



Fraser of Allander Institute

International Scotland

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Table of contents

The Fraser of Allander Institute

ii

Executive Summary

1

**Business, trade and
tourism in Scotland**

11

Invest in Scotland

24

**Scotland's
transition to
net-zero**

Disclaimer

The analysis in this report has been conducted by the Fraser of Allander Institute (FAI) at the University of Strathclyde. The FAI is a leading academic research centre focused on the Scottish economy.

The report was commissioned in January 2022 by CMS Partners.

The analysis and writing-up of the results was undertaken independently by the FAI. The FAI is committed to providing the highest quality analytical advice and analysis. We are therefore happy to respond to requests for technical advice and analysis. Any technical errors or omissions are those of the FAI.

Executive Summary

Background to the research

At the start of 2022, international law firm CMS teamed up with the Fraser of Allander Institute on a thought leadership campaign, under the theme 'International Scotland'.

Throughout March and April 2022, the institute undertook a series of non-attributed interviews with 11 CMS partners to influence and shape this research. These interviews explored with partners the issues related to the topics of International Scotland and provided direction for analysis.

Since then, the Institute have produced an analytical report setting out the evidence base of Scotland on the international stage.

The report

This report looks at the data and policy surrounding the following themes:

- Section 1: Business, Trade, and Tourism in Scotland
- Section 2: Invest in Scotland
- Section 3: Scotland's Transition to Net-zero

Throughout this report the opportunities and challenges Scotland is faced with under each theme is discussed.

This report also reflects on Scotland's growth sectors - industries where Scotland has a distinct comparative advantage - and how they support each international Scotland theme. These six sectors include –

- Food and drink (including agriculture and fisheries);
- Creative Industries (including digital);
- Sustainable tourism;
- Energy (including renewables);
- Financial and business Services; and,
- Life sciences.

Additionally, this report highlights the views of CMS partners on key barriers and enablers of each international Scotland theme.

A summary of findings for each theme is found at the start of the relevant section.

Next Steps

The Institute will support CMS in a series of Autumn events to discuss each of these themes.

These events will consist of a presentation from Professor Mairi Spowage, Director of the Institute, setting out the evidence of Scotland's performance on the international stage, with CMS partners, policymakers, and business leaders in attendance.

Following these events, the Institute will publish a final report which includes a summary of the events and the policy proposals/recommendations that have emerged from the International Scotland campaign's engagement.

1. Business, Trade and Tourism in Scotland

Summary

- Scotland's business base is made up predominantly by sole traders or small-to-medium enterprises (SMEs), with over 2/5 of large firms in Scotland owned abroad; mostly head-quartered in the EU or USA.
- 9% of foreign-owned firms in Scotland are high-growth businesses, compared to just under 1% of Scottish-based companies.
- While there are benefits to having foreign investors in Scotland, there may be negative implications for the visitor economy.
- High-value, low-volume (HVLV) tourists could be a key driver of **Sustainable Tourism** in Scotland, with business travellers spending over £830 per trip to the country, £60 more than holidaymakers, and almost £320 more than visiting friends and relatives (VFR) travellers.
- The US presents the greatest opportunities, with 18% of international visits to Scotland made from America, with the US accounting for 28% of total international visitor spend.
- When it comes to international trade, the US has been identified by the Trading Nations report as Scotland's top priority market, having the largest share of current exports and second highest export value gap (i.e. export potential) after Germany.
- The **Food and Drink** sector – and in particular, spirits - in Scotland exports a significant amount of goods internationally each year and is less reliant on EU trade than the Scottish average goods/services.
- The Netherlands was identified by Trading Nations as being a top priority location for the **Food and Drink** sector in Scotland however, in previous research, the Institute has found key opportunities in markets such as India – a market of interest to the Scottish Government.
- Salmon is another key player in Scotland's **Food and Drink** sector however, its global market share has almost halved over the past decade.

