



Scottish Enterprise

UAE Hydrogen - Clean Energy Incubator Scoping Study

Scottish Enterprise

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CONTENTS

TABLE OF TABLES	V
TABLE OF FIGURES	VI
EXECUTIVE SUMMARY	VII
1 INTRODUCTION	9
1.1 Objectives	9
1.2 The Growth of The UAE Clean Energy Market	10
2 METHODOLOGY	12
2.1 Researchers	12
2.2 Methodology	13
3 DESK-BASED RESEARCH	16
3.1 Delivery Models of Business Support	16
3.2 Comparison	29
3.3 Key Takeaways	30
4 QUESTIONNAIRE AND CONSULTATION FINDINGS	32
4.1 Questionnaire	32
4.2 Consultations	37
4.3 Key Takeaways	44
5 POLICY REVIEW	46
5.1 Introduction	46
5.2 Energy Policy in the UK	46
5.3 Energy Policy in Scotland	50
5.4 Energy Policy in the UAE	54
5.5 Commonalities Between Policies	56
5.6 Conclusions	59
5.7 Key Takeaways	60
6 CRITICAL ANALYSIS	62
6.1 Key Challenges	62
6.2 UAE Market Fit for Scottish SMEs	64
6.3 Key Takeaways	65
7 RECOMMENDATIONS	66
7.1 Business Support Recommendations	66
7.2 Key Considerations	69



8	CONCLUSION	71
8.1	Future Research and Next Steps	71
9	REFERENCES	73
	APPENDIX A - QUESTIONNAIRE FLOWCHART	80
	APPENDIX B – QUESTIONS FROM QUESTIONNAIRE	81



TABLE OF TABLES

Table 1 – Installed and planned clean energy capacity - UAE	11
Table 2 Introduction (Framing & Background)	34
Table 3 Scottish Business Support	35
Table 4 UAE Energy Market	37
Table 5 - Consultation List	38
Table 6 Section 4 Key Takeaways	45
Table 7 - Section 5 Key Takeaways	61
Table 8 - Section 6 Key Takeaways	65
Table 9 - Potential future contacts	71



TABLE OF FIGURES

Figure 1 Research Approach	13
Figure 2 Policy Review Methodology	14
Figure 3 Business Accelerators	16
Figure 4 Business Incubators	18
Figure 5 Government Grant Funding	20
Figure 6 Workshops, Webinars & Coaching	22
Figure 7 Consultancy & Advice	23
Figure 8 Membership Models	25
Figure 9 Support to Secure Finance	27
Figure 10 Comparison of all business support models	29
Figure 11 Xodus LinkedIn Post	32
Figure 12 Business Support Recommendations	66



EXECUTIVE SUMMARY

On behalf of Scottish Enterprise, Xodus was chosen to conduct a review of business support models and energy policy, as well as survey and hold a consultation-round with small-medium sized enterprises (SMEs) and business support organisations in Scotland and the UAE. This study was commissioned due to the Scottish Government identifying new market opportunities as key to maximising economic growth in the next decade – particularly opportunities focused on decarbonisation and clean energy. The development of clean energy technologies, such as hydrogen, presents a promising avenue for Scotland to not only mitigate the impact of the decline in North Sea oil, but also to position itself as a leader in the global energy transition. A Memorandum of Understanding signed between the UK Government and the United Arab Emirates (UAE) Government was the catalyst for exploring what collaboration between Scotland and the UAE could offer, specifically regarding knowledge sharing and mutual growth.

The objective of this study was to provide Scottish Enterprise and Scottish Development International with a recommendation of what a self-sustaining business support offering in the UAE, aimed at Scottish clean energy and hydrogen supply chain SMEs, could look like.

During the desk-based research seven business support models were summarised; (1) business accelerators, (2) business incubators, (3) grant funding, (4) workshops, webinars and coaching, (5) consultancy and advice, (6) membership models, and (7) support to secure finance. Following this, a survey was distributed, which received 42 valid responses. Additionally, 6 Scottish supply chain companies, 13 Scottish business support organisations, 8 UAE business support organisations and 2 GlobalScot's based in the UAE were consulted.

As a result of the survey and consultations with Scottish-based companies, the following key considerations emerged:

- There is no one-size-fits all approach to business support. Businesses seek very different types of support based on their available resources and priorities.
- Business accelerators and incubators are great for start-ups and SMEs that are confident in their products/services yet are still refining their value propositions and require support with market entry and exposure. However, business accelerators are time intensive, and the businesses are required to dedicated significant time and resource to participate.
- The biggest barriers of entry into the UAE for Scottish companies are the lack of awareness of the scale of opportunity which exists for them in the UAE, the lack of market insights and local knowledge, cultural differences, and the lack of in-person exposure to clients.

Consultations with business support organisations in the UAE, were extremely positive. Most notably, KEZAD and TA'ZIZ both registered their interest in being a potential delivery partner for a business support programme. An important consideration which emerged during these consultations was the *In Country Value* (ICV) bonus scheme which considers local expenditure regarding manufacturing, local products and services, hiring, and investment in the Emirates. As a result, being registered in the TA'ZIZ free zone would unlock an added 10% ICV bonus and be a significant factor in winning potential future work with ADNOC – the largest, state-owned, energy company in the UAE.



Further desk-based research was carried out to set out an overview of upcoming and current policy, legislation and MoUs which could influence the likelihood or structure of a UAE-based business support initiative for Scottish-based clean energy SMEs.

As a result of the desk-based research, and the survey and consultations, Xodus provided a business support recommendation to Scottish Enterprise and Scottish Development International. The recommendation consisted of a three-stage pathway towards a self-sustaining business incubator based in Abu Dhabi.

To develop this recommendation further, Xodus provided suggested next steps, which included exploring opportunities with the suggested delivery partners, and as well as additional research which was out with the scope and time restraints of this study.



1 INTRODUCTION

A recent (2022) Scottish Government publication [1], outlined the priorities for Scotland's economy over the next ten years. New market opportunities were identified as key to maximising economic growth in the next decade, focusing primarily on accelerating the global move towards Net Zero. As a result, Scottish Enterprise, a Scottish Government backed authority, aims to assist in enabling the journey towards Net Zero. Additionally, a Memorandum of Understanding (MoU) [2] was signed between the UK Government and the United Arab Emirates (UAE) Government. The purpose of the MoU is to increase the bilateral sharing of knowledge and expertise across clean energy sectors. As a result of this, and ongoing engagement with the energy industry in the UAE, Scottish Enterprise has commissioned the following study.

As Scotland faces the inevitable decline in economic contribution from North Sea oil, it is crucial for the country to diversify its energy sector and explore new opportunities for growth. The development of clean energy technologies, such as hydrogen, presents a promising avenue for Scotland to not only mitigate the impact of the decline in North Sea oil, but also to position itself as a leader in the global energy transition. Collaborating with countries like the UAE, which have already made significant strides in this area, could offer valuable opportunities for knowledge sharing and mutual growth.

On behalf of Scottish Enterprise, Xodus was chosen to conduct desk-based research exploring various models of business support, as well as survey and hold a consultation-round with small-medium enterprises (SMEs) and business support organisations in Scotland and the UAE. The researchers also investigated the synergies within energy policies in Scotland, the UK, and the UAE.

The following report will culminate with a recommendation for how Scottish Enterprise and Scottish Development International could provide a self-sustaining business support offering in the UAE. Targeting Scottish clean energy and hydrogen supply chain SMEs who are looking to bring their businesses over to the UAE.

1.1 Objectives

The primary aims of this engagement were to:

1. Conduct desk-based research including:
 - a. A comparison of the key strengths, gaps, and opportunities of business support delivery models, as well as the financial and resourcing requirements for successful delivery
 - b. Identify organisations in the UK and UAE which deliver various business support models (incl. membership models)
2. Survey and interview Scottish-based clean energy SMEs in order to;
 - a. Identify the types of business support they have used in the UK and collect their feedback on their experience.
 - b. Create an understanding of the type of business support they would require to bring their business to the UAE.
3. Interview business support organisations in Scotland and the UAE in order to;



- a. Explore the challenges and resource requirements associated with specific models of business support.
 - b. Create an understanding of the role the business support organisation could play in supporting a Scottish-based clean energy SME bringing their business to the UAE.
4. Review current and upcoming policy, legislation and MoUs which could influence the likelihood or structure of a UAE-based business support initiative for Scottish-based clean energy SMEs.
5. Provide a detailed range of recommendations to Scottish Enterprise for advancing with a UAE-based business support initiative and how it could become self-sustaining over time.

1.2 The Growth of The UAE Clean Energy Market

Scotland's energy sector has been undergoing a rapid transformation in recent years, with a growing focus on decarbonization and the transition towards cleaner energy sources. With its rich history in oil and gas, Scotland has the potential to be a leader in the energy transition and hydrogen export markets. As such, there are significant opportunities for collaboration and knowledge sharing with the UAE, which is also investing heavily in clean energy technologies and has set ambitious targets for reducing its carbon emissions. In particular, the potential for joint ventures and partnerships in the H2 export market and the transition from fossil to clean fuels could be a mutually beneficial area of interest for Scotland and the UAE.

1.2.1 UAE Energy Sector Overview

The UAE has abundant natural resources and is one of the largest oil & gas producers globally. ADNOC, the UAE's largest NOC, recently announced the allocation of \$150 billion of capital to increase its Oil & Gas production capacity to 5 million barrels per day by 2027. In parallel, ADNOC also recently announced an additional \$15 billion would be allocated to its new Low Carbon Solutions directorate, with the capital used to accelerate energy transition and decarbonization projects, including scaling up hydrogen and CCUS initiatives, driving ADNOC to be one of the world's lowest carbon intensive Oil & Gas producers. The UAE's economy is relatively energy intensive compared with other industrialized countries, largely fuelled by natural gas, petroleum, and other liquids. There are no direct export routes via pipeline, and all oil & gas export relies on shipping and Liquid Natural Gas (LNG). The abundant offshore oil & gas facilities have considerable decarbonisation opportunities like electrification and Carbon Capture and Storage (CCS). In fact, there is already an existing CCS facility capturing CO₂ from steel production and sending it offshore for enhanced oil recovery (EOR). There are two further CCS mega projects in the pipeline that are due to come online by 2025. In addition, ADNOC has approved a USD 3.2 billion offshore electrification project due to be completed by 2025.

1.2.2 New Energies

Rapid economic and demographic growth during the past decade pushed the UAE's electricity grid to its limits, and the country grew the generation capacity rapidly, including 5.6 GW of nuclear power and adding 2.6 GW of solar power. There is no interconnection to neighbouring Gulf states for electricity exchange.

UAE's state renewables companies have grown to become global leaders so the domestic opportunities could be plentiful. UAE does not shy away from visionary projects, and it is likely that regardless of its targets, ambitious projects will continue to be financed. The offshore wind potential does not appear to be well researched and there are no major developments in progress, however an early MoU for a mixed



offshore wind and green hydrogen development indicates some future potential. Still, large scale offshore wind is not likely in the near term.

There has been a lot of activity in the last two years, particularly around CCS for EOR with a strong project pipeline of two additional plants. Another potential project is power from shore electrification, as well as a green hydrogen plant. The overall new energy outlook is positive, and the UAE can be considered a very active market in CCS, and potentially in hydrogen and electrification.

As an oil & gas hub, and home to large renewable players, UAE can take advantage of domestic and adjacent regional supply chains.

Type	Installed Capacity [MW]	Planned [MW]
Hydroelectric	0	250
Solar	2,600	5,000
Onshore Wind	0	30
Fixed Offshore Wind	0	0
Floating Offshore Wind	0	0
Green Hydrogen & Ammonia	0	200,000 ta
Total	2,600	> 5,280 (MW)

Table 1 – Installed and planned clean energy capacity - UAE

In recent months, ADNOC has signed several agreements to explore hydrogen supply opportunities with customers in key demand centres including the Ministry of Economy, Trade and Industry of Japan and Korea’s GS Energy.

ADNOC, Mubadala, and ADQ have signed an MoU to establish the Abu Dhabi Hydrogen Alliance to establish Abu Dhabi as a trusted exporter of hydrogen to emerging international markets and build a substantial green hydrogen economy in the UAE.

Several hydrogen cooperation contracts between Germany and the UAE have been secured and it appears that blue hydrogen/ammonia will be the focus initially rather than green hydrogen.



2 METHODOLOGY

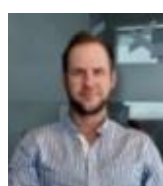
The following section will discuss the chosen methodology to best fulfil the objectives set out by the Researchers and Scottish Enterprise.

2.1 Researchers

The researchers were a multi-disciplinary team spread across multiple geographies. The core research team was comprised David Porteous, Alec Henry, Christopher Welsh, and Riley Smith. Caragh McWhirr was the Project Sponsor and provided project support. The researchers were independent, with no self-interest in the results or outcome of this study.



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During the project, the researchers reported to a cross-disciplinary team within Scottish Enterprise. This team consisted of:

- **Lesley Doyle**, Project Manager, Major Programme Management
- **Paul Foley**, Senior Project Manager, Major Programme Management
- **Jamie Robinson**, Hydrogen Specialist, Low Carbon Transition Team
- **Murray Bainbridge**, Senior Trade Specialist, Scottish Development International (SDI)

¹X-Academy is a not-for-profit subsidiary of Xodus and is the world's first energy transition skills



2.2 Methodology

2.2.1 Research Approach

The research philosophy shapes how the research question and objectives are interpreted, what research methods are chosen, and how conclusions are generated. This study used a pragmatic approach to research – a pragmatic approach is where research starts with a problem or question and the research aims to contribute practical solutions to inform future practice.

The researchers took a subjective stance when conducting primary research as it is appreciated that the viewpoints of the participants in the study are unique because of each person’s experiences and the way they uniquely perceive reality. This meant it was critical to understand the situation of each participant in detail, and the recommendations made at the end of the study must be carefully considered before making generalisations. This means the findings may not be applicable to SMEs in different sectors, those looking to enter different markets, and the data gathered may look considerably different if it were to be re-gathered at a different point in the future.

Figure 1 illustrates the researcher’s approach for generating conclusions and recommendations. The research strategy comprised a multi-method qualitative approach, utilising a questionnaire and consultations. Due to the requirement to gather data on experiences and requirements, qualitative approaches were deemed the most appropriate. The research strategy was also cross-sectional, looking at the experiences and requirements of SME’s and the services offered by business support organisations, at a specific moment in time (December 2022 to February 2023). The primary research took place concurrently alongside secondary desk research. The desk research explored the strengths and weaknesses of different types of business support models and identified specific programmes and delivery organisations. The findings of the primary and secondary research were then augmented by further desk research comparing energy policies in the Scotland, UK and the UAE. This provided crucial context for generating appropriate conclusions and recommendations.

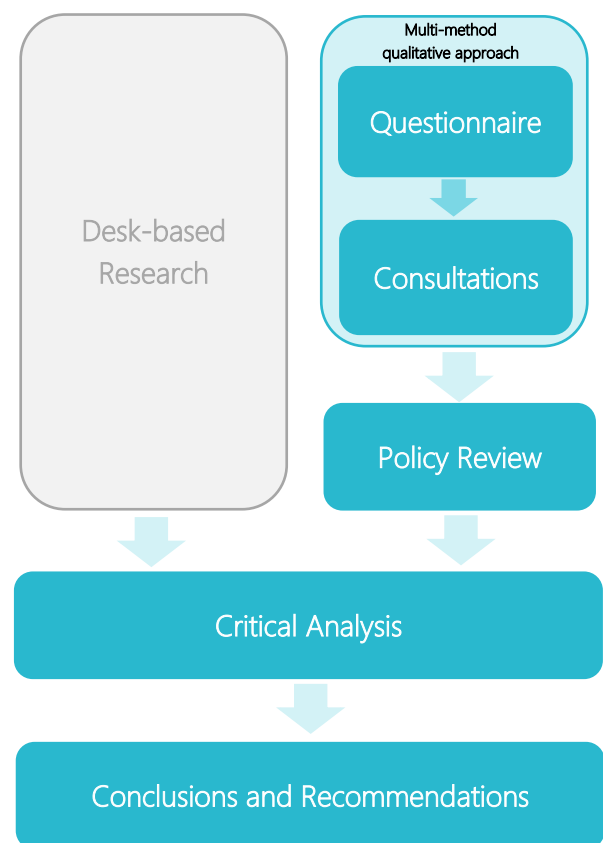


Figure 1 Research Approach

2.2.2 Questionnaire

Phase one of the multi-method qualitative approach was a questionnaire. A questionnaire was the preferred method of data collection due to the ability to easily distribute it to a large sample of Scottish-based clean energy and hydrogen-related SMEs. The target sample size was 30 as this amount would



provide the researchers with common themes which could be further explored during the consultations with both the SMEs and business support organisations.

The questionnaire was created in Microsoft Forms and was distributed through multiple channels by Xodus and Scottish Enterprise, including LinkedIn and mailing lists.

2.2.3 Consultations

Phase two of the multi-method qualitative approach was the utilisation of interviews in the form of 'consultations'. Consultations provided the opportunity to explore topics in more detail, ask follow-up questions, and when interviewing business support organisations, gauge interest on their ability to support the potential initiative.

The sample of SMEs interviewed was based on the businesses which responded the questionnaire and had business activity in Scotland, had received business support previously, and were considering expanding their business to the UAE.

The business support consultees were selected based on those mentioned during the questionnaire, and who were recommended for consultation by Scottish Enterprise and Xodus. Business support consultees were located in both Scotland and the UAE in order to meet the research objectives set out by Scottish Enterprise.

The consultations were done both virtually and in-person depending on location and availability, and where possible, two interviewers were present for one person to facilitate and the other to note-take and ask follow-up questions.

