT SELECTION AND RATIONALE

From January 2022 onwards, the research team reached out to over 100 potential attendees, looking to secure an audience as diverse as possible, considering also gender and professional experience. We sought attendees from, but not limited to, industry, regulators, trade unions, government, academia, charities and NGOs, law firms and local community groups in affected areas. In total, 21 participants signed up to join the event, alongside with 7 members of the University of Edinburgh team. Some were only able to attend parts of the workshop and therefore participation ebbed and flowed.

Despite considerable efforts, the participation rate of women was particularly low.

In dividing participants across working groups, the intention was to create a microcosm of diverse perspectives to facilitate collaboration and discussion across potentially opposing opinions. This was particularly the case as we aimed to achieve co-created outcomes beyond hegemonic or consensus positions and to provide a platform for individuals who would not normally get the chance to meet, to exchange views. The groups changed for each day and each scenario discussion to allow most participants to meet each other.

c) FINAL REFLECTIONS

There are points of strengths, limitations and lessons to be learned from the approach used. We reflect on four issues in particular. First, our workshop benefited from the participation of a varied stakeholder group with contrasting stances. This microcosm evidenced the strong interest among the UK oil and gas stakeholders to participate in such challenging but necessary discussions. Second, and more critically, during the exercise it was not possible to identify targeted timelines for key milestones. Discussions tended to be more general, with agreement, for instance, that it is generally important to begin repurposing infrastructure for alternative uses, but not exactly when or how this should happen. Longer and more specific deliberations might have facilitated the elaboration of more details in this regard. Third,

whilst the online format was the only viable option given the research context, it did limit one-to-one exchanges between the participants, which may have fostered relationships lasting beyond the workshop. Fourth, it is important to note that the emerging views from the scenarios workshop in no way represent an agreement on the preferred scenarios, milestones or priorities. Indeed, it was the express wish of several participants to be recorded as not being in agreement with any of the statements made or decisions taken. Therefore, in the report we outlined points of agreement and disagreement, mapping the general elements of the discussion with the open acknowledgement that the debate is and was more nuanced and at times, fractious.

Appendix 2:

Oil and Gas Transition: Building evidence for policy action in the UK, Norway and Denmark

Delegate List

Name	Organisation
Mike Danson	Professor Emeritus, Heriot-Watt University. Former Just Transition Commissioner, Just Transition Commission, Scottish Government
Mike Tholen	Sustainability Director, Offshore Energies UK
Andy McDonald	Head of Low Carbon Transition, Scottish Enterprise
Kenny Paton	Senior Oil and Gas Lawyer, Dentons
Adrian Del Maestro	Director of Thought Leadership, Expert in Oil & Gas and Low carbon, PwC Strategy&
Hassan Asheg	Global Business Development Lead - Renewables, Royal HaskoningDHV
Rosemary Harris	North Sea Just Transition Campaigner, Platform London
Oliver Johnson	Head of Climate, Energy and Environment, Government Office for Science
Declan Owens	Chief Executive Officer, Ecojustice Ireland
Heather Plumpton	Policy Analyst, Green Alliance
David Keenlyside	Engineering Director, Cierco
Ishbel Shand, or colleague	Founder, Friends of Saint Fittick's Park
Alison Flowers	Energy Advisor, International Energy Unit, Foreign and Commonwealth Office-BEIS Joint Unit
Martyn Tulloch	Head of Energy Systems Integration, Net Zero Technology Centre
Matthew King	Carbon Strategy Lead, BP

John Paterson	Professor of Law, co-founder of the Centre for Energy, University of Aberdeen
Daniel Jones Tessa Khan	Head of Research and Policy, UPLIFT Founder, UPLIFT
Stuart McWilliam	Director, Global Gas and Oil Network (GGON)
Tavis Potts	Professor of Sustainable Development, interim Director of the Centre for Energy Transition, University of Aberdeen
Jennifer MacDonald	Sector Development and Skills Planning Manager, Oil and Gas Transition, Climate Emergency and HVM, Skills Development Scotland
Madhu Basu	Siemens Energy

University of Edinburgh Team	
Navraj Singh Ghaleigh	Senior Lecturer in Climate Law
Stuart Haszeldine	Director, Scottish Carbon Capture and Storage. Professor of Carbon Capture and Storage
Kirsten Jenkins	Lecturer in Energy, Environment and Society, University of Edinburgh
Andi Sihota	Research Assistant, Oil and Gas Transition
Christopher (Louis) Cooper	Event Scribe
Rajeshwari Suryakanth Nagamarpalli	Event Scribe
Alreem Alshimmari	Event Scribe

Appendix 3:

Oil and Gas Transition: Building evidence for policy action in the UK, Norway and Denmark

The Scenarios for Transition

INTRODUCTION

This document aims to briefly describe three potential scenarios for the future of the oil and gas industry in the North Sea. Two of the three scenarios cover oil and gas phase-out-oriented outcomes. All scenarios, to varying extents, are concerned with a Just Transition.

The three scenarios are as follows:

1. Slow-to-No Transition with many climate laws, policies, and suggestions to Net Zero ignored.
2. Median Anticipated Pathway - by 2050, Net Zero basically reached with a focus on people, pivot of skills and greater emphasis on Just Transition, similar to much of the literature-based scenarios.
3. Rapid Exit, a short-order shut down of oil and gas in the North Sea, emission targets met (oil/gas demand met through imports).