Key barriers and enablers

- Scotland has few acquisitive firms and there are few large firms head-quartered in Scotland.
- Scottish firms are faced with significant global supply chain issues due to the ongoing conflict in Ukraine, Brexit, and the impact of the pandemic.
- **Sustainable Tourism** in the West of Scotland has also been hit hard by COVID-19, particularly by the lack of big corporate events.
- The **Food and Drink** sector – particularly whisky and salmon – is a key enabler for Scotland, with Scotland punching above its weight internationally. Increased trade with India could bring opportunities for the Scotch Whisky market.
- However, labour supply shortages is a key challenge, particularly for businesses in the **Food and Drink** sector - support is needed to attract international workers and address labour supply shortages.

Business

In 2021, there was a total of 344,500 registered and unregistered¹ private sector [businesses in Scotland](#), and a total of 178,500 registered firms.

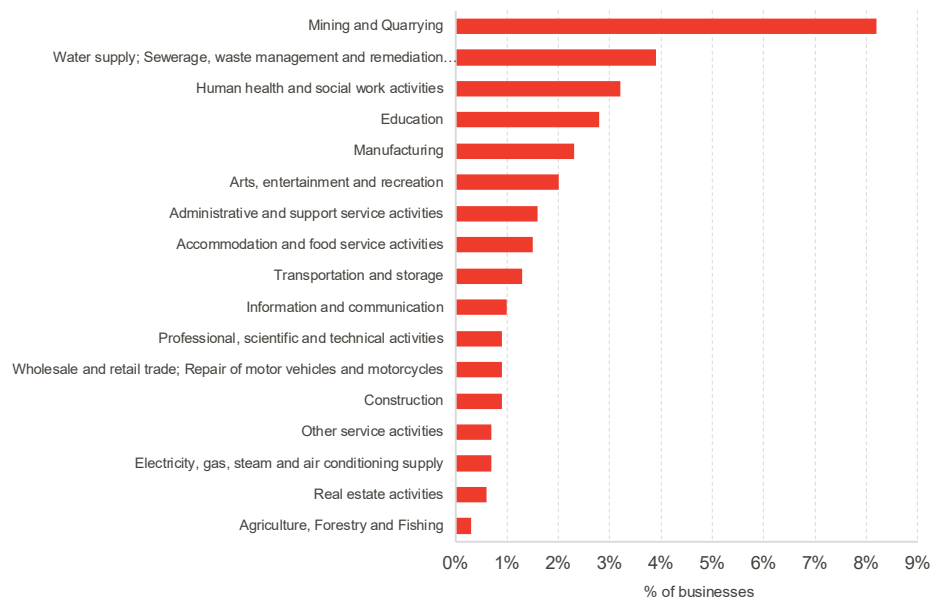
69% of all (registered and unregistered) businesses in Scotland are sole traders, with just over 30% being small (0-49 employees) or medium-sized (50-249 employees). Just 0.7% of firms in Scotland are considered large (250+ employees) businesses. Despite this, large firms made up 45% of Scottish employment and 60% of business turnover in 2021.

These large firms are typically found in retail trade (incl. fuel sales), admin services, manufacturing, and professional services.

From 2018-2021, over 2,000 registered businesses were considered to be high growth².

Breaking high-growth firms down by sector highlights sectors with key opportunities for growth, including the mining and quarrying sector in Scotland, which has the highest high-growth percentage share³ in Scotland (8.2%), followed by water supply (3.9%). See Chart 1.

Chart 1: High-growth registered businesses by sector, Scotland, 2018-2021



Source: Scottish Government

In terms of having headquarters in Scotland, 99% of small businesses are based in Scotland compared to 59% of medium-sized firms, while just 17% of large companies operating in Scotland are Scottish-based.

41% of large businesses operating in Scotland are owned abroad, outside of the UK.