2.2.4 Policy Review

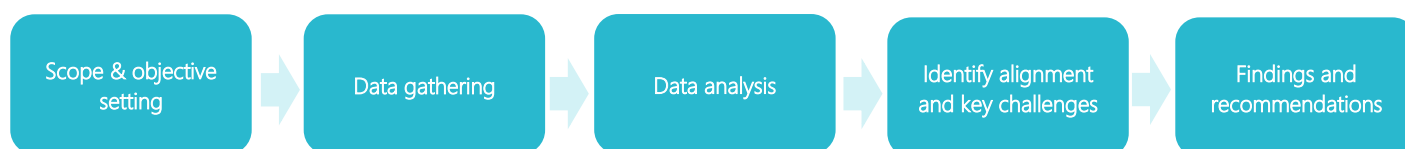


Figure 2 Policy Review Methodology

The energy policy review was conducted based upon the following methodology (see figure 2):

1. **Defining the scope and objectives:** The first step in the policy review was to establish the scope and objectives. This involved setting out the key policy areas to be reviewed (in this case renewable energy, hydrogen, and oil and gas activities) and outlining the goals of the review, which was to determine if there was substance behind the UK-UAE MoU signed in January 2023, and if there were sufficient areas of policy overlap that would be beneficial for Scottish businesses looking to launch incubator projects in the UAE.
2. **Gathering data and information:** The next step was to collect relevant data and information. This involved researching existing policies and reports, analysing energy market trends, and gathering insights from key governmental departments in the UK and UAE.
3. **Analysing the data:** Once the data was collected, it was analysed in detail, which allowed trends and patterns to be identified, and data from the UK and UAE to be comparatively assessed.



-
4. **Identifying key commonalities, issues, and challenges:** Based on the data analysis, the next step was to identify key issues and challenges related to energy policy in the UK, Scotland, and the UAE, such as gaps in policy or regulation between review party, or barriers to renewable energy deployment.
 5. **Presenting the findings and recommendations:** Summarised the review findings from each energy sector covered in the analysis per country, clearly identifying gaps and opportunities for Scottish businesses in the UAE. This analysis was concluded by means of a SWOT analysis, presenting each of those constituent parts to underline how Scottish businesses in applicable sectors can thrive in the UAE.



3 DESK-BASED RESEARCH

This section will contribute to the fulfilment of the following objective:

1. Conduct desk-based research in order to;
 - a. Compare the key strengths, gaps, and opportunities of business support delivery models, as well as the financial and resourcing requirements for successful delivery.
 - b. Identify organisations in the UK and UAE which deliver various business support models (incl. membership models)

3.1 Delivery Models of Business Support

3.1.1 Business Accelerators

Description

Business Accelerators offer time-boxed support which usually lasts between 3 and 6 months. These accelerators are aimed at start-up businesses (usually small teams, rather than individuals) who are yet to launch their business or are at the very early stages. Accelerators are run in cohorts with other businesses going through a similar process concurrently. Sometimes accelerators are also accompanied with pre-seed investment (from £5,000 - £50,000) and are usually concluded with a final showcase event which allows the projects to be shown off to potential customers and investors [3].

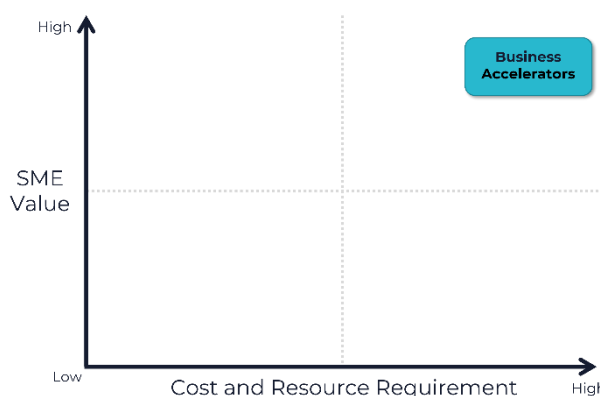


Figure 3 Business Accelerators

Resource Requirement

To successfully run a business accelerator, a core team needs to be in place to facilitate the day-to-day running (usually a team of 2-4 to cover administration, planning, and facilitation). Access to specialist advisors is required to provide start-ups with support (either from one of the full-time staff, through volunteers/ alumni, academic staff, or paid advisors). If pre-seed investment is on offer, then that needs to be financed (usually through private investment), and finally, facilities are required to host the accelerator – usually this will exist of a multi-functional collaboration/ co-working space.

Target Audience

Business accelerators are aimed at supporting teams of start-ups and early-stage businesses, who are seeking support in growing and becoming profitable quickly [4].



Examples

SCOTLAND	UAE	OTHERS
TechX, Net Zero Technology Centre	Catalyst, Masdar & BP	Science and Enterprise Park Business Accelerator Programme, Loughborough University
Start-up Accelerator, Robert Gordon University	Astrolabs	Business Acceleration, SET Squared Partnership
Scotland's Hydrogen Accelerator, H2A	Flat6labs	Y-Combinator
Circular Economy Accelerator, Zero Waste Scotland	Smart City Accelerator, Dtec	
Geovation Scotland Accelerator Programme, Geovation	Sandbox, Dtec	

Pros and Cons

PROS	CONS
<ul style="list-style-type: none"> ✓ Cohort-based, therefore provides opportunity to network and learn from others [5]. 	<ul style="list-style-type: none"> ● Accelerators can be highly populated, so resources are split between numerous companies.
<ul style="list-style-type: none"> ✓ Skills and experienced gained from incubator give the company a sustainable competitive advantage in the market (is not finite like cash and is supervised) 	<ul style="list-style-type: none"> ● Accelerator organisers must secure funding to use as seed-investment for the start-ups – this can be challenging to secure.
<ul style="list-style-type: none"> ✓ Higher risk appetite results in low Technology Readiness Level (TRL) and Commercial Readiness Index (CRI) start-ups gaining access to resources they may otherwise not have available [6]. 	<ul style="list-style-type: none"> ● On some occasions, accelerators might require the participants to give up equity in their business.
	<ul style="list-style-type: none"> ● Usually requires full-time participation which can be challenging for start-ups whose founders are not full-time.



PROS	CONS
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3.1.2 Business Incubators

Description

Business incubators are designed to provide early-stage businesses with an environment for them to grow and thrive within. Incubators will typically have entry requirements based on the 'type' of business they are aimed at incubating, for example, digital products, clean energy solutions, or food and beverage.

The support provided by a business incubator includes providing access to subject matter experts (such as tax or intellectual property advisers), as well as access to networking events, investors, and mentors. Incubators usually occupy a physical space, providing the businesses with co-working space alongside other early-stage businesses.

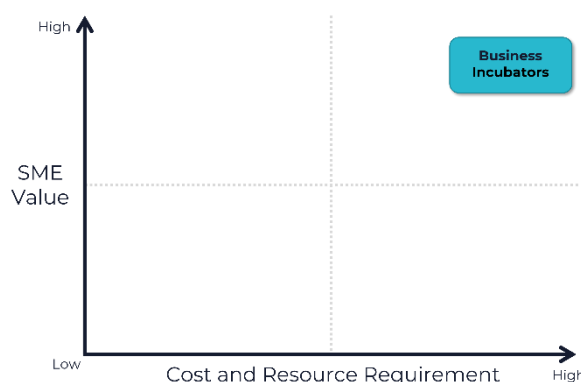


Figure 4 Business Incubators

Business incubators can be provided by various types of organisations, for example, they may be organised by academia to provide current students, staff and alumni with incubation facilities, it might be entirely or partly funded by the public-sector to provide specific support to a priority investment area, or it could take the form of a corporate incubator whereby a larger corporation provides the funding, business support and facilities.

Typically, incubators funded by academia or public-funding will not cost the early-stage business any money or equity, however corporate incubators may require payment in the form of equity shares or the rights to first refusal for future investment or buy-out.

Finance and Resource Required

Similarly, to accelerators, an incubator will require a core team to ensure the smooth operation of the facility and events - this is usually a team of 2-4. Access to specialist advisors is required to provide the businesses with support – depending on the type of incubator advisors might be staff from other areas of the business, they might be volunteers/ alumni, or they might be paid consultants.

A core part of an incubator is the facility. Co-working space, confidential meeting, and collaboration space, as well as events space is required.

Target Audience

Incubators are targeted at early-stage businesses, often start-ups. Each incubator will be set-up for a specific purpose; therefore, the target audiences will vary, however they are usually industry-focused and/or regional.



Examples

SCOTLAND	UAE	OTHERS
AB Venture Zone	Intelak	P&G Ventures
Heriot-Watt University	Turn8	BP Launchpad
Elevator UK	In5	
Bright Red Triangle, Edinburgh Napier University		
CodeBase		

Pros and Cons

PROS	CONS
<ul style="list-style-type: none"> ✓ Incubators create an innovative and inspiring environment for business me motivated by and grow within. 	<ul style="list-style-type: none"> ✗ Some incubators will require ROI in the form of equity in the early-stage business.
<ul style="list-style-type: none"> ✓ Incubators also promote collaboration with other businesses, allowing stronger propositions to be developed, and for successes and failures from others to be learned from. 	<ul style="list-style-type: none"> ✗ As well as being industry-specific, some are regionally specific and/or TRL & CRI-specific, restricting the number of incubator-options available to some early-stage businesses and SMEs.
<ul style="list-style-type: none"> ✓ Incubators have access to subject matter experts, providing the businesses with quality and bespoke advice and support. 	<ul style="list-style-type: none"> ✗ Incubators are not like accelerators; this means the support is less structured and may not include funding.
<ul style="list-style-type: none"> ✓ Direct access to investors and networks which otherwise might not be accessible. 	



3.1.3 Government Grant Funding

Description

Grant funding is made available either directly through the government, or through an intermediary which has been allocated to manage a competitive application process. Government grants may be “*competed*” whereby applications are scored against a pre-published criterion. If only one company has the required knowledge and expertise to deliver a specific intervention the grant may be “*un-competed*”. They may also be “*criteria based*” where if the applicant meets a qualifying criterion, they receive the funding. Government grant funding is not a loan, therefore does not need to be repaid [7].

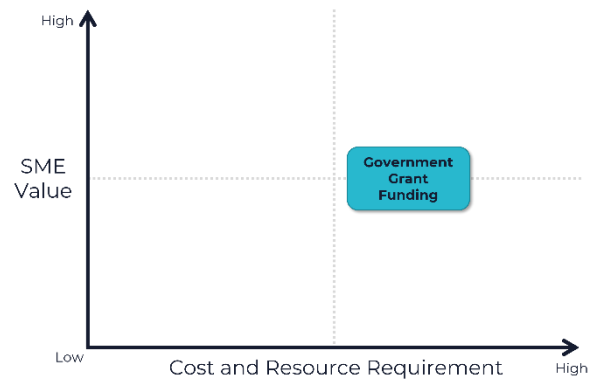


Figure 5 Government Grant Funding

Resource Requirement

The availability of grant funding will depend on the budget allocation. The amount of budget allocated towards a certain development area will depend on current governmental priorities and is not necessarily guaranteed each year - this can make future planning challenging.

As well as securing the budget, application portals and staff to review the applications is required – this may require the formation of new teams and departments to administer and evaluate funding rounds if they are continually open for multi-year programmes. Once awarded, grant funding will require on-going administration during the funding cycle to ensure it is spent in alignment with the terms of the award.

Target Audience

Target audiences for grant funding will vary depending on what the allocated budget aims to achieve. This will be aligned with government policy. Therefore, the purpose may be very specific (for example targeted at a specific region, technology type, or challenge statement), or it may be less specific (for example advancing entire industry sectors).

Examples

SCOTLAND	UAE	OTHERS
Innovate UK	Abu Dhabi Fund for Development	Northern Australian Infrastructure Fund
Energy Investment Fund	Researcher.ae	UKRI
Scottish Co-investment Fund	Khalifa Fund for Enterprise Development	British Business Bank



SCOTLAND	UAE	OTHERS
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[Scottish Venture Fund](#)

[Workplace Innovation Fund](#)

[Scottish Government EETF](#)

Pros and Cons

PROS	CONS
------	------

✓ Government grants are not loans or require giving equity, so the recipient does not have to pay the money back or lose any control of their company [8].

✗ There can be a lot of bureaucracy involved meaning the application process can be very time-consuming.

✓ There usually is a large range of different grants available (although securing the grant is not guaranteed).

✗ Companies cannot spend the money they receive however they want; they will have to stick to the exact purpose they applied for, or potentially face penalties [9].

✓ Applying and receiving a grant is a good way to build companies reputation, improving chances of receiving both public and private funding again in the future [10].

✗ The competition for grants is large, with a low success rate – often the best way to secure grants is to employ a competent grant application writer [10].

✗ The importance of having a strong application writer onboard, and the bureaucracy involved, means some organisations will not receive funding despite perhaps having the best idea in real terms.

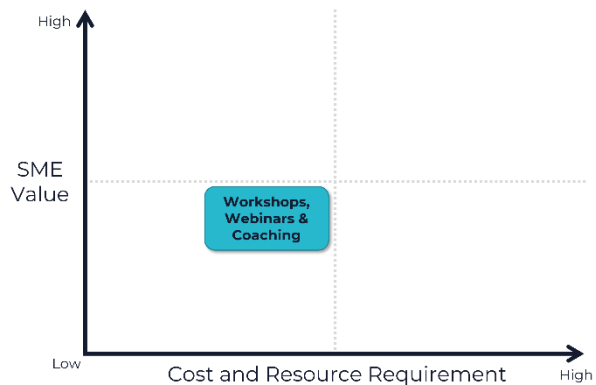
✗ Companies often pay upfront for costs and end up invoicing for the funds upon the project completion



3.1.4 Workshops, Webinars & Coaching

Description

One-off, repeat, or a series of events, whereby the organiser arranges for subject matter experts to talk to an audience of multiple business stakeholders on a specific subject (for example, using business model tools or providing market insights). Although the session/s will likely be based on a specific topic, they are not bespoke to a single business.



Resource Requirement

These may be led by either a government agency, such as Scottish Enterprise, or a private organisation. A video conferencing software, such as Zoom might be required, or a physical conference space. Subject matter experts will be required to deliver the workshops and coaching – this may require external speakers or consultants to deliver if that expertise is not in-house.

Figure 6 Workshops, Webinars & Coaching

Target Audience

The target market for workshops and webinars will depend on the topic and industry sector. A range of sizes of firms will attend webinars and workshops, from start-up founders to executives. They are a cost-effective (usually free) and are an easy way to gain knowledge. Some workshops will be more specialised than others, which presents an opportunity for the participants to gain information and insights that they may not have otherwise be exposed to.

Examples

SCOTLAND	UAE	OTHERS
Scottish Enterprise	SORP Business Accelerator	TRANSCEND
Highlands and Islands Enterprise	MA'AN Social Accelerator	YouthX
South of Scotland Enterprise	STARTAD	EforAll
Business Gateway		
Net Zero Technology Centre		



Pros and Cons

PROS	CONS
<ul style="list-style-type: none"> ✓ Webinars are typically free to access and can be rewatched and shared with others. 	<ul style="list-style-type: none"> ✗ Not bespoke to each business, so information will be more general.
<ul style="list-style-type: none"> ✓ Workshops can offer high-level advice and information to businesses, as they may have similar problems to each other. 	<ul style="list-style-type: none"> ✗ Webinars are less interactive than in-person so may not provide the opportunity for attendees to address specific questions.
<ul style="list-style-type: none"> ✓ Webinars provide the opportunity to see conferences in other locations. 	<ul style="list-style-type: none"> ✗ Webinars heavily rely on technology working as intended.
<ul style="list-style-type: none"> ✓ Accessible opportunity for organisations to gather information, regardless of business maturity. 	

3.1.5 Consultancy & Advice

Description

Bespoke consultancy, advice, mentoring or coaching, provided through in-kind or discounted support by either public or private-sector businesses. This type of support will be tailored to the specific business in question and will therefore provide very targeted one-to-one support.

Resource Requirement

A consultancy organisation needs to be identified to deliver the support and their time will need to be paid for – this could be arranged through public funding (to either total cover or partially cover the fee), or the consultancy might provide in-kind support or provide discounts.

Target Audience

The target audience for consultancy depends on the funding source – for example, consultancy provide via a government funding programme aimed at offshore wind. This might also impact the size of company eligible for the support – although usually the support is made available for start-ups and SMEs.

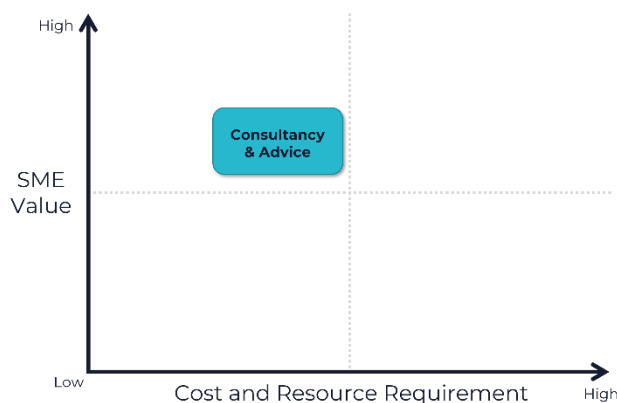


Figure 7 Consultancy & Advice



Examples

SCOTLAND	UAE	OTHERS
Aberdeen & Grampian Chamber of Commerce	Innovate, Masdar	myBusiness
Cluster Builder	UAE Ministry of Economy	New South Wales Government Business Advice and Support
F4OR		
ETZ		
SE Expert Support		



Pros and Cons

PROS	CONS
<ul style="list-style-type: none"> ✓ Enables company to bring in individuals with expertise outside the business' range of knowledge or skills, allowing them to tackle challenging tasks that they otherwise may not have been able to do [11]. 	<ul style="list-style-type: none"> ✗ Relying on consultancy advice provided by academia can mean outputs are influenced by academic calendars rather than urgency.
<ul style="list-style-type: none"> ✓ Consultants generally more experienced and can offer a 'birds eye view' and different perspective on the challenges being faced. 	<ul style="list-style-type: none"> ✗ Lacks flexibility after kick-off due to contracts outlining what is in-scope and out-of-scope.
<ul style="list-style-type: none"> ✓ Some consultancy programs like Cluster Builder and OWES, or through universities is free for the organisation receiving the support. 	<ul style="list-style-type: none"> ✗ The value of the deliverables is highly dependent on the quality of consultant and the relationship between the consultant and client.