Within the workshop itself, we will engage with just two of these scenarios: (1) the median anticipated pathway and (2) rapid exit.

The purpose of these scenarios is to facilitate conversations between all actors. We will begin with their descriptions and then work back from them, identifying opportunities for change, a concrete course of action, the division of responsibilities, and bottlenecks.

SCENARIO 1 – SLOW-TO-NO TRANSITION BY 2050

The high carbon-emitting oil and gas industry status quo remains whilst attempts are made across other sectors to reach legally-binding climate emissions targets. Employment in the sector remains vulnerable to volatility in the market and the sector continues to make declining contributions to the UK economy. Legal action and social movements increasingly challenge the continuation of oil and gas extraction given that this does not align with widely acknowledged climate threats and international targets. Whilst governmental, social and technological changes do occur, they are very slow, with the consumption of oil and gas remain the same. Tensions in the ambitions of the devolved nations increase and there is a risk that, as with the previous UK energy transitions away from coal and steel, later, rapid action with unmanaged supply-chain impacts will lead to significant social justice impacts for oil and gas workers and their surrounding communities.

SCENARIO 2 – MEDIAN ANTICIPATED PATHWAY

Net Zero is reached with a managed decline of the oil and gas industry. The importance of the oil and gas industry in the economy and culture of the UK is acknowledged and emphasis is placed on retaining the skills, expertise and knowledge gained. Therefore, subsurface industries continue, but are rapidly pivoted

away from being oil and gas extractors and towards CO₂ and energy storage injectors. Demand falls significantly for oil and gas and is phased out in domestic settings and buildings as electrification and the use of hydrogen increases. In this scenario, the energy mix becomes more diversified and the adaptation of the skilled labour pools into a new climate positive sector which can be globally replicated, thereby fulfilling many of the criteria for a Just Transition. Government and regulation are key in order to drive change and set commercially viable objectives. There should also be pressure from Government to change companies' culture and insist on holding environmental responsibility and transparency to CEOs and board members.

SCENARIO 3 – RAPID EXIT

There is a rapid closure of the oil and gas industry, starting with the existing infrastructure with the largest emissions profiles or shortest economic and licensing lifespan remaining. The industry's closure signifies the end of domestic production, but with downstream industry and consumers still dependent on fuel from oil and gas, there would be an increased need for the import of fossil fuels. A short-term shutdown of the industry triggers the loss of approximately 200,000 workers, requiring immediate intervention to ensure that the skills necessary for low carbon industries such as offshore wind and hydrogen are retained. There is significant decrease in oil companies operating, exploring, and therefore any associated emissions. This results in future targets being met, but a risk that the opportunity for a Just Transition is missed unless green investment and Just Transition policies are rapidly scaled up. Government would phase-out fiscal benefits for fossil fuel production and infrastructure, such as tax breaks, uplift, fast depreciation, and feed-in tariffs. There is sense that oil and gas is not being domestically produced, but imported and so there's no way to regulate emissions or production practises.

ADDITIONAL RESOURCES

Prior to the workshop, please familiarise yourself with the software 'Miro' as it will be used during both days.

We have created an interactive Miro sheet "Timeline to 2050". At present you will only be able to view this, but on the day it will be editable by all. You can find this by following this link: <https://edin.ac/388tYPI>

Miro also has an FAQs webpage, which you might find helpful: <https://edin.ac/30pEHoQ>

WORKSHOP OUTLINE

Our workshop is structured around four key activities: interventions, group work, reporting and plenaries. Interventions include an introduction to the scenarios and provocations from a member of the University of Edinburgh team.

Group work will consist of interactive Miro exercises in small assemblies of 4-5 people. Within these, we request that a scribe and rapporteur is identified. They are responsible for the reporting task, summarising key discussion points from each group to the whole assembled meeting. By plenary, we refer to a whole group structured discussion led by a volunteer.

Day one: 3rd May 2022, 1pm – 5pm	
1.00pm	Welcome Intervention: Navraj Singh Ghaleigh, The Median Anticipated Pathway Roundtable on initial reflections
2.00pm	Group work 1: Milestones What are the key milestones required to meet the vision?
2.30pm	<i>Break</i>
2.45pm	Group work 2: Actors and responsibilities Who are they key actors responsible for each milestone?
3.15pm	Group work 3: Incumbent actors and lock-in What can delay or disable the transition milestones?
3.45pm	<i>Break</i>
4.00pm	Working groups report back via group work rapporteurs
4.20pm	Plenary 1: Volunteer from group: Main opportunities and bottlenecks and a collaborative course of action
4.50pm	Sum-up and plans for tomorrow: Kirsten Jenkins

Day two: 4th May 2022, 9am – 1pm	
9.00am	Welcome Intervention: Stuart Haszeldine, The Rapid Exit Roundtable on initial reflections
10.00am	Group work 4: Milestones What are the key milestones required to meet the vision?
10.30am	<i>Break</i>
10.45am	Group work 5: Actors and responsibilities Who are they key actors responsible for each milestone?
11.15am	Group work 6: Defining a “Just Transition” For whom and how?
11.45am	<i>Break</i>
12.00pm	Working groups report back via group work rapporteurs
12.20pm	Plenary 2: Volunteer from group: Main opportunities and bottlenecks and a collaborative course of action
12.50pm	Sum-up and the way forward: Kirsten Jenkins

For more information visit: www.oilandgastransitions.org.



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