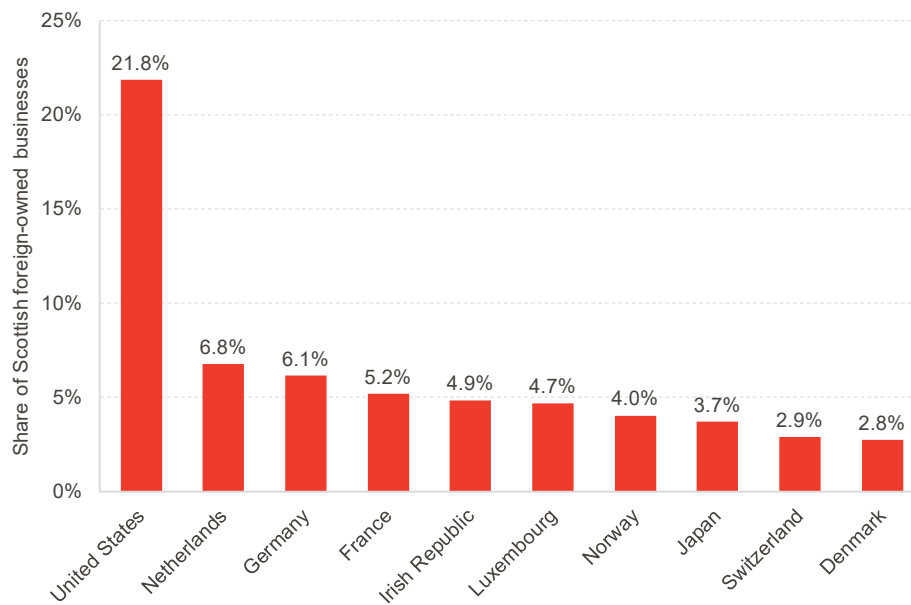
Just over 2 in 5 of foreign-owned businesses (of all sizes) in Scotland are head-quartered in EU countries however, the USA owns over a fifth of foreign-owned businesses in Scotland, with the Netherlands following. See Chart 2.

1 Registered = base or headquarter in Scotland; and, unregistered = businesses without a base or headquarter but still a presence in Scotland. Registered firms are used for this report's analysis unless otherwise stated.

2 "High-growth business is defined as a business with 10+ employees in the base year (x-3) exhibiting an average of 20% growth over three years in terms of turnover. In practice, average annualised growth of 20% per annum over three years would be equal to 72.8% growth from year x-3 to year x" - [Businesses in Scotland](#).

3 High-growth percentage share = high-growth businesses in the sector/all businesses in the sector.

Chart 2: Foreign-owned businesses operating in Scotland by country, Top 10, 2021



Source: Scottish Government

Despite making up just over 20% of foreign-owned businesses in Scotland, American companies employ 32% of workers in Scotland that work for foreign-owned firms. EU firms employ around 36%.

"How do we promote international Scotland but still keep Scottish firms?"
- Partner feedback

8.7% of foreign-owned businesses in Scotland are considered to be high-growth, compared to 0.9% of Scottish-based firms. But, while having foreign-owned firms operating in Scotland has its benefits in terms of productivity and economic growth, there are implications of not having many large Scottish firms head-quartered in the country. For example, the impact on the visitor economy.

People living in Scotland and working for these firms with foreign headquarters (HQs) will more likely be travelling abroad to foreign HQs for business trips. If Scotland had more HQs domestically, then foreign visitors would be coming to Scotland more for corporate tourism.

Tourism

Sustainable tourism is one of Scotland's key [growth sectors](#) – industries identified by Scotland's 2015 Economic Strategy as those where Scotland has a comparative advantage -, supporting £2.5bn in Gross Value Added in 2020 and around 190,000 jobs in 2020, with the majority of employees coming from the hospitality sector (restaurants, hotels, and beverage serving activities).

Data from [Visit Scotland](#) shows that Scotland is a popular destination for international visitors, and their spending is substantial.

The number of visits had been growing steadily from 2012 to 2018, reaching 3.7m trips in 2018, with visitor spending estimated at £2.4 billion for that year. In 2019, visits dropped to 3.5 million. However, spending grew to £2.5 billion (a 6% increase).