3.1.6 Membership Models

Description

Memberships Models are whereby an organisation (typically not-for-profit) allows various organisations (who align with a selection criteria) to pay a monthly or annual fee to part of a group. The group can then use this membership to demonstrate a commitment towards a specific cause, and as an opportunity to network and collaborate with other organisations. These organisations often host networking events. Networking events (whether through a Membership Organisation or not) are where individuals or businesses are invited to come together for the purpose of sharing

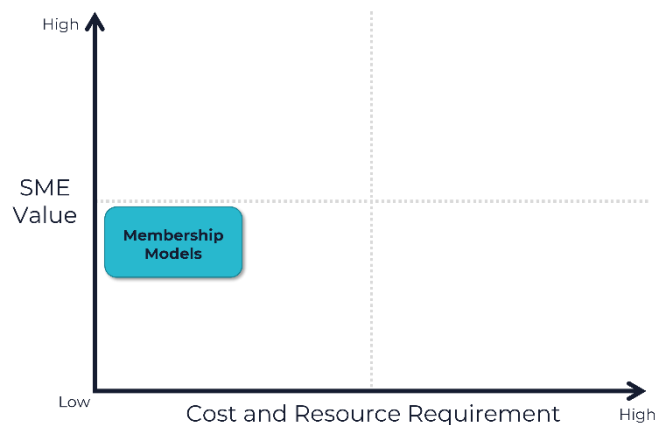


Figure 8 Membership Models

information and creating relationships in order to grow professional networks. Types of networking events include industry-specific events and conferences, roundtable discussions, or virtual groups [12].

Resource Requirement

Membership Models require typically a small core team of direct employees including such roles as an accountant and programme lead. Outside of this, many functions run under such model can be (and often is) outsourced to 3rd party companies – such as marketing, legal, and event management. Networking events require a venue or virtual setting (although virtual networking events are generally regarded as not



as effective due the formality). Usually food and beverages are required, and in some cases a guest speaker. Outsourcing such events, allow for a small core team to operate efficiently under this model.

Target Audience

Membership models are aimed at a group of organisations who are aligned with a specific cause. They might be industry specific, region specific, or both. Networking events are great places for businesses to find potential partners and meet new clients or suppliers.

Examples

SCOTLAND	UAE	OTHERS
AREG	DSA UAE	SME Programme, Catapult
NECCUS	MESIA	
GrowBiz	ADIPEC	
TORCH, The Data Lab		
SHFCA		

Pros and Cons

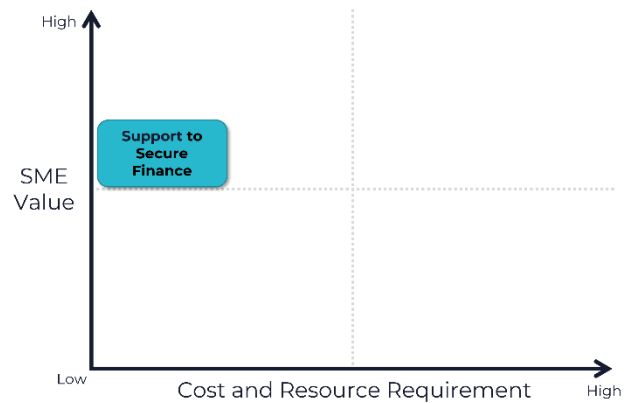
PROS	CONS
<ul style="list-style-type: none"> ✓ Membership models are a cost-effective way to demonstrate commitment towards a cause and gain exposure within an industry. 	<ul style="list-style-type: none"> ✗ Membership models can be limited by its financial constraints associated with membership costs, this can be eased with scaling membership costs based upon size and turnover of associated members.
<ul style="list-style-type: none"> ✓ Membership models and networking events provide the chance to engage with many people and companies in similar industries. 	<ul style="list-style-type: none"> ✗ Membership models are, typically, heavily reliant on 3rd party organisations for the functioning of events and even day-to-day operations.



3.1.7 Support to Secure Finance (Public and Private)

Description

Securing funding for an SME can come in many forms, from government grants to private SEED investment. Whether it is signposting businesses to the most appropriate grants, helping with application writing, or preparing businesses for pitching for investment, there are a number of organisations out there which can provide support and feedback for securing various forms of external financing.



Resource Requirement

Subject matter experts who understand the public and/or private funding landscape is crucial. Their time spent in identifying relevant funding and supporting with funding applications then needs to be paid for.

Figure 9 Support to Secure Finance

Target Audience

Support in securing finance can be relevant to a variety of businesses, whether they are start-ups or multi-national organisations.

Examples

SCOTLAND	UAE	OTHERS
Scottish Enterprise	Invest in Dubai	Australian Renewable Energy Agency
Business Gateway	UAE Government Portal	Business Growth Hub
Scottish Development International	UAE Ministry of Economy	
Invest Aberdeen	Abu Dhabi Investment Office	
Highlands and Islands Enterprise		



Pros and Cons

✓ PROS	CONS
<ul style="list-style-type: none">✓ Ensures time is spent applying for only the most relevant types of funding – increasing the likelihood of success.	<ul style="list-style-type: none">✗ Certain support to secure financing is only available to organisations which match a certain criteria, such as those of a specific TRL or CRI
<ul style="list-style-type: none">✓ Can target funding focussed on growth and innovation, so can offer support which is better suited to businesses wanting to improve profitability and market position. [13]	
<ul style="list-style-type: none">✓ Offers alternatives for grant funding if that is not the correct source of funding for the company [14].	
<ul style="list-style-type: none">✓ Can offer tailored financial advice relevant for businesses, such as Energy Crisis Advice, Recovery Loan Scheme, Debt Advice and Property information [15].	



3.2 Comparison

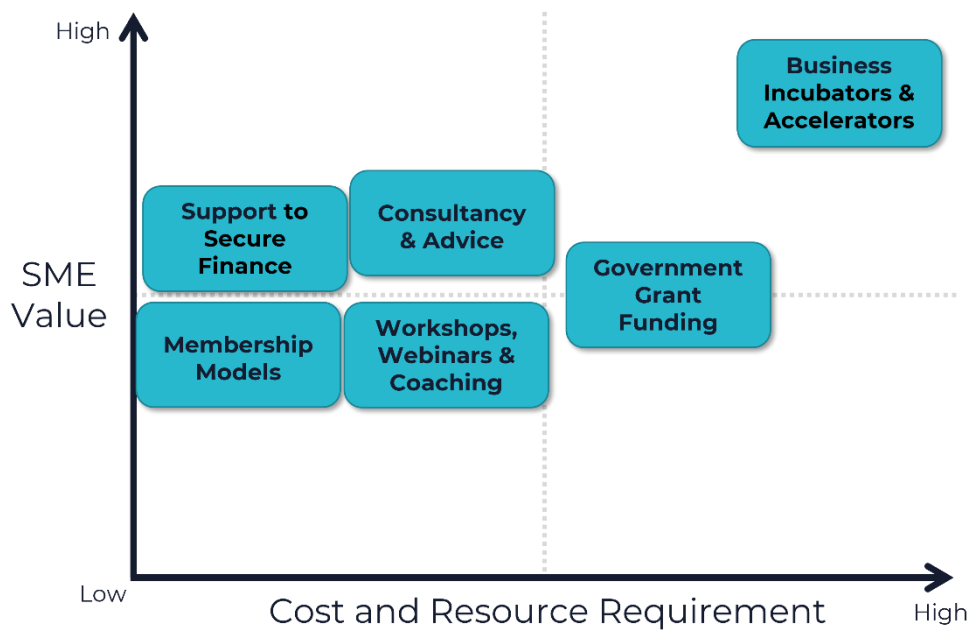


Figure 10 Comparison of all business support models

In order to compare the various models of business support, 2x2 matrix was developed. This tool is a decision support technique and allows options to be plotted against two axes.

The Y-axis represents the value and impact received by an SME from a business support initiative. Scoring high on this axis would mean the business support has been relevant, resulted in sustained benefits, and is likely to play a critical role in the success of the SME. Scoring low on this axis would mean the support provided has been general and not bespoke to the SME in question and has not significantly contributed the success of the SME.

The X-axis represents the cost and resource requirements. A high score on this axis represents significant investment required, as well as additional hires and/or subcontracting of services. A low score represents low cost and no need to increase the delivery team’s capacity.

Figure 10 provides a side-by-side comparison of all the business support models mentioned in section 3.1. As can be seen, the more bespoke the support is, the more valuable it is for the SME, and the more cost and resource is required from the support provider. Additionally, the maturity and needs of a business looking to enter a new market will influence the amount of support they require. It’s therefore critical to match the needs of the business with the correct level of business support.

Two example scenarios of business needs and business support requirements have been explored, illustrated through two hypothetical businesses, Business A and Business B. In both scenarios, it can be assumed that growth to a new market is somewhere within their business plan, whether that’s immediately or within a few years.



Business A has limited resources (time, money, and staff) due to them being preoccupied delivering work scopes within their existing market. As a result, they find it difficult to reallocate time and resource to explore any new market opportunities or conduct any business development activities in new regions. Business A lacks context about specific new markets, and does not know which market to choose from. In this scenario, services such as *Consultancy & Advice*, *Government Grant Funding*, and *Support to Secure Finance* could be considered as more useful, as the time investment from the business is relatively low, yet the outcomes could provide the business with critical context which could help to re-prioritise resource allocation, and/or it may provide the funding the business needs to justify the reallocation of resource.

In contrast, entering a new market is a critical part of Business B's business strategy and growth. The justification for investing into this has already been made, and resource has been allocated, however their weakness is in understanding the nuances of the market, tailoring their propositions to specific clients, and not having the right connections or feet-on-the-ground to successfully deliver scopes of work in the new market. In this case, services such as *Business Incubators*, *Business Accelerators*, *Workshops and Webinars*, and *Membership Models*, (which require more time and resource invested) have the potential to provide greater benefit to that business. In particular, Business Incubators and Business Accelerators which for a fixed-period of time could provide an in-country experience for that business.

3.3 Key Takeaways

KEY TAKEAWAYS

No "one-size-fits-all" business support model

There are numerous types of business support models available, each with their own pros and cons, target audiences and resource requirements.

The best option of business support model to use will depend on the desired impact, funding available, and the target sector and region.

Consider the right delivery partners

It is rare that the organisation delivering the business support will have all the resources and capabilities available in-house to fully deliver the support. It's therefore crucial to consider how the capabilities will be acquired, e.g., partnerships with industry, subject matter experts and academia.

Securing budget

Creating sustained impact, business support must be made available to businesses in different forms over multiple years. It is crucial to have a funding pathway to support multiple business at different TRLs and CRIs across multiple years – as such there



KEY TAKEAWAYS

is increased importance on securing multiple-years of funding whenever possible.

Supporting businesses enter a new overseas market

If a business has their sights set on a specific overseas market, they will be more willing to invest their own time and resource into the support, such as joining an Accelerator. However, if the opportunities the new market presents are not clear to the business, business support services which require the least amount of time and resource to be committed by the business, or that help to justify the time spent by subsidising research or providing financial support, are more likely to be welcomed.



4 QUESTIONNAIRE AND CONSULTATION FINDINGS

This section will explore the outcomes of the following objectives:

2. Survey and interview Scottish-based clean energy SMEs in order to;
 - a. Identify the types of business support they have used in the UK and collect their feedback on their experience
 - b. Create an understanding of the type of business support they would require to bring their business to the UAE
3. Interview business support organisations in Scotland and the UAE in order to;
 - a. Explore the challenges and resource requirements associated with specific models of business support
 - b. Create an understanding of the role the business support organisation could play in supporting a Scottish-based clean energy SME bring their business to the UAE.

4.1 Questionnaire

A total of 45 responses to the questionnaire were collected over a month-long period. The questionnaire was advertised on both Xodus' and Scottish Enterprise's LinkedIn networks, calling on Scottish SMEs who considered themselves clean energy and hydrogen-related supply chain businesses to participate. Out of the responses collected, 42 were deemed usable. Three responses were deemed unusable and eliminated due to a failure to complete the form fully - answering less than two of the total questions. The flow and structure of the questionnaire can be viewed in the flowchart attached in Appendix A. Finally, a full list of the questions used in the questionnaire can be found attached in Appendix B.



Figure 11 Xodus LinkedIn Post



4.1.1 Questionnaire Outcomes

Section 1 – Introduction (Framing & Background)

SURVEY QUESTION	RESULT												
<p>1) Is your business an SME?</p>	<p>A pie chart with a large orange slice representing 'Yes' at 84% and a smaller blue slice representing 'No' at 16%.</p> <table border="1"> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Yes</td> <td>84%</td> </tr> <tr> <td>No</td> <td>16%</td> </tr> </tbody> </table>	Response	Percentage	Yes	84%	No	16%						
Response	Percentage												
Yes	84%												
No	16%												
<p>2) Is your business registered in Scotland?</p>	<p>A pie chart with a large orange slice representing 'Yes' at 86% and a smaller blue slice representing 'No' at 14%.</p> <table border="1"> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Yes</td> <td>86%</td> </tr> <tr> <td>No</td> <td>14%</td> </tr> </tbody> </table>	Response	Percentage	Yes	86%	No	14%						
Response	Percentage												
Yes	86%												
No	14%												
<p>3) What region of Scotland does your business primarily operate within?</p>	<p>A bar chart showing the number of businesses in each region. The y-axis ranges from 0 to 20. The x-axis lists five regions.</p> <table border="1"> <thead> <tr> <th>Region</th> <th>Count</th> </tr> </thead> <tbody> <tr> <td>Aberdeen and North East</td> <td>17</td> </tr> <tr> <td>Glasgow and Strathclyde</td> <td>6</td> </tr> <tr> <td>Edinburgh and Lothians</td> <td>5</td> </tr> <tr> <td>Tayside, Central, and Fife</td> <td>5</td> </tr> <tr> <td>Highland and Islands</td> <td>3</td> </tr> </tbody> </table>	Region	Count	Aberdeen and North East	17	Glasgow and Strathclyde	6	Edinburgh and Lothians	5	Tayside, Central, and Fife	5	Highland and Islands	3
Region	Count												
Aberdeen and North East	17												
Glasgow and Strathclyde	6												
Edinburgh and Lothians	5												
Tayside, Central, and Fife	5												
Highland and Islands	3												



SURVEY QUESTION RESULT

6) What is the primary sector your business operates within?

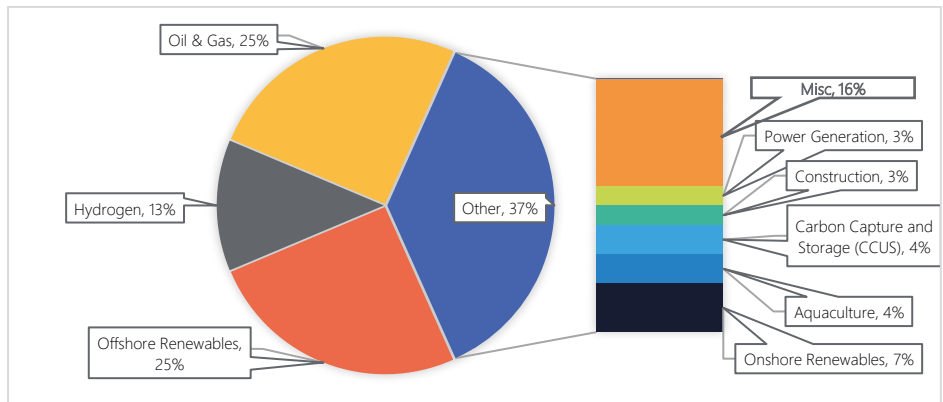


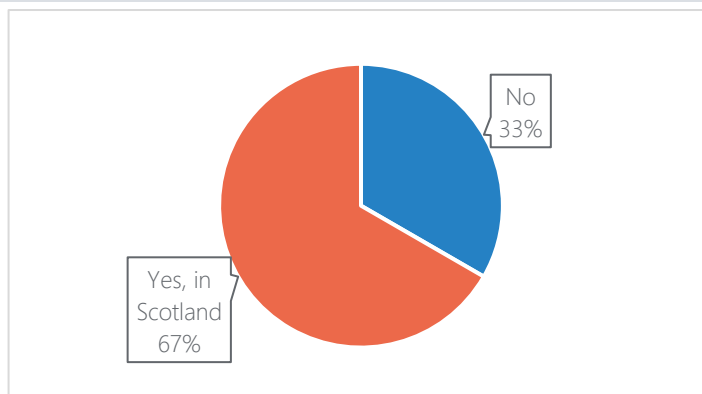
Table 2 Introduction (Framing & Background)

Out of the total number of respondents a majority were both an SME and registered in Scotland (operating with a current Scottish business address) - with just under half of the respondents operating in Aberdeen and the north-east of Scotland. With almost two thirds of respondents currently operating fully, or partially, in the clean energy/hydrogen sector currently and 25% operating in the traditional Oil & Gas sector. With a further 25% operating in the offshore renewable sector, 13% in the hydrogen sector, and further 37% of other sectors including onshore renewables, CCS, aquaculture, and power generation.

Section 2 – Scottish Business Support

SURVEY QUESTION RESULT

9) Has your company been supported by any business support services?





SURVEY QUESTION RESULT

10) What type of business support have you received?