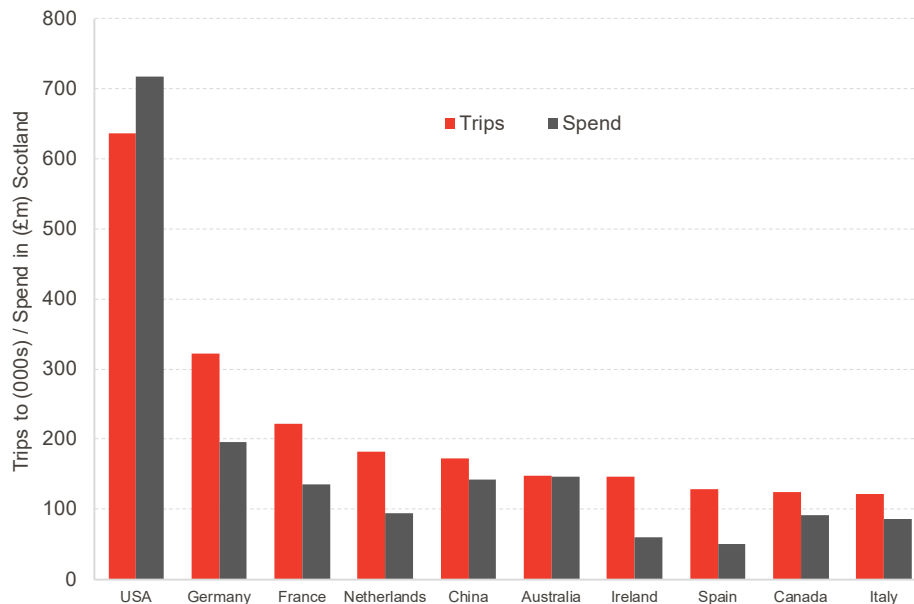
When it comes to tourism, visits are broken down by purpose of travel which falls under either Business, Holiday, or Visiting Friends and Relatives (VFR).

In 2019, under 400,000 visits were made to Scotland for business with the total spend of these visits standing at £308m. Over 2.1m visits were holiday travels with £1.6bn spent, while almost 900,000 visits were for VFR travels with £446m spent.

Although holiday-related visits make up the majority of tourism spending, business travellers spend on average £832/trip while holidaymakers spend £772/trips, and people visiting friends or relatives spend only £516 per trip. These figures highlight the value of attracting high-value, low-volume (HVLV) corporate tourism which Edinburgh's [2030 Tourism Strategy](#) identifies as a driver of year-round sustainable tourism.

Chart 3 highlights the top 10 visitor countries to Scotland by trips made in 2019 - six being in the EU.

Chart 3: Visits and spending (£m) by tourists from top 10 visiting countries, Scotland, 2019



Source: Visit Scotland

The top 10 accounts for 64% of total trips to Scotland, with the US alone accounting for 18% of the visits. Additionally, the top 10 accounts for 68% of total spending by visitors, with the US accounting for 28%. In total, visitors from these 10 countries spent £1.7bn in Scotland in 2019.

This data relies on the International Passenger Survey (IPS) which was suspended on 16th March 2020 due to the COVID-19 pandemic, with interviewing not starting back up until the start of 2021, and suspensions in place at some seaports and train stations throughout the year.

The latest Visit Scotland data⁴ shows that a total of 479,000 visitors came to Scotland internationally in 2021, down 86% from the 3.5m visits made in 2019. Spend by these international travellers also fell by 82%, down from £2.5bn in 2019 to just £0.5bn in 2021.

Additionally, the latest employment estimates for sustainable tourism in Scotland show that the number of those employed in this growth sector fell by 40,000 across Scotland in 2020, down 17% on the year. GVA also dropped by almost £2bn in 2020, down 44% on the year. The contractions experienced in tourism were the largest among the growth sectors in 2020.