(Column titles renamed and merged from direct survey responses to match terminology previously used in Section 3)

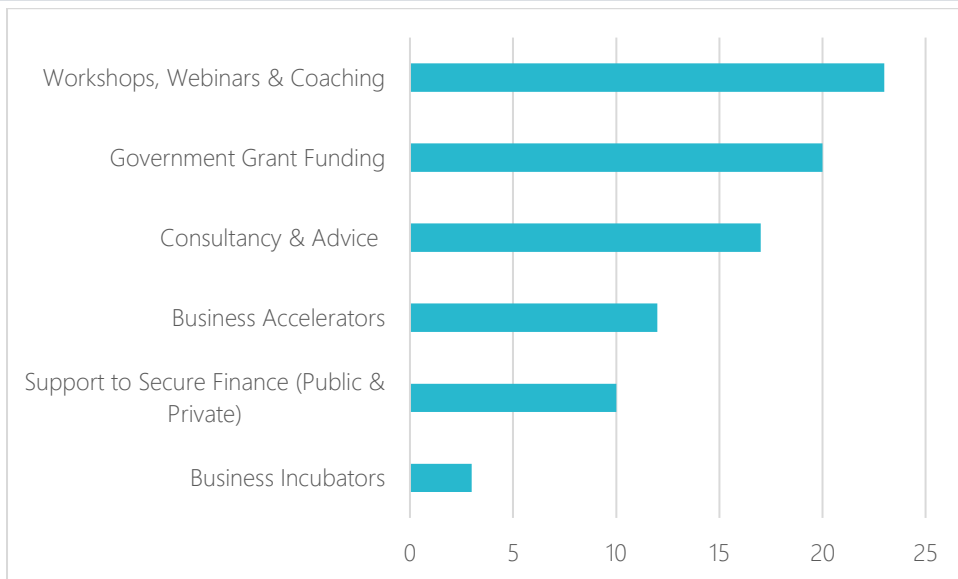


Table 3 Scottish Business Support

As seen in Table 3, 67% of respondents (a total of 28) had received business support prior to completing the questionnaire. As expected, not every company who filled out the survey had received business support in Scotland due to the survey being open to any business. Of the 28 respondents the largest form of Scottish business support that was received was grant funding - at 24%. Including the full spectrum of grant funding, public/private sector specifically, over one third of respondents had received some form of funding opportunity through business support programmes.

In response to "What are the names of the business support programmes you have received support from?", the most frequently named business support programme used by the respondent SMEs was the NZTC/TechX programme. With other large notably mentioned programmes including Scottish Enterprise and the Scottish Development International, the Elevator programme, and Scottish EDGE.

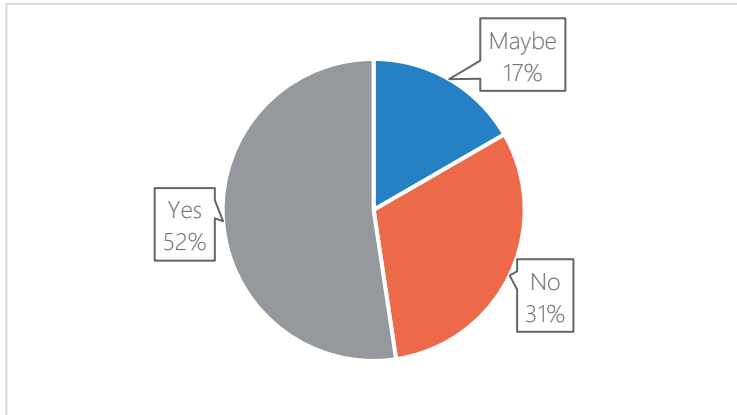
Delving further into "What form of business support did you prefer, and which added the most value to your business?" it was clearly conveyed in the responses, that funding & grants (in all its forms) was the form of business support that companies found to add the most value to their business. Although funding was not selected by a majority when clarifying what business support they have received, by those that responded to what support added the most value to their business, it was overwhelmingly conveyed as the most impactful. However, when considering the follow up question "Is there anything that could have improved about business support you received? Or was there anything you wished you had received but was not available?", the most common responses included a mix of more networking events, less bureaucracy regarding funding applications, and having a more cohesive and consistent engagement with business support organisations and programmes.



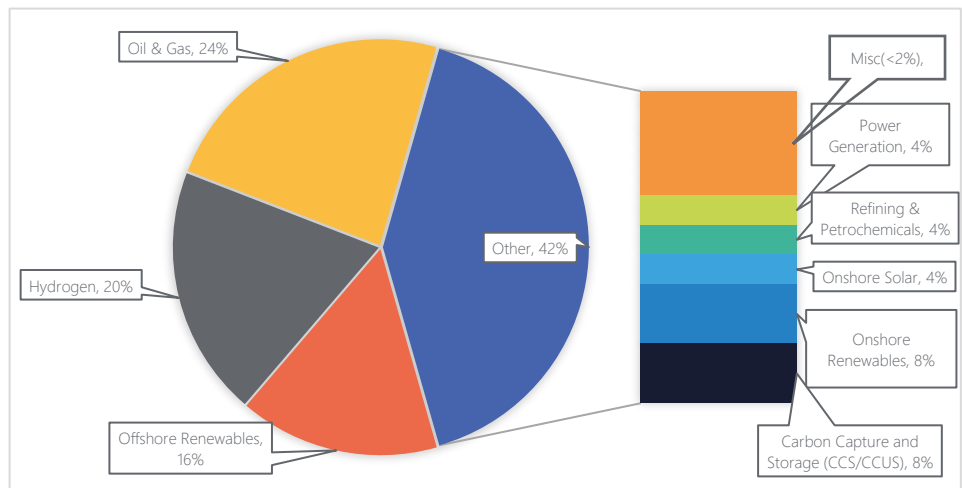
Section 3 - United Arab Emirates Energy Market

SURVEY QUESTION RESULT

14) Do you view the UAE as a potential market for your company?



15) Which sector of the UAE energy market would you look to enter?



16) How soon do you wish to enter the UAE energy market?

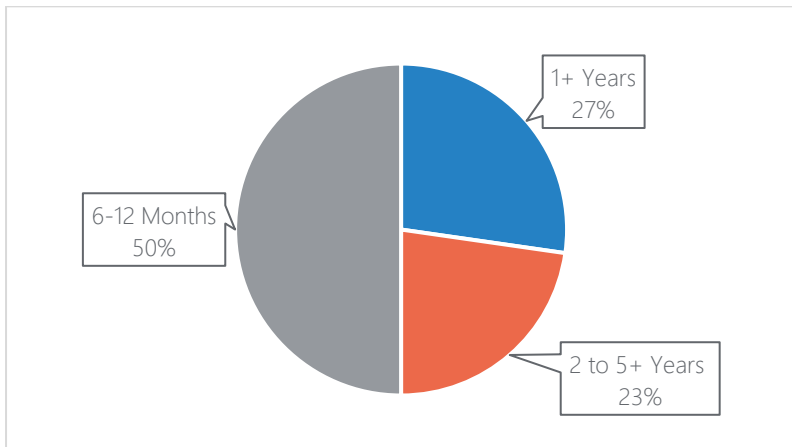




Table 4 UAE Energy Market

Finally, as can be seen in Table 4, just over half of respondents viewed the UAE energy market as a potential for their business, with half of those respondents looking to potentially enter the UAE market in the next 6-12 month. Out of the companies that viewed the UAE as a potential market, the spread of which sector they would look at entering is similar to their operating sector in the Scottish market - the top three market sectors remain the same when looking to enter the UAE market, Oil & Gas, Hydrogen, and Offshore Renewables. However, one of the largest increases in interest in a specific market is the Hydrogen sector - with a 7-point increase in comparison. With the Oil & Gas market interest remaining virtually identical to domestic interest.

Looking further into questions surrounding potential business support in the UAE, when asked “*What type of business support would you like to see made available in the UAE?*” common themes arose regarding funding opportunities, networking events, and market insights and what the apparent opportunities are. When asked, “*What do you see as the largest barrier to entry into the UAE market?*” the respondents raised concerns surrounding lack of ‘on the ground’ knowledge, operational costs, legal and market legislation, and not having a local partner/knowing how to establish a local partnership.

4.2 Consultations

A total of 29 consultations, see Table 5, were carried out over a one-month period, proceeding the conclusion of the questionnaire. The list of consultees contacted for interview was directed by the outcome of the questionnaire, and in combination with desk-based research carried out.

SCOTTISH BUSINESS SUPPORT	UAE BUSINESS SUPPORT	SCOTTISH SUPPLY CHAIN
NECCUS	Dubai Expo Village	Puls8
Invest Aberdeen	ADNOC	GM Flow Measurement
AREG (Aberdeen Renewable Energy Group)	TA’ZIZ Industrial Park	JET Connectivity
NZTC/TechX (Net Zero Technology Centre)	Ras Al Khimah Economic Zone	Napkin Innovation
SDI (Scottish Development International)	Heriot-Watt University (Dubai Campus)	PlusZero
Scottish Enterprise	UAE Ministry of Economy	PJP Eye
Robert Gordons University	Abu Dhabi Investment Office (ADIO)	



SCOTTISH BUSINESS SUPPORT	UAE BUSINESS SUPPORT	SCOTTISH SUPPLY CHAIN
ORE Catapult (Offshore Renewable Energy)	KEZAD Economic Zone	
Herriot-Watt University - Business School	Ryan McPherson – GlobalScot Network (EIC)	
Strathclyde University - Offshore Energy Transition Programme	Graeme Chalmers – GlobalScot Network (Motive Offshore)	
ETP (Energy Technology Partnership)		
HIE (Highlands and Islands Enterprise)		
ETZ (Energy Transition Zone)		

Table 5 - Consultation List

4.2.1 Scottish Business Support

A total of 13 Scottish Business Support Organisations were interviewed over the consultation period. These organisations were found primarily through the desk research conducted for the report, with some being identified through various discussions with Supply Chain companies and other contacts. Scottish Business Support Organisations were defined as any entity that ran support business support programmes for start-ups and SMEs – including university programmes.

Background

Initially, the support organisations were asked to elaborate on what businesses they target when providing their support. Most consultees stated that they were sector agnostic when it comes to which industry sector they prefer to work with. Some of the restrictions surrounding which businesses are targeted were in the form of location restrictions, either Scotland or a region of Scotland specifically. When asked to further elaborate on what technology readiness level (TRL) is targeted, all but one programme had no specific TRL as a priority. The one programme with any stipulations stated that a TRL of 5+ was required, alongside a commercial readiness (CR) of 1. Finally, when gaining insight to the background of the programmes, it was found that these programmes had all run for at least 4 years, with the longest around 60 years, therefore defining these programmes as established entities.



Delivery Model

When establishing information regarding the delivery model used when providing the respective business support, consultees were asked to provide further explanation on exactly what forms of business support they provide. A wide range in variety of support was identified with the most occurring forms of support including grant funding (and facilitation of finding funding opportunities), networking, and webinars/seminars/workshops/masterclasses. When specifically looking at university support programmes, some form of knowledge exchange scheme was the most prevalent support type offered. When asked further about the support offered, consultees were asked if they used delivery partners to assist when providing the programmes. Every support programme interviewed used some 3rd party delivery partner to assist in delivery of the support. This ranged from outsourcing admin, legal, or accountancy to outsourcing potential modules of certain programmes to delivery partners – including the use of specialists or even other business support programmes.

Challenges

When delivering the business support packages, the consultees were asked further about the challenges associated with running these programmes. There were three main challenges identified; finding good staff to run the programmes, finding companies that were willing to commit fully to the scheme, and the bureaucracy surrounding the Scottish Government funding cycles. From the university perspective, their biggest challenges included finding researchers to partake in the programmes (due to a low level of funding), and university-university partnerships. The consultees were asked to elaborate more into the resource requirements for running these programmes, and it was identified that these were like the challenges that were associated with running support programmes. The main identified resource requirement was personnel. There was only one programme that did not stipulate personnel when asked about resource requirements. A notable mention from a large minority of the consultees regarding resource requirements was funding – and finding funding opportunities.

Funding Models

Further, the consultees were questioned about how the delivery of their support was funded. Most of the consultees were in part funded by the UK/Scottish Government either directly or indirectly through another organisation. For some of the support programmes, only certain sections of the support offering may have been funded by public money. The other funding used to support these programmes were either private industrial financial support, or membership fees. Notably, only one of the university support programmes were completely self-funded through the respective university. Finally, the consultees were asked about what sort of relationship they have with businesses they support, both currently and post support. Overwhelmingly the relationship that was established is on-going and continuous throughout the programme period, with several maintaining some form of contact with businesses after the support programme was complete. Only two of the business support programmes questioned stipulated their support was on a fixed-term basis.

Partnership Landscape

Finally, the Business Support Organisations were questioned regarding their prospective potential role in the UAE, being a delivery partner, or whether they could support an entry to the UAE clean energy market for a Scottish SME. Initially the consultees were asked if they currently offer support with aiding companies looking to enter a new international market, particularly the UAE. Only a minority of the organisations interviewed currently offer support for entering new international markets. With the others stipulating that



they either focus exclusively on Scottish business support opportunities, and at best could support a business to prosper in Scotland to have a trickle-down impact on entering a new market. Of the limited organisations, which were currently offering new market support, most partnerships already established to offer support in the UAE were Scottish Development International (SDI) or the UK Department for Business and Trade. Ultimately, when asked further, regarding what form of support the business support programmes could offer, in providing a supportive environment for Scottish SMEs looking to enter the UAE most of the consultees referenced their ability to act as networking partners. A common theme of facilitating connections across the industry and referring businesses towards the organisations (such as SDI and Dept. for Business and Trade) that could support in enabling an entry to the UAE, was established. Outside of networking potential, the other support that could potentially be offered was stated to be small grants to enable trade missions to the UAE, as part of a larger plan to ensure a business's longevity in the Scotland.

4.2.2 UAE Business Support

A total of eight UAE Organisations were consulted directly as part of the study. These organisations were identified through a combination of Xodus' market presence and knowledge and recommendations from a consultation with the UAE Ministry of Economy. Companies engaged in the UAE comprised of a broad range of organisations including free (economic) zones, government entities, education institutions, financial institutions, and key market players such as ADNOC.

The consultation phase in the UAE was purposely timed to commence after the UK questionnaire and subsequent consultation phase, allowing the questioning to be guided by the feedback from the UK survey respondents and consultees. Common themes from the UK research on what companies wanted in terms of support included funding opportunities, market insights or connections within the target markets in addition the key barriers identified were broadly the ease of doing business in the UAE, namely local knowledge, operational costs, legal and market legislation and the potential local partner requirements. These elements shaped the focus for the consultations with the UAE business support organisations.

Background

Initially UAE support organisations were asked what type of businesses they tend to work with, covering location, industry, size and maturity. This prompted a wide range of responses, but when further questioned on whether they had engaged with the types of SME included in our UK sample, 95% of consultees confirmed they are working with similar businesses in terms of size and industry sector in some capacity, with only one respondent confirming their support model is better suited to enterprise ready (commercial scale) businesses.

In terms of the maturity of the businesses that are typically being serviced by the consultee organisations, it ranged from early-stage start-ups through the various TRLs and up to enterprise ready companies. Maturity of the consultees also ranged from 10+ years to <3 years, but this was not considered an important factor in delivery success.

Delivery Models

Free zone consultees provided a uniform response in terms of the support services offered, which focussed on the practicalities of setting up a business in the UAE, including licencing, office space, visa and



immigration support, with the majority also able to offer support with residential accommodation in addition.

KIZAD were the only free zone organisation to have a detailed offering specific to incubation hubs, similar to the other delivery models, KIZAD lease the facilities to the incubation partner (government authorities, industry associations etc.) at a discount, who then sub-lease facilities to member organisations (start-ups, SMEs).

Education institutions, such as Herriot-Watt can provide office space, access to academic partnerships/personnel and access to laboratories for proving/testing of technologies. However, they are not able to provide support services relating to company set up in the UAE or residential accommodation. The current delivery model is based around early-stage start-ups, which are incubated under the umbrella of the university's company registration.

Financial institutions, specifically ADIO, were able to provide funding in the form of a cash loan linked to certain KPIs but were limited in their capacity to provide the other critical business support services required for company set-up. In addition, it was noted that funding options were only available to enterprise ready (commercial scale) businesses that fit the very specific criteria of being classified as a potential "national champion".

In terms of key market players and the support services available via ADNOC and TA'ZIZ specifically, they provide guidance and support towards company set up formalities, but ADNOC itself does not offer this as a service, however the major differentiator was the ability to link the businesses directly to the major end user and supply chain, a benefit that was highlighted as a key theme from the UK consultation. In addition, companies that register with TA'ZIZ in Al Ruwais were eligible for a 10% In Country Value (ICV) score bonus, which can potentially prove valuable during tendering with UAE national companies such as ADNOC.

Consultees were further questioned on whether they had any delivery partners to help in delivering their support. The majority of the respondents did not utilise any partners within their delivery model, with the exception of the free zone respondents, of which 100% had partnerships to facilitate business set up. These included specific banking partnerships and arrangements to assist the opening of accounts in the UAE, which can be a significant challenge for new market entrants to the UAE. It also included 2 free zone respondents that had formal partnerships with the Ministry of Economy's Next Gen FDI program, a federal government initiative set up to speed up incorporation processes to speed up licensing; facilitating the issuance of visas; accelerating banking services; and providing commercial and residential lease incentives for advanced technology companies seeking to relocate to the UAE.

Components of a Successful Delivery Model

100% of consultees stressed the importance of two-way commitment in the program from both the foreign government entity and the support organisation. It was noted that a commitment of resource on from the foreign government side was also critical to help guide the businesses in the incubator.

Funding models

Apart from ADIO and the Ministry of Economy, all respondents adopted a similar funding model for similar initiatives. This was focussed on the foreign government acquiring an office lease through which they



obtained a business centre licence, which would then be sub-leased to incubator businesses, in most cases at a subsidised rate, thus in most cases there was an element of in-direct foreign government funding in place for similar initiatives already in operation. In addition, all free zones consulted indicated that discounted office rental rates were available to foreign governments setting up the incubator.

100% of the consultees that offer business support services state that their support is ongoing and dependent on individual requirements, both to the foreign government and foreign businesses.

Partnership Landscape

Out of all the consultees that provide business support services, each of them stated they have similar existing initiatives within their respective organisations, the blueprints of these incubators were largely the same, with foreign governments taking up space within the relevant zone and utilising that space and trade licence to allow them to bring other businesses to the UAE. Out of the free zone organisations consulted, none currently had an incubator specific to the clean energies sectors.

Dubai Expo Village Free Zone has current incubator/accelerator programs with Turkey and Italy, while KIZAD have a program with Russia. Both Dubai Expo Village and KIZAD have the added benefit of being a part of the Ministry of Economy's Next Gen FDI program which includes linkages to 3 major local banks in addition to being affiliated with the government.

At the time of the study, none of the consultees had any formal partnerships established within Scotland or with the Scottish government in the UAE.

100% of the consultees indicated an appetite to support an incubator initiative in partnership with the Scottish Government.

GlobalScot Network

Two GlobalScots were consulted, the focus was on the observations and lessons learned from their own personal journeys in setting up a business in the UAE or engaging with UK/Scottish SMEs regularly. Both consultees here highlighted the advantages that the GlobalScot network provides SMEs in terms of networking and connecting to the local supply chain. In terms of lessons learned, the main observation was the importance of a good PRO or support services partner to help SMEs navigate the complex business set up landscape.

Both consultees also stressed the role of SDI in the incubator, particularly around providing current market information to SMEs in Scotland to frame the market opportunity accurately and working with the project developers, such as ADNOC, to identify the niche technology/services required, then engage and select the relevant Scottish SMEs.

When asked of their opinion on the incubator concept, it was noted that Scottish policy to not support hydrocarbons may limit the appetite of SMEs wanting to pursue a market entry, due to the origins of a lot of businesses with clean energies services being in oil & gas, limiting them from these services could have a negative effect on the incubator.



4.2.3 Scottish Supply Chain

Based on businesses which completed the questionnaire from Section 4.1, as well as recommendations from Scottish Enterprise and Xodus as to who to speak to, consultations were requested with a total of 15 Scottish Supply Chain companies. A total of six companies responded to the consultation request and were consulted with during the consultation period.

Background

Initially, all the companies were asked to provide clarity on the size and scale of their business, with all six companies confirming they fit the definition of an SME or start-up organisation. The team size across the companies ranged from 2-16 persons. Further, two out of the six confirming during the consultation that they were aiming to expand their current base of employees by the end of 2023. All the consulted companies further clarified that they have experience operating in other markets outside of Scotland currently – including England, Europe, the USA, Asia, and some current experience in the Middle East (one of which currently operating in the UAE). Three of the six consultees had received some form of support, either from SDI or the Department for Business and Trade, to assist in entering other markets outside of Scotland. Out of the six consultees, four of them viewed the UAE as a favourable and potential market to enter for their business in some form. Out of the two that did not see the UAE as a potential market, cited that they needed more insights into the offshore wind market or that they had ethical concerns surrounding monetary transparency in the region.

Prior Business Support

Regarding business support that each company received, all six consulted companies had received some form of business support thus far. The most common business support organisation they had received support from included Scottish Enterprise, Scottish Development International, NZTC/TechX, and Innovate UK. When the consultees were asked for input on which form of business support was most valuable, from support organisations, it was clear that funding (in all its forms, public or private) was identified as the most valuable to these supply chain companies. Further, it was made clear that the full business incubator model of funding and other support was the most favoured by the consultees. Finally, regarding business support, when the consultees were questioned in relation to what could have been improved with the business support they had received, a clear common theme arose around the funding application process. Most of the consultees commented on the associated bureaucracy that is attached to the applications for funding, with the process either being complex and time consuming in relation to limited human resources being dedicated to it, or the funding was simply flagged as 'not worth it' for the money potentially applied for.

UAE Entry

Finally, the consultees were questioned specifically surrounding their potential entry into the UAE energy market. Firstly, to establish a baseline regarding the UAE market, the consulted companies were questioned about potential barriers towards entry to the UAE energy market for their business, and what form of business support would be valuable to them in the UAE. Two common themes formed much of the discussion surrounding this, market insights and a lack of a 'person-on-the-ground'. Regarding market insights, consultees cited that they simply required more information to enter the market and was therefore hesitant to dedicate the resources without understanding the market opportunity for their company. Further, when citing a lack of a 'person-on-the-ground', consultees noted that they would prefer to have either a trusted employee based in the UAE or an established partnership with a 3rd party company or



organisation, to establish a functional presence. When the questioning pivoted to ask what form of business support made available in Scotland would assist their entry to the UAE, the discussion pivoted once more to funding opportunities. In this case, specifically quick and easily accessible funding to attend events based in the UAE. Ultimately, all consultees commented that having additional support services in place would likely increase a potential entry into the UAE energy market.

4.3 Key Takeaways

KEY TAKEAWAYS

Questionnaire	42 usable responses from a wide variety of businesses in a range of energy sectors. With two thirds of respondents having received business support, and just over half viewing the UAE as a potential market. Questionnaire respondents provided the basis for supply chain consultations.
Consultations – Scottish Business Support	13 consultations conducted across a range of business support services in Scotland including Accelerators and Universities. With commonly provided services including financial funding, networking, and webinars/seminars. A minority of organisations consulted with currently offer support to enter new international markets.
Consultations – UAE Business Support	<p>Eight consulted organisations, broad range of bodies including free zones, government entities, and key market players. Majority of consultees currently work with SME sized business. No consultee currently operated a clean energy exclusive support programme. With every consultee indicating an appetite to support and incubator in partnership with the Scottish Government.</p> <p>We also engaged with the GlobalScot network, consulting 2 individuals with experience in setting up or dealing with SMEs in the UAE, here it was clear that the power of the GlobalScot network in connecting SMEs to the market should not be overlooked. There was also some comment on the Scottish Government’s current policy to not support Oil & Gas activity, which was viewed as perhaps limiting the appetite of Scottish SMEs entering the market.</p>



KEY TAKEAWAYS

Consultations – Scottish Supply Chain

Six Scottish supply chain companies contacted for consultations currently operating in the clean energy sector. All consultees currently have experience operating in markets outside Scotland. It was clearly conveyed that funding opportunities was the most valuable support provided to consultees. 4/6 consultees looked to enter the UAE, with the largest barriers identified as market insights and lack of local knowledge.

Table 6 Section 4 Key Takeaways



5 POLICY REVIEW

This section will fulfil the following objective:

4. Review current and upcoming policy, legislation and MoUs which could influence the likelihood or structure of a UAE-based business support initiative for Scottish-based clean energy SMEs.

5.1 Introduction

The UK, Scotland, and the UAE have different energy policies that reflect their unique situations and priorities. Despite geographical, social, and economic differences between the UK and the UAE, there are some commonalities between policies and innovation incentives, a feature underlined by the signing of a Memorandum of Understanding (MoU) to help facilitate the sharing of technical knowledge, advice, skills, and expertise, opening new avenues for cooperation on energy and climate. Below is a comparison of their energy policies, with a particular focus on oil and gas activities, renewables, hydrogen, and key themes from COP26 & 27.

5.2 Energy Policy in the UK

5.2.1 Renewable Energy, Hydrogen, and CCUS Targets

The UK has made significant progress in developing renewable energy sources, particularly onshore/offshore wind. The UK government has set a series of targets for energy generated through renewable energy technologies and has also invested in renewables with more marginal installed capacities such as solar PV and biomass. Some key policies and initiatives introduced by the UK Government are summarised below:

Offshore Wind

The UK has set a target of 50 GW of offshore wind capacity by 2030 [16], up from 8.4GW in 2022, which would require a significant increase in current capacity. The government has therefore launched a £160 million fund to support the development of new offshore wind technologies [17].

Onshore Wind and Solar

The UK government has launched a consultation to reform previous restrictions on new onshore wind and solar projects, which had been put in place due to concerns over local opposition. This has opened new opportunities for renewable energy development [18]. However, unlike offshore wind generation capacity, the UK government has not set a specific target generation capacity for onshore wind by 2030. The UK government has set a target of 40 GW of installed solar capacity by 2030, as enshrined in the Clean Growth Strategy, which was published in 2017 [19].

Hydrogen

The UK has set a target of 10 GW hydrogen production (at least 5 GW from electrolytic hydrogen) capacity by 2030 and has launched a £240 million fund to support the development of hydrogen production and



distribution infrastructure. The government has also launched a Hydrogen Strategy, which sets out a roadmap for the development of a hydrogen economy in the UK [20].

Carbon Capture, Utilisation, and Storage (CCUS)

The UK government has set out a range of policies and initiatives to support the development of carbon capture, utilisation, and storage (CCUS) technologies, as part of its strategy to achieve net-zero greenhouse gas emissions by 2050. The government launched a £1 billion fund to support the development of CCUS in 2018 [21] and has announced a commitment to support the deployment of CCUS in the power sector, including through the development of a framework for a UK-wide CO₂ transport and storage infrastructure [22].

Innovation Incentives

The UK government has several innovation incentives for renewable energies. One of the key initiatives is the Clean Growth Strategy, which aims to increase the number of low-carbon technologies and fuels used in the UK. The strategy includes several measures to support innovation and research in areas such as low-carbon transport, renewable energy, and energy efficiency. In addition to the Clean Growth Strategy, the government has also established several funding programs and competitions to encourage innovation in the renewable energy sector. These include:

The Energy Entrepreneurs Fund: The Energy Entrepreneurs Fund is a UK government initiative that provides financial support to innovative low-carbon energy projects developed by small and medium-sized enterprises (SMEs) [23]. The fund was established in 2012 and has since supported more than 140 projects, with a total investment of over £70 million. The Energy Entrepreneurs Fund is open to UK-based SMEs that are developing new and innovative low-carbon energy technologies, products, or services. Projects that are eligible for funding may include, but are not limited to, the development of new technologies for energy storage, smart grid systems, energy efficiency, and renewable energy generation.

Contracts for Difference (CfD): a competitive auction process introduced by the UK government to incentivise low-carbon electricity generation. Under the scheme, eligible renewable energy projects can bid for a contract that guarantees a fixed price for the electricity they generate, known as the "strike price," for a period of up to 15 years. The scheme aims to encourage the development of low-carbon energy sources, particularly in technologies that are not yet cost-competitive, such as offshore wind and tidal power. The CfD scheme is designed to provide long-term price stability and revenue certainty for investors in low-carbon energy projects, which reduces their financial risks and encourages private investment in the sector. The scheme also promotes innovation and competition in the development of new technologies, by rewarding projects that can deliver the most cost-effective low-carbon energy generation [24].

Low Carbon Hydrogen Production Business Model (HPBM): The HPBM is the UK governments scheme which discounts the cost of production of low carbon hydrogen. The support to low carbon hydrogen producers consists of a premium payment, as calculated through the difference between the Strike Price and a Reference Price – with a floor at the natural gas price [25].

The Industrial Energy Transformation Fund: The Industrial Energy Transformation Fund (IETF) is a UK government grant scheme designed to help businesses with high energy use to cut their carbon emissions and reduce their energy bills through investing in energy efficiency and decarbonization projects. The IETF



provides grants for up to 70% of the project costs for projects that can demonstrate that they will deliver significant carbon savings [26].

The Energy Catalyst: The Energy Catalyst is a UK government funding program that supports innovative solutions to global energy challenges. The program is designed to help innovative companies, researchers, and entrepreneurs develop new, commercially viable energy technologies that can make a significant impact in meeting the world's energy needs [27].

The Future Energy Storage Research and Development Programme: The Future Energy Storage Research and Development (R&D) Programme is a UK government initiative that aims to support research and development in energy storage technologies, which are essential for achieving a sustainable and low-carbon energy system. The programme is designed to support a range of innovative technologies that have the potential to transform the energy storage landscape. This includes:

- Next-generation battery technologies, such as solid-state batteries, which have the potential to offer higher energy density, longer cycle life, and improved safety compared to conventional lithium-ion batteries.
- Novel thermal energy storage systems, which can store renewable energy in the form of heat and use it to generate electricity when needed.
- Smart and responsive energy storage systems, which can be integrated with the electricity grid to balance supply and demand in real-time.

The Offshore Wind Growth Partnership: The Offshore Wind Growth Partnership (OWGP) is a UK government-backed industry initiative to support the growth of the offshore wind sector. The OWGP was launched in 2018 as part of the government's Industrial Strategy, with the aim of increasing the competitiveness and productivity of the UK offshore wind supply chain. The OWGP provides funding and support to companies in the offshore wind sector to help them develop new technologies, improve their supply chain capabilities, and enhance their productivity. This includes providing access to expert advice, training, and financial support for research and development projects. The OWGP is managed by the Offshore Renewable Energy (ORE) Catapult, which is the UK's leading innovation centre for offshore renewable energy. The initiative is funded by the Department for Business, Energy, and Industrial Strategy (BEIS) and the Scottish Government.

5.2.2 Oil & Gas Activities

The UK has been a major producer of oil and gas in the North Sea, but overall production of oil and gas has gradually declined since reaching a peak around the year 2000. The UK government is committed to maximizing the economic benefits of remaining oil and gas resources, while also reducing greenhouse gas emissions from upstream production facilities. The UK government has set out a range of policies and initiatives to support the oil and gas sector in the UK, as well as to encourage the transition to a low-carbon economy. Some of the key policies related to the oil and gas sector in the UK include:

The North Sea Transition Deal

In March 2021, the UK government announced the North Sea Transition Deal, which sets out a plan for the oil and gas industry in the UK to transition to a low-carbon future. The deal includes a commitment to reduce greenhouse gas emissions from the industry by 50% by 2030, and to support the development of low-carbon technologies such as hydrogen and carbon capture, usage, and storage (CCUS) [28].



Taxation Policies

The UK government has put in place a range of tax incentives to support the oil and gas sector in the UK. These include tax relief for exploration and development activities [29], as well as tax allowances for decommissioning costs. In recent years, the government has also introduced a carbon price floor, which sets a minimum price for carbon emissions from power generation in the UK [30].

Regulation

The oil and gas sector in the UK is subject to a range of regulations and standards to ensure safety and environmental protection, overseen by the North Sea Transition Authority (NSTA). The government has committed to maintaining high standards for the industry, while also streamlining regulation to reduce the burden on businesses.

Licensing and Exploration

The UK government is responsible for issuing licenses for oil and gas exploration and production in UK waters through the Oil & Gas Authority. In recent years, the government has taken steps to encourage exploration in areas that have not yet been fully explored, such as the West of Shetland region [31].

Support for the Energy Transition

While the government continues to support the oil and gas sector, it has also taken steps to support the transition to a low-carbon economy. This includes policies to support the development of renewable energy, hydrogen, and CCUS, as well as initiatives to support the electrification of transport and heating [22] [32].

5.2.3 Commitments at COP26

The UK reiterated its commitment to achieve net zero emissions by 2050, as enshrined in law as part of the UK's Climate Change Act 2008 [33]. The UK has been a global leader in setting a net zero target and was the first major economy to do so.

The UK announced a new target to reduce greenhouse gas emissions by at least 68% by 2030, compared to 1990 levels. This target is more ambitious than the UK's previous target of a 57% reduction by 2030 and is in line with limiting global warming to 1.5°C above pre-industrial levels, as per the UK's Nationally Determined Contribution (NDC) under the Paris Agreement [34]. In addition, the UK pledged to double its international climate finance to £11.6 billion over the next five years, with a focus on helping the most vulnerable countries adapt to the impacts of climate change [35]. Furthermore, the UK announced a new £5.8 billion international climate finance initiative to help developing countries adapt to the impacts of climate change and build resilience [36].

The UK committed to phasing out unabated coal power generation by 2024, and to end the overseas financing of coal projects [37]. The UK also pledged to reduce methane emissions by 30% by 2030, as part of a global effort to reduce short-lived climate pollutants [38].

5.2.4 Commitments at COP27

At COP27, the UK committed to the following actions to continue playing an important leadership role in driving forward global implementation of climate change policy:



The Santiago Network was previously established at COP25 in 2019 with the aim of providing technical support to help developing countries deal with loss and damage from climate change. However, final details of the network and how it will be run were only confirmed at COP27. The Santiago Network differs from loss and damage funding as its aim is to provide technical support rather than direct funding for loss and damage. As an example, in the case of flooding, this might include “improved mechanisms to prepare and implement early warning systems and evacuation processes”. The UK Government has outlined £5 million of funding for the Santiago Network along with further commitments on loss and damage it made at COP27.

The Climate Change Committee report on COP27 also highlights the UK would triple its contributions to adaptation finance by 2025, based on 2019 levels. However, this is to come from existing official development assistance budgets. As part of its work on the forests and climate leaders’ partnership the Government announced £90m for conservation in the Congo Basin and £65 million in funding for the Nature, People and Climate Investment Fund.

5.3 Energy Policy in Scotland

5.3.1 Renewable Energy, Hydrogen, and CCUS Targets

Scotland has set ambitious targets for renewable energy generation as part of its overall goal of transitioning to a low-carbon economy, including setting a target of generating at least 50% of the gross electricity consumption from renewable sources by 2030. This target is part of a wider ambition to achieve net-zero greenhouse gas emissions by 2045. Some other key targets as part of Scotland’s renewable energy policies are included below:

Offshore Wind

The Scottish Government has set a target of having at least 11 GW of offshore wind capacity installed in Scottish waters by 2030. This would represent a significant increase from the current installed capacity of around 1.5 GW [39]. To facilitate the development of offshore wind, the Scottish Government has developed a sectoral marine plan that sets out the areas of Scottish waters that are most suitable for offshore wind projects. The plan considers a range of factors, including environmental sensitivities, shipping lanes, and existing offshore infrastructure [40]. The Scottish Government has the power to grant leases for offshore wind projects in Scottish waters and has been actively awarding new leases to developers in recent years. In 2020, the government announced plans to launch a new leasing round for offshore wind projects that would have a combined capacity of upwards of 20+ GW [41]. As of December 2022, there is currently a total capacity of 4GW of new offshore wind developments in either the planning, awaiting construction, or under construction phases [42].