Pre-2020 tourist data shows that Scotland has a successful tourism industry with plenty of opportunities in countries such as America however, COVID-19 and consequent lockdown restrictions presented this growth sector with unprecedented challenges.

On top of this, the UK's withdrawal from the European Union places significant barriers to growth in Scotland's tourism market – although by how much is difficult to tell given the impact of the 2020/21 winter lockdown and following COVID-19 restrictions.

A key challenge will be supporting this hard-hit growth sector in the coming years.

⁴ No specific data on international visitors by country, etc. is available for 2021 on the Visit Scotland database.

Trade

Since leaving the European Union at the end of 2020, Scotland, which exports over £35bn worth of goods and services internationally, has experienced considerable change in its relationships with global partners.

The [latest export statistics](#) for Scotland, published at the end of last year, cover 2019, meaning we will not see Brexit's impact on exports (expected to be seen in estimates of 2021) in Scotland until around late 2023. However, given the impact of COVID-19 and ongoing global supply-chain issues, it will be difficult to decipher the true impact of Brexit on Scottish exports when this data is published.

Financial services – a key growth sector in Scotland – are Scotland's largest total (rUK + International) export, exporting almost £12bn of services in 2019. See Table 1.

Table 1: Top 10 exports by industry, rUK & international, 2019

Top 10 Exports	Industry	Value (£bn) of total exports	% exported internationally	Share of total exports
1	Financial and insurance activities	11.5	21.5%	13.2%
2	Food products, beverages and tobacco products	10.0	65.8%	11.5%
	of which distilling, rectifying and blending of spirits	6.0	90.5%	6.9%
3	Wholesale and retail trade	8.4	22.0%	9.7%
4	Professional, scientific and technical activities	7.9	47.4%	9.1%
5	Utilities	7.6	3.4%	8.7%
6	Coke, refined petroleum products, chemicals and chemical products	5.4	70.4%	6.2%
7	Information and communication	4.6	38.5%	5.3%
8	Transportation and storage	3.8	35.6%	4.3%
9	Mining and quarrying	3.7	47.9%	4.2%
10	Administrative and support service activities	2.9	28.9%	3.4%
Scotland total		£87.1bn	40.2%	

Note: green = share of international exports exceeds Scottish average

Source: Scottish Government

There are few large Scottish firms in sectors like tech and finance – “while whisky is a true Scottish export, is finance?”
- Partner feedback

Unsurprisingly, food and drink products, another growth sector in Scotland, is Scotland's 2nd largest export, particularly spirits which alone accounts for £6bn of Scotland's total exports – almost 7% of all rUK and international exports in 2019.

It is important to note that whilst financial services is Scotland's largest export, just 22% of exports leave the UK. On the other hand, 66% of food exports are to international markets, with 90% of spirits exported internationally – the largest share of any sector.

Across all goods and services, 60% of Scotland's exports go to the rest of the UK (rUK) and 40% go to international markets; with 19% going to the EU, and 21% going to non-EU countries.

Overall, food products are Scotland's biggest seller on the international market, making up 18.8% of Scotland's rest of the world (RoW) exports – with spirits making up 15.5% of Scotland's international exports.

Coke, chemicals and petrol come in at second, with professional services, finance, and wholesale following. See Table 2.

Just 32% of Scottish spirits are exported to the EU – below the average for all Scottish exports of 37%. On the other hand, coke, chemicals, and petrol products are highly dependent on EU trade, with 85% of exports going to the European Union in 2019.

Table 2: Top 10 exports by industry, international, 2019

Top 10 Exports	Industry	Value (£bn) of total exports	% exported to the EU	Share of international exports
1	Food products, beverages and tobacco products	6.6	36.2%	18.8%
	of which distilling, rectifying and blending of spirits	5.4	31.8%	15.5%
2	Coke, refined petroleum products, chemicals and chemical products	3.8	84.9%	10.8%
3	Professional, scientific and technical activities	3.7	34.9%	10.7%
4	Financial and insurance activities	2.5	31.0%	7.1%
5	Wholesale and retail trade	1.9	56.1%	5.3%
6	Information and communication	1.8	30.0%	5.1%
7	Mining and quarrying	1.8	28.1%	5.0%
8	Computer, electronic and optical products	1.7	66.5%	4.8%
9	Machinery and equipment	1.4	56.8%	3.9%
10	Transport equipment	1.4	20.7%	3.9%
Scotland total		£35.1bn	36.5%	

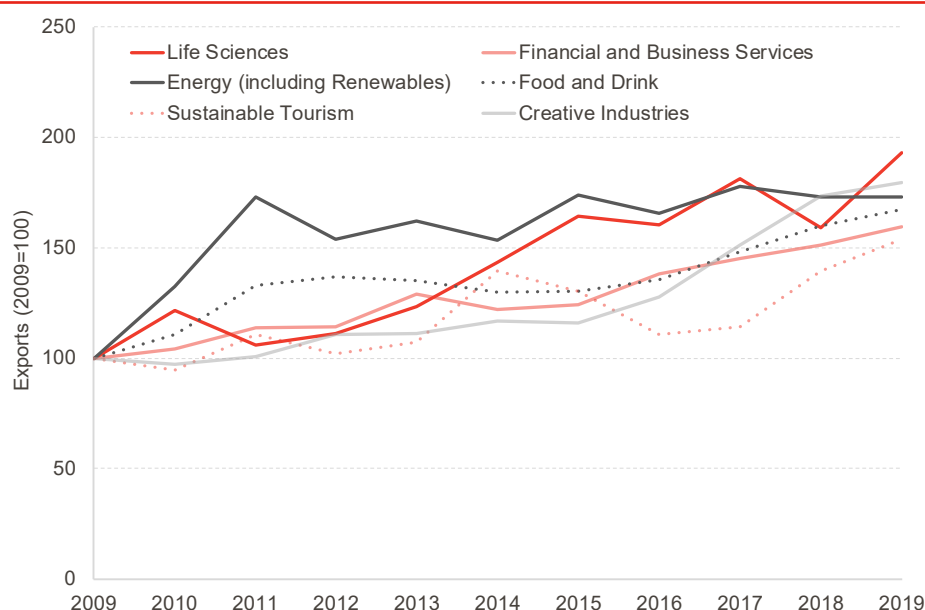
Note: red = share of EU exports exceeds Scottish average (high dependence on EU trade)

Source: Scottish Government

Over the past decade, the food and drink sector has experienced strong growth in its international exports. See Chart 4.

During this period, the value of international exports of each of Scotland's growth sectors has followed an upward trajectory, with life sciences experiencing the strongest growth.