Onshore Wind and Solar

Onshore wind is the largest source of renewable electricity in Scotland, accounting for over 65% of installed renewable energy capacity in 2022 [42]. The Scottish Government has set a target of achieving an additional 11 GW of installed onshore wind capacity by 2030 – resulting in a total installed capacity of 20GW [43]. To support the continued development of onshore wind capacity, the Scottish Government has introduced the Onshore Wind Policy Statement, which provides guidance on the planning and



development of onshore wind projects in Scotland [44]. There is currently a total capacity of 11GW of new onshore wind developments in either the planning, awaiting construction, or under construction phases [42].

Although solar power has traditionally played a smaller role in Scotland's renewable energy mix compared to wind, in 2017, the Scottish Government has set a target of increasing the country's installed solar capacity to 1 GW by 2025. To achieve this goal, the Scottish Government has introduced a number of measures to support the development of solar energy, including the Low Carbon Infrastructure Transition Programme (LCITP), which provides funding for renewable energy and low-carbon projects, including solar. At present, solar PV contributes 411MW of installed renewable energy capacity (3%). There is currently a total capacity of 958MW of new solar PV developments in either the planning, awaiting construction, or under construction phases [42].

Hydrogen

The Scottish Government has set ambitious targets for the production and use of hydrogen as part of its efforts to transition to a low-carbon economy. The government's Hydrogen Policy Statement, published in 2022, outlines several policies and initiatives to support the development of a hydrogen economy in Scotland [45].

One of the key goals of the policy is to establish Scotland as a leading producer of green hydrogen, which is produced from renewable sources such as wind and solar power and has zero carbon emissions. The policy aims to achieve a production capacity of 5GW of low-carbon hydrogen by 2030 and 25GW by 2045, which could help to reduce emissions from heavy industry, transport, and heating.

To support the development of a hydrogen economy in Scotland, the government has committed to investing in a range of initiatives, like funding for research and development of new hydrogen technologies, such as fuel cells and hydrogen storage. There is also the provision of support for demonstration projects to showcase the potential of hydrogen in various applications, such as heating and transport. There is also investment in hydrogen infrastructure, including hydrogen refuelling stations and pipelines. Finally, partnerships with industry and academic institutions have been facilitated to support the development of a skilled workforce for the hydrogen sector.

The Scottish Government is also working alongside the Scottish Hydrogen and Fuel Cell Association (SHFCA) to help coordinate and promote the development of the hydrogen sector in Scotland [46]. The association brings together businesses, research institutions, and government organizations to share knowledge and best practices and to collaborate on projects and initiatives.

Innovation Incentives

To facilitate innovation, The Scottish Government has established several funding programs to support innovation in offshore wind, as well as in other renewable energy technologies. Examples of these are included below:

Just Transition Fund: The Scottish Just Transition Fund is a £500 million fund established by the Scottish Government in 2020 to help support the transition to a low-carbon economy and to support workers and communities affected by the shift away from high-carbon industries. The fund is part of the Scottish Government's commitment to achieving a "just transition" to a net-zero economy, which means ensuring that the shift to a low-carbon economy is fair and equitable for all, and that no one is left behind [47]. The



fund is available to support a wide range of projects, including those that help workers in high-carbon industries to retrain and acquire new skills, and those that support the development of new low-carbon industries and technologies. It is also available to support community-led projects that help to create new jobs and economic opportunities in areas affected by the transition away from high-carbon industries. The fund is managed by the Just Transition Commission, an independent body established by the Scottish Government to provide advice on the transition to a net-zero economy and to help ensure that the transition is fair and inclusive for all. The Commission works closely with a range of stakeholders, including businesses, trade unions, and community groups, to develop recommendations and guidance for the Scottish Government on how to achieve a just transition.

Offshore Wind Accelerator: The Offshore Wind Accelerator (OWA) is a collaborative research and development program that aims to accelerate the deployment of offshore wind power by addressing key technical and commercial challenges. The program is led by the Carbon Trust, an independent organisation focused on accelerating the transition to a low carbon economy and is supported by several leading offshore wind developers and operators. It focuses on several key areas, including reducing the cost of energy, improving the reliability and availability of offshore wind farms, and reducing the environmental impact of offshore wind [48]. The OWA is structured as a series of research and development projects, each focused on a specific technical or commercial challenge facing the offshore wind industry. These projects are developed and managed by the Carbon Trust, in collaboration with the participating industry partners. The projects are typically multi-year efforts and involve a range of activities, including technology development, testing, and demonstration.

Low Carbon Infrastructure Transition Programme: The Low Carbon Infrastructure Transition Programme (LCITP) is a Scottish Government initiative that provides funding to support the development of low-carbon energy infrastructure projects. The program has supported a range of offshore wind projects, including the development of new manufacturing facilities and the construction of port infrastructure to support the installation and maintenance of offshore wind turbines.

5.3.2 Oil & Gas Activities

The Scottish Government has a broad policy framework for the oil and gas sector that includes both economic and environmental considerations. Some key elements of this policy framework are:

Maximizing Economic Recovery of Oil and Gas Resources

The Scottish Government aims to maximise economic benefits from the oil and gas sector, while ensuring that the regulatory framework provides for safe and environmentally responsible operations.

Supporting the Energy Transition

The Scottish Government recognises the need to transition away from fossil fuels and is promoting the development of renewable energy and low-carbon technologies. This includes the development of new industries and job opportunities in areas such as offshore wind, hydrogen, and carbon capture and storage.

Encouraging Innovation

The Scottish Government encourages innovation in the oil and gas sector, particularly in areas such as digital technologies and robotics that can improve efficiency and reduce costs.



The Scottish Government has established a £62 million Energy Transition Fund to support businesses in the oil, gas and energy sectors to transition to a low-carbon economy. The fund is designed to help companies develop new low-carbon technologies and processes and to support the creation of new jobs in the energy sector.

The Scottish Government has provided funding to establish the Net Zero Technology Centre (NZTC), an Aberdeen-based research and development centre that was established to accelerate the development and deployment of low-carbon technologies in the oil and gas sector. The Centre works with industry, academia, and government to identify, fund, and promote projects that will help to reduce greenhouse gas emissions and support the transition to a net-zero carbon future.

The NZTC is funded by the UK and Scottish governments, as well as the oil and gas industry. Its main focus is on developing and testing new technologies that can be used to reduce emissions in the oil and gas sector, such as carbon capture and storage (CCS), hydrogen production, and electrification of offshore platforms. The Centre also promotes collaboration and knowledge-sharing between industry, academia, and government to help drive innovation and progress towards net-zero carbon emissions.

The Scottish Government has committed to investing in carbon capture and storage (CCS) technology as part of its efforts to reduce carbon emissions from the oil and gas sector. The government has established the Scottish Carbon Capture and Storage (SCCS) partnership to support the development of CCS technology and to help Scotland become a global leader in this area.

5.3.3 Commitments at COP26

Scotland, as part of the UK delegation, made several commitments at COP26. Some of these key commitments include:

- Net Zero by 2045: Scotland has committed to achieving net zero greenhouse gas emissions by 2045, five years ahead of the UK target.
- Climate Justice: Scotland has committed to providing £12 million of new funding to support climate justice, including funding for climate mitigation and adaptation measures in developing countries.
- Just Transition: Scotland has committed to supporting a just transition to net zero, including through funding for retraining and support for workers in high-carbon industries.
- Green Energy: Scotland has committed to increasing its renewable energy capacity, with a target of generating 50% of its energy from renewable sources by 2030 and 100% by 2050.
- Transport: Scotland has committed to phasing out the sale of new petrol and diesel cars by 2030 and has committed to supporting the development of zero-emissions vehicles.
- Natural Climate Solutions: Scotland has committed to scaling up the use of natural climate solutions, including restoring degraded peatlands and planting new forests.

5.3.4 Commitments at COP27

- The Scottish Government was a signatory of the global agreement to give formal recognition to the fact of loss and damage because of the climate crisis and to establish a fund under the United Nations Framework Convention on Climate Change (UNFCCC), alongside other financial mechanisms, to provide support to those countries suffering loss and damage.



- However, unlike at COP26, COP27 was unable to build on the progress made at COP26 towards keeping the goal of limiting global warming to 1.5°C above pre-industrial levels alive and failed to extend the language of the Glasgow pact on a phasedown of unabated coal-use to include other fossil fuels.
- As such, the Scottish Government called for a coalition of action to be built ahead of COP28 to secure greater progress in global efforts to tackle the climate crisis.

5.4 Energy Policy in the UAE

5.4.1 Renewable Energy, Hydrogen, and CCUS Targets

The UAE has set a series of objectives to integrate renewables into its energy mix as part of its recent energy policy. The country is aiming to increase the share of “clean energy” in the total energy mix to 44% by 2050 [49]. The UAE's energy strategy aims to promote the use of renewable energy sources such as solar, and nuclear power, in addition to gas.

Solar Power

The UAE is focusing on solar energy as a key source of renewable energy. The country has some of the world's highest levels of solar irradiation, making it an ideal location for large-scale solar projects. The UAE aims to achieve 44% of its electricity from clean sources by 2050, of which 30% will come from solar power.

The UAE has also invested heavily in the development of large-scale solar projects, such as the Mohammed bin Rashid Al Maktoum Solar Park in Dubai, which has a planned capacity of 5 GW by 2030, and the Noor Abu Dhabi Solar Project, which has a capacity of 1.2 GW.

Hydrogen

The UAE has been actively exploring the potential of hydrogen as a low-carbon energy source. The country is focusing on green hydrogen in the near future, primarily produced using solar as the power source for the electrical demand of the electrolysis plants required to produce the UAE's target output of green hydrogen. However, currently blue hydrogen production is seen as pathway to green hydrogen production.

In 2021, the UAE launched the Green Hydrogen Alliance, which is a collaboration between public and private entities to accelerate the development of a green hydrogen industry in the country. The alliance aims to support research, development, and deployment of green hydrogen technologies, as well as to foster collaboration between stakeholders in the sector.

The UAE is also home to the world's largest solar power plant, the Mohammed bin Rashid Al Maktoum Solar Park, which has a capacity of 1.2 GW. The solar park is expected to play a key role in the production of green hydrogen in the UAE.

In addition to green hydrogen, the UAE is also exploring the potential of blue hydrogen, which is produced from natural gas in combination with carbon capture and storage (CCS) technology to reduce emissions. The Abu Dhabi National Oil Company (ADNOC) has announced plans to develop a blue hydrogen industry in the country.



Innovation Incentives

The UAE has taken several steps to foster innovation in clean energy generation. One of the key initiatives in this area is the establishment of the Masdar City, which is a sustainable city that aims to be carbon-neutral and zero-waste. The city includes a research and development centre that focuses on renewable energy and clean technologies.

The UAE has also set up several incubators and accelerators to support start-ups and entrepreneurs working in the clean energy sector. For example, the Abu Dhabi Future Energy Company (Masdar) has launched a Clean Energy Incubator to support start-ups working on renewable energy and sustainability solutions. The Dubai Electricity and Water Authority (DEWA) has also set up a start-up accelerator called the Greenhouse, which focuses on supporting start-ups in the clean energy and sustainability sectors.

In addition to these initiatives, the UAE has also launched several funding programs to support research and development in the clean energy sector, such as the UAE Research Program for Advancing Climate Modelling. This supports research projects focused on improving the accuracy of climate models and developing innovative solutions to address the impacts of climate change.

The Abu Dhabi Green Hydrogen Hub, which was launched in 2021, aims to create a hydrogen ecosystem in the UAE, and it offers several incentives and support programs for companies that are involved in the development and commercialization of hydrogen technologies. This includes financial support, access to testing and demonstration facilities, and support for research and development. In addition, the UAE has launched the Dubai Green Hydrogen Project, which aims to develop a green hydrogen production facility with a capacity of 40,000 tons per year by 2024. The project offers opportunities for collaboration and partnerships with international companies and researchers to develop and commercialise hydrogen technologies.

The UAE also hosts the Abu Dhabi Sustainability Week, which includes several events and exhibitions focused on clean energy and sustainability. These events provide a platform for researchers, start-ups, and policymakers to exchange ideas and collaborate on new initiatives.

The Innovation Testing Lab initiative, which is a joint project between the UAE Ministry of Industry and Advanced Technology and the Abu Dhabi Department of Economic Development. The initiative provides a platform for companies to test and develop their innovative technologies in a real-world setting. The Abu Dhabi Investment Office (ADIO) Innovation Programme, which provides funding and other support to innovative companies looking to set up in Abu Dhabi, provides funding for research and development, as well as access to specialised facilities and mentorship from industry experts.

Additionally, the UAE's "Future Energy Storage Research and Development Program" could provide opportunities for Scottish companies in the energy storage sector to collaborate with UAE-based entities to develop new solutions for energy storage.

5.4.2 Oil and Gas Activities

The UAE has the world's seventh-largest proved oil reserves and the sixth-largest natural gas reserves. Oil and gas production have historically been the mainstay of the UAE's economy, accounting for a significant portion of the country's gross domestic product (GDP), government revenues, and export earnings.



According to the U.S. Energy Information Administration (EIA), the UAE was the world's eighth-largest oil producer in 2020, with an average daily production of about 2.9 million barrels per day. The country was also the sixth-largest exporter of crude oil and other petroleum liquids in the world, with most of the exports going to Asian countries such as China, India, and Japan.

In terms of natural gas production, the UAE produced about 2.9 trillion cubic feet of dry natural gas in 2020, making it the world's seventh-largest producer. Natural gas is used primarily for domestic power generation and other industrial uses. In 2020, natural gas supplied 68% of the UAE's total energy supply, with a further 29% of total energy demand being supplied by oil-based derivatives.

5.4.3 Commitments at COP26

One of the key commitments made by the UAE at COP26 was to achieve net-zero greenhouse gas emissions by 2050, which is in line with the Paris Agreement. The country also pledged to increase the share of renewable energy in its total energy mix to 50% by 2050, and to reduce its carbon footprint by 70% over the next 30 years.

In addition to these commitments, the UAE announced several initiatives to support the global transition to a low-carbon economy. These include the launch of the Global Methane Pledge, which aims to reduce methane emissions by 30% by 2030, and the establishment of the Regional Centre for Climate Action and Sustainability, which will focus on capacity building and knowledge sharing to support climate action in the Middle East and North Africa region.

5.4.4 Commitments at COP27

The UAE laid out a pathway to achieving net zero greenhouse gas (GHG) emissions by 2050, which was in step with the commitments previously made at COP26:

The new net zero roadmap presented by the UAE's climate change and environment ministry, the UAE is aiming to reduce emissions by 49% by 2030 and by 60% by 2040. Moreover, these targets are based on a 2019 rather than a 2016 baseline and imply even lower outright emissions in 2030.

As part of these plans the UAE still intends to reach its Net Zero goal by 2050.

5.5 Commonalities Between Policies

The commonalities between the UK and the UAE can be best demonstrated by the signing of a recent MoU, which aligns the UK and UAE on some aspects of energy policy, particularly with regards to clean energy and hydrogen production. There are, therefore, opportunities for Scottish companies to exploit in these sectors.

5.5.1 Renewable Energies and Hydrogen

UK - UAE

One key area of commonality between UK and UAE energy policy is the focus on developing and deploying renewable energy technologies. Both countries have set ambitious targets for renewable energy deployment and have implemented a range of policies and initiatives to support the growth of the sector.



For example, the UK has set a target of reaching net-zero greenhouse gas emissions by 2050 and has implemented several policies to support this goal, such as the Contracts for Difference scheme to support renewable energy generation and the Energy Entrepreneurs Fund to support innovation in the sector. Similarly, the UAE has set a target of generating 44% of its electricity from “clean energy” sources by 2050 and has implemented policies and initiatives such as the Dubai Clean Energy Strategy 2050 to support this goal.

In terms of specific policies, both countries have implemented initiatives to support the deployment of solar PV and have launched funding programs to support research and development in the clean energy sector, such as the UAE's Clean Energy Research and Innovation program and the UK's Energy Catalyst program.

Additionally, both countries are exploring the potential of hydrogen as a clean energy source and have launched initiatives to support the development of the hydrogen economy.

Scotland – UAE

While Scotland and the UAE have different geographical and economic circumstances, both have set ambitious targets for the development and deployment of renewable energy technologies. In addition to setting targets, both Scotland and the UAE have implemented policies to support the growth of renewable energy.

Both Scotland and the UAE have shown an interest in hydrogen as a fuel source. Scotland has established a hydrogen policy statement that outlines its approach to supporting the development of a hydrogen economy, while the UAE has launched a national hydrogen alliance to accelerate the country's production and use of hydrogen.

Additionally, both Scotland and the UAE have established research and development funding programs to support the growth of renewable energy. The Scottish Government's Energy Investment Fund, for example, provides financial support for innovative projects that focus on renewable energy, while the UAE has launched several funding programs to support research and development in the clean energy sector.

5.5.2 Oil & Gas

UK - UAE

Both the UK and UAE have significant oil and gas reserves and are committed to decarbonisation efforts while ensuring secure energy supplies. In the UAE, the largest producer, ADNOC, has developed its policy around CEO's message of “Maximum energy, Minimum Emissions” and recently announced that it would spend \$150 billion of capital expenditure to accelerate its production capacity to 5 million barrels of oil per day by 2027, in doing so ADNOC has also committed an additional \$15 billion to accelerate decarbonisation projects through to 2030 which will further contribute towards ADNOC's status as one of the world's lowest carbon intensive National Oil Companies. Both countries have set targets to reduce greenhouse gas emissions and are exploring ways to transition towards a more sustainable energy mix, with a focus on renewable energy sources and low-carbon technologies. Additionally, both countries have implemented policies to support research and development in clean energy technologies, with a particular emphasis on developing innovative solutions for decarbonizing the oil and gas sector.



European policy such as the Carbon Border Adjustment Mechanism (CBAM) effects heavy emitting industries importing products to the EU, including Oil & Gas (and LNG), as a result the UAE has developed its energy policy to focus efforts on producing hydrocarbons at the lowest possible carbon intensity, to ensure UAE companies such as ADNOC remain highly competitive in these EU markets.

Additionally, the UK government has established the Energy Innovation Programme, which includes initiatives such as the Energy Entrepreneurs Fund [23], the Energy Catalyst [27], and the Industrial Energy Transformation Fund [26], all of which aim to accelerate the development and deployment of innovative low-carbon technologies.

Similarly, the UAE has launched several funding programs to support research and development in the clean energy sector, including the Emirates Energy Award, which seeks to encourage innovation and leadership in the energy sector, and the Abu Dhabi Fund for Development, which provides funding for renewable energy projects in developing countries.

In addition to these initiatives, both the UK and the UAE have established partnerships with industry and academia to advance research and development in clean energy technologies. For example, the UK has launched the Offshore Wind Growth Partnership, which brings together government, industry, and academia to support the growth of the offshore wind sector, while the UAE has established partnerships with companies such as Masdar and the Petroleum Institute to develop innovative solutions for decarbonizing the oil and gas sector.

Scotland – UAE

Scotland and the UAE share some commonalities in their oil and gas policies with respect to their efforts to decarbonise the sector. Both countries recognise the need to transition to cleaner sources of energy and have implemented policies to support research and development in clean energy technologies.

In Scotland, the government has established the Energy Transition Fund, which provides financial support for projects that accelerate the transition to a low-carbon economy. This includes support for projects that aim to decarbonise the oil and gas sector through the development of new technologies such as CCUS, and the production of green hydrogen.

The UAE has also been active in pursuing clean energy research and development, particularly in hydrogen production. The country has set a target to produce hydrogen from renewable energy sources, with a focus on using this hydrogen in the transport sector. The UAE has also established partnerships with companies and institutions in other countries to support the development of clean energy technologies, including those related to the oil and gas sector.

Both countries also have a strong focus on collaboration and partnerships to achieve their decarbonization goals. For example, Scotland and the UAE have worked together on several initiatives, including the joint development of a low-carbon energy hubs in the UAE and UK/Scotland, which will focus on the production of green hydrogen and other clean energy technologies. This has resulted in potentially the first international investment in the low-carbon hydrogen facility H2Teesside. Additionally, both Scotland and the UAE are members of the Oil and Gas Climate Initiative (OGCI), a global coalition of oil and gas companies committed to reducing greenhouse gas emissions.



5.6 Conclusions

Overall, there is alignment with energy policy across the board, particularly within the renewable energy, hydrogen production, and oil and gas decarbonisation sectors. Presented below are the conclusions of the policy review, framed within a SWOT analysis, presenting each of those constituent parts to underline how Scottish businesses in applicable sectors can thrive in the UAE.

Strengths

Both Scotland and the UAE have strong commitments to transitioning to clean energy, which creates opportunities for companies with expertise in renewable energy technologies. Scotland has a strong track record in offshore wind energy and has set ambitious targets for the expansion of its offshore wind sector. This could create opportunities for Scottish companies to export their expertise to the UAE, which has also identified offshore wind as a key area for growth.

The UAE has significant oil and gas reserves, which presents opportunities for Scottish companies with expertise in decarbonising these sectors, getting directly involved with upstream operators.

Weaknesses

The geography and climate of the two regions differ significantly, which could limit the applicability of certain renewable energy technologies. For example, solar energy is less effective in Scotland than in the UAE due to differences in available solar irradiation, and as such there is a smaller emphasis on governmental funding geared towards facilitating innovation in this sector. Therefore, there are fewer companies offering innovative solutions to solar power to compete with other economies where solar power capacities are higher (China, US, Japan, etc.).

The UAE has historically been heavily reliant on oil and gas, which may create a cultural and regulatory barrier to transitioning to clean energy. It would therefore be critical for any Scottish companies launching incubator projects around this theme to be closely aligned with the decarbonisation strategies of the UAE, and domestic companies in this sector (ADNOC etc.). There may be further challenges in aligning the policies of the two regions due to differences in political, economic, and social contexts. Companies operating in the UAE require an internal presence and view companies with a workforce geared towards employing Emiratis favourably.

Opportunities

There is potential for Scottish companies to provide solutions for decarbonising the UAE's oil and gas sectors, such as carbon capture and storage technologies using technology that has been pioneered and deployed in the UKCS.

Both regions have identified hydrogen as a key area for growth, which creates opportunities for companies with expertise in this area. The UAE has been focusing on the development of a hydrogen economy, due to the abundance of natural gas resources, blue hydrogen is being accelerated as the bridge towards green hydrogen. As part of this effort, it has launched several initiatives and programs to support the development of hydrogen technologies.

There is a potential opportunity for financing from the UAE to Scotland or vice versa via an export credit agency financing to fund new technologies. Both Scotland and the UAE have high investment grade ratings which would aid this endeavour.



Threats

There may be competition from other regions with expertise in renewable energy technologies, such as Scandinavia and Germany. There is intense competition in the region. The UAE has been investing heavily in renewable energy and has set ambitious targets for clean energy production. As a result, many other companies, both local and international, are also seeking to establish themselves as leaders in the field. This competition could make it challenging for any Scottish company to establish its presence and differentiate itself from other players.

There may be challenges in navigating the regulatory and cultural differences between the two regions. While the UAE has made strides in creating a business-friendly environment, there may still be bureaucratic hurdles that could delay or prevent the establishment of an incubator project. The company may need to navigate complex regulations, obtain necessary permits and licenses, and comply with legal requirements, all of which could take time and resources.

The COVID-19 pandemic and other global economic and political factors could impact the growth and investment in the energy sectors in both regions. If investment into an incubator project is to go ahead, there would need to be a clear financial basis, or specific incentive program that can be exploited to ensure that an incubator project is viable, with a clear path to producing positive financial results, to justify investment into a UAE incubator project.

5.7 Key Takeaways

KEY TAKEAWAYS		
Renewable Energies	1	Wind Energy:
	1.1	UAE targeting offshore wind development; Scotland is a leader in this field, with abundant UK & Scottish government support.
	2	Solar Energy:
	2.1	Likely the main source of renewable energy into the UAE's grid. Whilst not a field of expertise in Scotland, the UK government's plans to increase Solar PV capacity could allow an incubator to leverage the experiences and expertise of other companies at a UK level.
Hydrogen	3	Green Hydrogen:
	3.1	UAE and Scotland are both targeting Green Hydrogen economies. This is a fledgling sector in both economies, with expertise in the Scottish market. There are multiple incentives at Scottish, UK, and UAE levels to facilitate progression in this field.
	4	Blue Hydrogen:
	4.1	UAE still plans to use coal and gas fired power plants to provide base and variable grid loading under its 2050 plans to reach 44% of electrical output via "clean energy". There is an opportunity to utilise both methane and captured CO2 to act as feedstock for Steam Methane Reforming (SMR) and Autothermal Reforming



KEY TAKEAWAYS

(ATR) hydrogen production methodologies. Expertise at both a Scottish and UK level to exploit this opportunity and for an incubator to become a key stakeholder in defining how these processes could be used for the UAE to fulfil its hydrogen economy targets.

Oil & Gas	5	Emissions Management
Decarbonisation	5.1	Quantification of emissions (CO ₂ , NO _x , CH ₄ etc) is an important step change in upstream oil and gas to ensure that operators take ownership of their environmental impact and take measures to reduce these emissions. ADNOC are one operator in the UAE who have an emissions strategy in place. Emissions quantification is commonplace across the UKCS, and so there is existing domestic expertise in this field.
	6	Process Management
	6.1	Another key tenet of an emissions reduction strategy is the ability to optimise production to reduce energy waste, reducing flaring, and stabilise production to reduce the likelihood of unplanned shutdowns. This is, and has been, the cornerstone of many Scottish engineering companies, and can be directly applied in the UAE.
	7	Carbon Capture, Utilisation, and Storage
	7.1	As part of Scotland’s energy strategy, CCUS is a key pillar. There are multiple ongoing projects, therefore, the skills honed in this domestic sector can be directly translated into the UAE, allowing companies with expertise in this field to be impactful in the UAE CCUS setting.

Table 7 - Section 5 Key Takeaways



6 CRITICAL ANALYSIS

This section summarises the critical analysis of the qualitative data collected in the survey and consultations, as well as the desk-research into energy policies in Scotland, the UK, and the UAE.

During the surveys and consultations, it was clear that in order for the SMEs to increase the likelihood of successfully entering the UAE market that they would require on-the-ground expertise and access to clients, increased market insights to base strategic decisions on, and more funding opportunities. Almost all of the Scottish business support organisations identified some sort of role they could play in the journey of an SME looking to enter the UAE, however in some cases they were restricted by the conditions of their funding and purpose. For example, Robert Gordon University signalled that although Aberdeen-based, they would keen to be involved in the formation and delivery of an accelerator in the UAE due to the exposure the University could gain, as well as being capable of doing so. However, organisations such as Highlands and Islands Enterprise and Invest Aberdeen are restricted to only supporting organisations in their regions, and any support they give out must mostly benefit their regions.

However, simply creating a pipeline of initiatives from various delivery partners is not the answer. Each model of business support has different outcomes, resource requirements, and challenges (as outlined in Section 2), and feedback concerning different types of business support was varied from the SMEs. For example, regarding grant funding opportunities, SMEs cited a high-level of bureaucracy in the application process as one potential barrier.

A number of key challenges impacting the likelihood of an SME's entry to the UAE Energy Market have been outlined in Section 6.1 below.

6.1 Key Challenges

The following section explores the key challenges which emerged during the primary research and desk-based research.

Market Maturity

The UAE is still in the early stages of its energy transition journey, the pipeline for planned projects in CCUS and Hydrogen domestically is still quite limited, although growing rapidly. There have already been efforts to develop the local supply chain required to deliver these projects, which results in a more complex and challenging landscape for any new market entrants. Despite this observation, the clean energies sectors are developing at a rapid pace in the region, and we expect opportunities for SME's providing specialist services across these sectors will also grow at pace.

Whilst the domestic market for new energies projects appears limited at present, it should be noted that the UAE has strong ambitions to rapidly increase the activities in these sectors in the coming years, there is a role to play here by both the UAE and Scottish Governments in keeping abreast of these market developments and ensuring that the growth plans and activities are conveyed to the market players in Scotland.

In addition, the UAE is considered an early adopter of technologies, particularly in relation to clean energy. This presents an opportunity for SME's developing such technologies to potentially accelerate the deployment of their products through targeted pilot projects in the UAE.



Why the UAE?

During the consultations with Scottish start-ups and SMEs, it became clear that resources to dedicate towards new or uncertain markets were limited. Many organisations were focused primarily on their domestic market with their sights set on one other additional market – which was normally mature and ‘obvious’. The UAE was rarely an obvious option and choosing the UAE over another market would require resources to be re-focused. It will therefore be critical to provide SMEs with information on the opportunity the UAE represents, and why it could be better suited than other markets such as the USA or Australia.

Location

ADNOC is without doubt the key player in the energy market in the UAE and is the largest domestic investor in the clean energies market. Additionally, ADNOC are a key stakeholder when UAE energy policy is discussed, and significant investment has been committed into UK-based projects by ADNOC. ADNOC have allocated \$15 billion to advancing clean energy technologies as they look to meet their 2030 decarbonization targets, it is therefore important that any new market entrant has access to these opportunities with ADNOC.

As part of the In-Country Value initiative, ADNOC requires all suppliers to be registered in Abu Dhabi, either as an individual entity or via a local partner/agent. In order for SMEs to have access to opportunities with ADNOC, any incubator would need to be set up in the Emirate of Abu Dhabi, however it should be noted that companies set up in Abu Dhabi would still have access to opportunities across the rest of the UAE.

Complex Business Environment for SMEs

Licensing for SMEs in the UAE can be complex, and the business landscape is highly regulated, added to this complexity is the In Country Value program. It is important for companies to conduct thorough research and engage with local experts to determine correct business activity licensing and to ensure compliance with local laws and regulations.

The complex business set up landscape means SMEs without support can wait 6-12 months before being operational, meaning that opportunities earmarked in the early stages of scouting would have passed by. Therefore, a primary benefit of exploring an incubator concept would be the reduced burden and set-up time for SMEs to be able to capitalise on opportunities as they present.

Highly Competitive Market

The UAE is a highly attractive market for international companies, and many other global players are already established in the region, leading to a highly competitive domestic market and one that is often procurement driven and price sensitive. A Scottish Clean Energies Incubator would need to find ways to differentiate its SMEs from the market, leveraging the maturity of the Scottish supply chain, history and technology are potential differentiators. In addition, it would benefit the SMEs in the incubator to have direct access to ADNOC, which could be facilitated by the Scottish Government and its affiliate organisations (SDI).



In terms of reputation, Scotland has a very strong track record and reputation in the clean energies sectors, particularly offshore wind, this carries with it a certain amount of credibility for Scottish SMEs entering the UAE and this would have a positive influence.

Cultural Differences

Cultural differences may also pose challenges for Scottish companies seeking to enter the UAE's energy sector. The UAE has a different business culture and customs compared to the UK and Scotland, and it may take time to build relationships and establish trust with local partners and stakeholders.

Hydrocarbons First

The UAE's energy sector is highly focused on hydrocarbons, with significant investments in oil and gas, for example ADNOC have announced \$150 billion towards ramping up production capacity, in comparison to a \$15 billion allocation towards energy transition and decarbonisation activities. This may present a challenge for Scottish companies focused on renewable energy or clean technologies. However, there are initiatives underway in the UAE to diversify its energy mix, and there may be opportunities for Scottish companies to contribute to this effort. The ADNOC Low Carbon Solutions directorate will focus on funding projects in clean energy electric power, carbon capture, and increasing reliance on electricity versus fossil fuels directly. The overall aim being to help meet and fund emission targets (25% reduction in carbon emissions) in ADNOCs operations by 2030.

High Levels of Bureaucracy

SMEs stated that the application writing process for funding was very time intensive, as was the reporting duties once awarded. The levels of bureaucracy were perceived to be just as high for a £1,000 grant as that of £100,000+, therefore it was only worthwhile after a certain point. With this in mind, the perceived value of any business support initiative must be seen as higher than the opportunity cost of dedicating substantial time to bid report and admin.

The perception of high levels of bureaucracy was not limited to just the receivers of the business support (the SMEs), government backed agencies who were dependant on budget announcements also sited high levels of bureaucracy to operate. In some cases, this limited the potential impact the agencies could create due to budget cuts and no ability to plan long term as there was no guarantee budget would be made available in subsequent years. To limit the amount of bureaucracy and uncertainty from the business support organisation perspective, it would be recommended to ensure funding is secured for multiple years, for example 2-5 years.

6.2 UAE Market Fit for Scottish SMEs

The UAE clean energies market is developing at a rapid pace and is focussed on blue/green hydrogen, electrification using renewable energy and carbon, capture, utilisation, and storage (CCUS), therefore, suiting SMEs providing services or technology across these domains.

International opportunities with domestic players as the 'petrodollars' flows from the region are being re-allocated to global renewable and energy transition assets as part of diversification and economic development strategies. UAE's state renewables companies have grown to become global leaders so the domestic opportunities could be plentiful. UAE does not shy away from visionary projects, and it is likely that regardless of its targets, ambitious projects will continue to be financed.



In January 2023 ADNOC announced its new Low Carbon Solutions directorate with an allocation of \$15 Billion to advance an array of projects across its diversified value chain by 2030. These projects will include investments in clean power, carbon capture and storage (CCS), further electrification of its operations, energy efficiency and new measures to build on ADNOC's long-standing policy of zero routine gas flaring.

Previously, ADNOC, Mubadala, and ADQ have signed an MoU to establish the Abu Dhabi Hydrogen Alliance to establish Abu Dhabi as a trusted exporter of hydrogen to emerging international markets and build a substantial green hydrogen economy in the UAE, and more recently ADNOC, TAQA and Mubadala Investments announced a deal to take over Abu Dhabi's National Renewables company, Masdar.

The Scottish supply chain across these domains is well developed with a strong track record, and therefore, the UAE market is an attractive proposition for SME's that are part of the Scottish clean energies' ecosystem.

6.3 Key Takeaways

KEY TAKEAWAYS

Key Challenges	Nine key challenges for entry to the UAE have been identified. These challenges represent the biggest barriers to entry from the perspectives of Scottish SMEs and business support organisations. With market maturity being a primary key challenge surrounding the UAE clean energy sector.
Market Fit for Scottish SMEs	Scottish SMEs would be dealing with a rapidly developing, young, and competitive UAE clean energy market. However, it is concluded, that with the implementation of various policies and massive investment solidifying the UAE clean energy market, Scottish SMEs would view the UAE as an attractive market – fit for the Scottish supply chain.

Table 8 - Section 6 Key Takeaways



7 RECOMMENDATIONS

This section will fulfil the following objective:

5. Provide a detailed range of recommendations to Scottish Enterprise for advancing with a UAE-based business support initiative and how it could become self-sustaining over time.

7.1 Business Support Recommendations

To best illustrate the recommendations from this report, the 2x2 matrix used in Section 3 has been re-introduced.

Figure 12 illustrates the three plotted recommendations which could be executed independently, however the Xodus recommendation is that they are executed consecutively, building towards a self-sustaining business support service in the UAE.

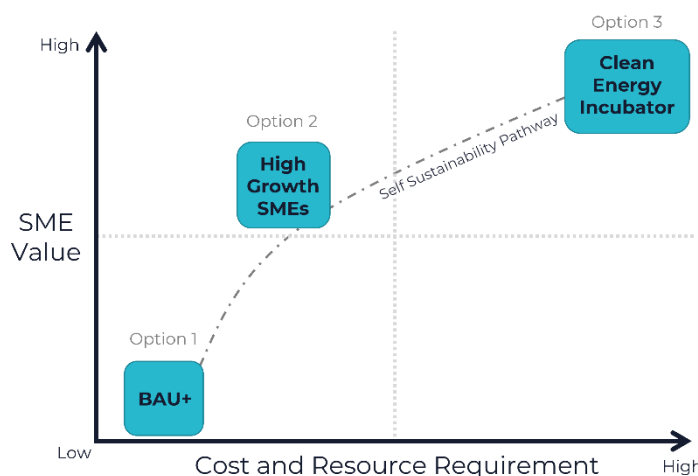


Figure 12 Business Support Recommendations

The following section will go on to describe these options in further detail.

7.1.1 BAU+

BAU+, "*Business as Usual plus*", advocates for minimal change from the current levels of support offered today by Scottish Enterprise and Scottish Development International. It would consist of continuing with current signposting towards resources and further support by the likes of SDI.

The + to BAU represents SE and SDI doing more to spread awareness of the opportunities which exist in the UAE for Scottish-based SMEs. The lack of awareness about the opportunities in the UAE which exist mean the likelihood of companies reallocating resources to explore them is low, and without context is considered high-risk.

BAU+ would result in the lowest relative value-add for Scottish SMEs looking to enter the UAE Energy Market. Although it will begin to create awareness of what opportunities exists, companies which are serious about entering the market will require additional support, as highlighted in '*High-growth SMEs*'.

Launching BAU+ could be viewed as a 'quick win' towards increasing the likelihood of the UAE being recognised as a potential new market and compared to incubators or providing grant funding is relatively low cost. Suggested key activities include:

- Commissioning a market insights report into the growth of the UAE clean energy economy – and making this available to Scottish companies.



- Hosting a 'new market' webinar or in-person workshop describing the opportunities which exist within the UAE
- Inviting Scottish SMEs to networking events when UAE delegations are visiting.

7.1.2 High Growth SMEs

"High-growth SMEs" builds upon the previous BAU+, by beginning to directly target Scottish SMEs with high potential for growth in the UAE Energy Market. High growth business, as defined by the OECD, are "enterprises with average annualised growth in employees or turnover greater than 20 percent per annum, over a three year period, and with more than 10 employees in the beginning of the observation period" [50]. This could be considered the starting point for defining eligibility for the following support, but factors such as alignment with key global challenges and leveraging governmental policies and capability sharing could also be considered.

Once identified, the chosen SMEs would receive bespoke account management focused on providing consultancy-like advice and market insights, making introductions to key industry stakeholders, and lastly access to additional funding for trade missions and similar small-scale financial grants.

This would provide the SMEs with the opportunity to have 'feet-on-the ground' which during the consultations the SMEs identified as key to enabling them to attempt entering the UAE. This could come through the traditional 'trade mission' support, or as bespoke trips centred on pre-arranged client introductions and site-visits.

Another key attribute to "High-growth SMEs" is the signposting towards existing incubators and accelerators in the region – specifically KEZAD and TA'ZIZ. Partnering with these organisations would enable SE/SDI to leverage existing programmes and establish strong regional relationships.

In comparison to BAU+, the costs incurred by Scottish Enterprise would increase due to additional grant funding, resourcing of bespoke consultancy/ market insights, and the trade missions. However, despite the increased cost, the value for SMEs looking to enter the UAE is considerably higher and would be well received by eligible SMEs.

7.1.3 Clean Energy Incubator

"Clean Energy Incubator" advocates establishing a Clean Energy Incubator and business centre in Abu Dhabi. During the consultations it became clear that the business support model that provided the most value to SMEs, and received the best feedback, was that of an Incubator and Accelerator model. This was mainly due to how those models provided access to subject matter experts and direct access to industry partners.

To set up the Clean Energy Incubator, it is recommended that the local delivery partners to consider are KEZAD (Abu Dhabi Ports Free Zone) and TA'ZIZ Al Ruwais Industrial Zone with ADNOC being a key stakeholder. Under the Clean Energy Incubator initiative SE and SDI would create a flagship 'soft-landing pad' in the preferred location, Abu Dhabi. The partnership with ADNOC as a key stakeholder would provide unparalleled access to industry experts and use-cases, giving the SMEs an opportunity to develop their businesses and technologies in a dynamic and innovative environment.



Each of the recommended UAE delivery partners would offer a bespoke solution to the Scottish Government, costs would be dependent on a number of factors still to be agreed, such as size of office space, other support services required, no of people relocated for each SME, due to the customisation of these solutions it is not feasible to provide a cost estimate at this stage, however both of the recommended local delivery partners have stated that preferential commercial rates would be offered to the Scottish Government.

Delivery Model

SDI / SE would lease a co-working space in a suitable location within either KEZAD or TA'ZIZ under a Business Centre activity licence, both KEZAD and TA'ZIZ may offer discounted lease rates. The space is then sub-leased (subsidised or not) to member SME's meeting SE/SDI's selection criteria, and the Business Centre would be able to obtain the correct licence for its member SME's depending on the company's activities. This solution mitigates a large proportion of the perceived barriers from a business set-up perspective and would allow the member SME's to focus on market engagement and growth. It will also provide the SMEs with professional meeting spaces for inviting clients to, as well as an events space for SE and SDI.

In addition to ADNOC, other subject matter experts may be required to assist in providing support to SMEs. External consultants could provide certain services, as well as links with academia, or in-house expertise within SE and SDI.

Relative to the previous two recommendations, "*Clean Energy Incubator*" is the most cost and resource intensive, requiring the leasing of a dedicated space and dedicated full-time management. The investment in such a programme will also be over a number of years as it may take a full-year to establish the facility and hone the programmes and materials provided. SMEs joining the incubator will also be relying on the facility for at least one-year, if not more. As stakeholders to the programme, it will be crucial to ensure they are carefully managed. Based on the consultations with Scottish-based incubators and accelerators, at least two FTEs are required to manage the businesses, events, and associated admin for an accelerator cohort of 6-12 businesses (however a pilot of <6 businesses is still likely to require at least one full-time staff member and an additional full- or part-time member).

As the business support model which requires the most investment from both SE/SDI (and partners) and the eligible SMEs, the "*Clean Energy Incubator*" represents a promising opportunity to create an innovative and dynamic environment for the SMEs to land, and take-off from.

7.1.4 Pathway to Self-Sustainability

Although each of the previous three options, BAU+, High Growth SMEs, and Clean Energy Incubator in theory could be established in isolation, doing all three consecutively would be the recommended approach. BAU+ requires the least upfront investment (rather the relocation of existing budget) and would take the least time to establish, whilst High Growth SMEs and Clean Energy Incubator will require dedicated budget to establish.

This approach creates a pathway towards the largest and most substantial financial commitment, and during the time will enable the UAE hydrogen and clean energy market to mature, and also provide SE and SDI with an opportunity to demonstrate to Scottish SMEs the opportunity the UAE represents.



Staggering the investment and building up towards the Incubator and Business Centre, through piloting the scheme with a smaller cohort would also provide more decision points – allowing the ongoing spend/investment to be paused or pivoted as requirements change. The recommended size for the pilot cohort would be 3-6 businesses. This would enable the cohort to go through the journey together, to share learnings and knowledge, and potentially form strong alliances and partnerships.

As an estimated timeline for launching the pilot incubator is ~2 years. Within this time, interest from Scottish SMEs exposed to *BAU+* and *High-growth SMEs* will have increased, as too will the number of clean energy market opportunities in the UAE. This time could then be used to identify delivery partners, recruit the delivery team, and also provide SDI with an opportunity to identify the key opportunities (such as specific technology challenges or upcoming projects) which suitable SMEs could then be hand picked for the pilot cohort.

To make the Incubator and Business Centre self-sustaining, the facility itself could be commercialised. For example, after the SMEs have undergone a fixed period of ‘incubation’ (suggested 6-12 months) there would then be an option for the SMEs to continue to lease space within the building. This could be staggered to help with the transition for the SMEs (such as 50% subsidised in year 1, 25% year 2, 0% year 3). The space could also be available for other Scottish-based organisations to use who are aligned with other non-hydrogen support streams within SDI/SE (for example, academia or food and beverage). Conference and events space could also be made available for hire by the SMEs and used during Scottish delegation visits.

Additionally, another way to commercialise the business support model is by providing loans to the SMEs in order to support their growth and development in the region. A dedicated investment fund could provide a pot of funding available to high-growth SMEs who may appear as too high-risk for conventional loan mechanisms. The interest charged on the loans would therefore act as an additional income stream.

7.2 Key Considerations

In addition to the key challenges identified in Section 6, there are also suggested key considerations for SE and SDI to consider if a decision is made to pursue an Incubator-model.

SMEs Looking to Work on Traditional Energy Scopes in the UAE

The UAE represents a huge market for Scottish SMEs looking to explore traditional energy scopes or the decarbonisation of oil and gas – limiting the remit of SMEs who operate within the proposed Clean Energy Incubator to only hydrogen and CCUS might become a significant detractor and barrier to entry, this was highlighted through the engagement with the GlobalScot network. Supporting the SMEs to secure a strong foothold in the UAE by collaborating on wider decarbonisation energy projects could be what is needed to establish a presence and strong relationships.

Tailored ‘Trade Missions’

Feedback from the SMEs who attended trade missions previously was that centring the trip on an industry conference resulted in it being too intense and as a result not enough time could be given to developing a single relationship or getting closer to their first sale in that region. Therefore, a key consideration would be that in order to maximise the value of trade missions, prior to visits, relationships should be already established, and key organisation identified, that way the ‘mission’ can be focused on further developing



certain relationships or exploring specific opportunities, therefore bringing them closer to securing a first client in a region. Another recommendation was that 'trade missions' could be a series of planned visits over the course of a year, including Scottish delegates visiting the UAE and vice versa.

The 'social' activities was also deemed as having little value to achieving their organisational goals.

ICV Bonus

The UAE operates an In Country Value (ICV) bonus scheme which considers local expenditure regarding manufacturing, local products and services, hiring, and investment in the Emirates. The aim of the scheme is to support and secure national industry by redirecting expenditure, goods, and services into the UAE economy. Through collaboration with TA'ZIZ, there would be an added 10% ICV bonus for companies which are set up in that free zone - this would be a significant factor in winning potential future work with ADNOC.



8 CONCLUSION

In conclusion, the establishment of a clean energy incubator for Scottish SMEs in the UAE would be well received by SMEs looking to enter the UAE, and there are multiple potential delivery partners willing to contribute and support the initiative. Ensuring the demand from SMEs is there comes down to following through with BAU+, to ensure the SMEs are aware of the opportunities which exist now and in the future. Identifying the opportunities and sharing them will require collaboration between SDI and SE, but the analysis shows that the market is there, and Scottish SMEs do have the capabilities and transferable skills to capitalise on the opportunities given the right support.

8.1 Future Research and Next Steps

Recommendations for future research and next steps can be considered in two ways: more time spent on the existing scope of the research; and additional discovery.

The existing scope

During the consultation period there were several business support organisations and SMEs that were contacted however did not respond. It would be recommended that if further research into the topic was to be made, the following business support organisations and SMEs in Table 5 are contacted.

SCOTTISH BUSINESS SUPPORT	UAE BUSINESS SUPPORT	SCOTTISH SUPPLY CHAIN
Elevator	Masdar City	Storegga
University of Aberdeen, Centre of Energy Transition	Virtuzone	Rig Control Products
South of Scotland Enterprise		Sysmax
Scottish Government		Aventus Energy
UK Government		SAMS Enterprise
		Krucial
		Chromacity

Table 9 - Potential future contacts



Additional discovery

The following topics were considered out of scope, and prior to launching an incubator in the UAE additional research could include;

Broadening the scope

Expand the scope to include SMEs who support the wider decarbonisation of oil and gas. As this is still the predominate industry in the UAE and represents significant current opportunity, it would help to create additional market-pull and create a stronger proposition for the SMEs when considering which international market to expand into.

Exploring partnership

It is important for SE and SDI to establish key relationships with potential local partners and stakeholders who can help to facilitate the incubator project, including possible strategic partners, investors, or government entities. Based on this study, KEZAD and TA'ZIZ are considered a great starting point for this.

Establishing the business plan

After exploring delivery partnerships and establishing the key upcoming projects and industry challenges, the next stage will be establishing the investment required. As stated previously, the recommended delivery partners can provide bespoke offerings and contributions to help facilitate the establishment of such an initiative, however, the commercial discussions can only take place after SE/SDI have established their own relationships with those recommended partners.

Reviewing the sustainability

With sustainability high on the agendas of both Governments, a thorough assessment of the environmental impact of the incubator project, and the environmental impact of the businesses they incubate, on CO2e emissions, waste management, and energy efficiency should be considered.



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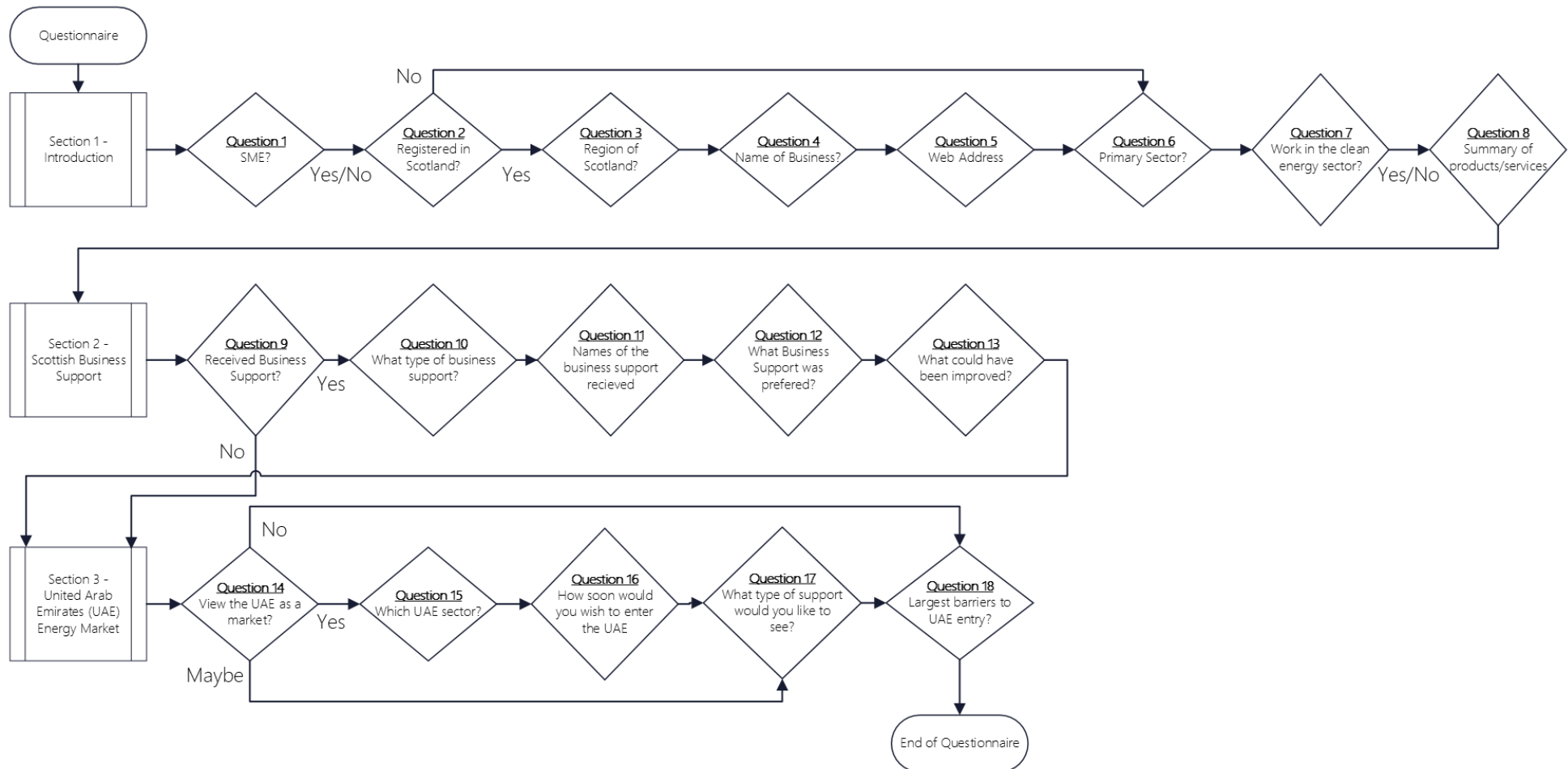
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APPENDIX A - QUESTIONNAIRE FLOWCHART





APPENDIX B – QUESTIONS FROM QUESTIONNAIRE

Section 1 - Introduction (Framing & Background)

- 1) Is your business an SME? (Defined: Headcount of <250 & turnover <£50million)
- 2) Is your business registered in Scotland?
- 3) Which region of Scotland does your business primarily operate?
- 4) What is the name of the business?
- 5) What is the website of the business?
- 6) What is the primary sector your business operates in? (Pick at most 3)
- 7) Does your business work in the hydrogen or clean energy sector currently?
- 8) Please provide a brief summary of the products and/or services provided by your business.

Section 2 – Scottish Business Support

- 9) Has your company been supported by any business support services?
- 10) What type of business support have you received? (Select all that apply)
- 11) What are the names of the business support programmes you have received support from?
- 12) What form of business support did you prefer, and which added the most value to your business?
- 13) Is there anything that could have improved about business support you received? Or was there anything you wished you had received but was not available?

Section 3 – United Arab Emirates (UAE) Energy Market

- 14) Do you view the UAE as a potential market for your company?
- 15) Which sector of the UAE energy market would you look to enter? (Pick at most 3)
- 16) How soon would you wish to enter the UAE energy market?
- 17) What type of business support would you like to see made available in the UAE?
- 18) What do you see as the largest barrier to entry into the UAE market?