Chart 4: Growth sector international exports (value), Scotland, 2009-2019

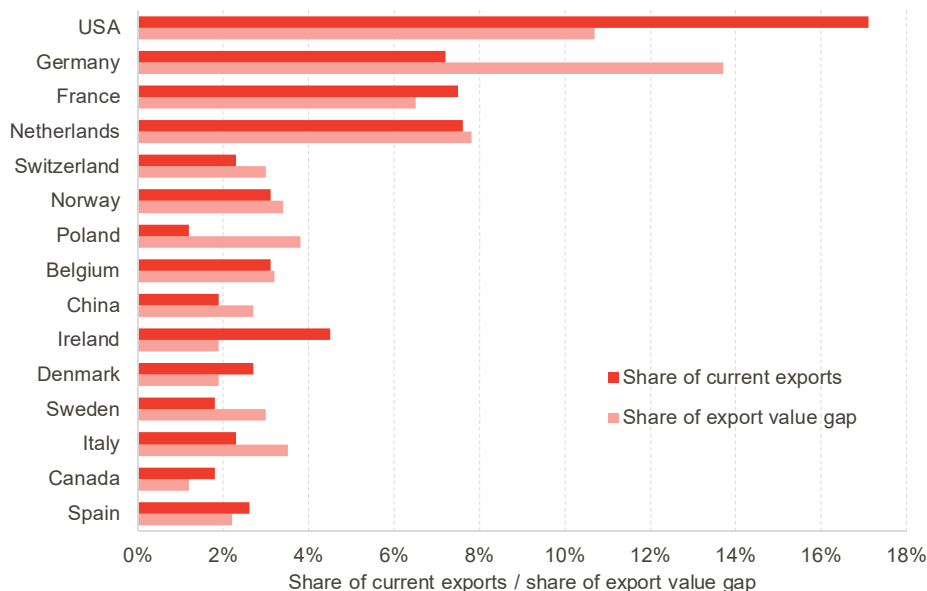


Source: Scottish Government

In the face of tougher trading with the EU, it will be important to ensure that the nation can continue to build on its competitive advantages across each of these high-growth sectors. Identifying priority markets to further grow exports from each will be crucial for Scotland.

[‘Scotland: a Trading Nation’](#) identifies the USA as its top export opportunity location; Switzerland, Norway, China and Canada are non-EU countries which also make the top 15. See Chart 5.

Chart 5: Scotland’s Top 15 priority markets with immediate opportunities in multiple sectors, 2021



Source: Export Statistics Scotland and OCEA calculations

The UK has signed trade deals with Switzerland and Norway, and signed the UK-Canada Trade Continuity Agreement (TCA) on 1st April 2021 but there are currently no trade deals with the US or China; although, the UK has signed a Mutual Recognition Agreement (MRA) with the US.

The 15 countries in Chart 5 make up 66.7% of Scotland’s exports, and 68.5% of Scotland’s export value gap⁵.

Emerging markets of interest, identified as providing “mid to longer term, sector specific opportunities” are outlined in Chart 6.

The Trading Nation report also outlines Scotland’s export strengths in a number of countries. See Figure 1.

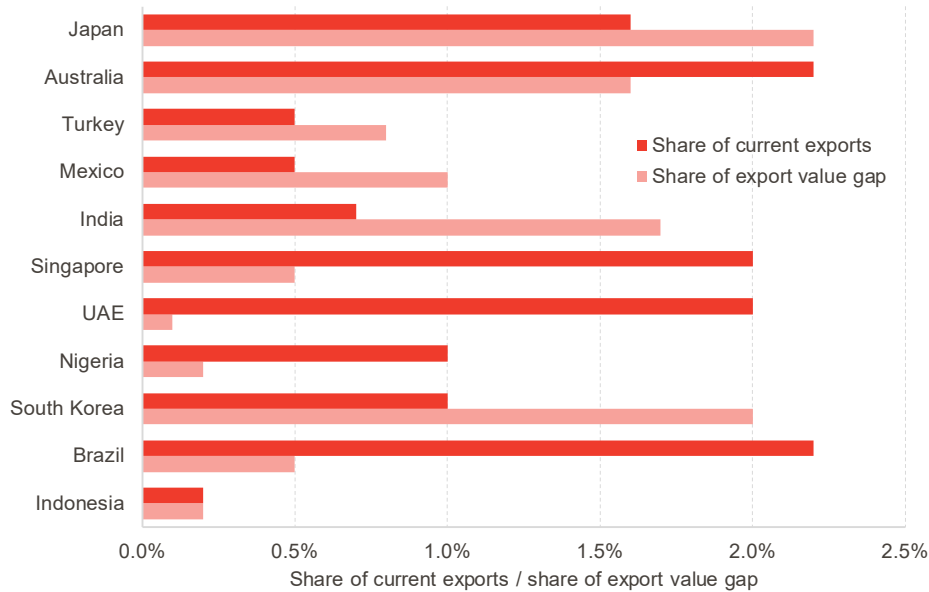
However, among other things, Brexit, heightened demand following the reopening of global economies following COVID-19 lockdowns, and the ongoing conflict in Ukraine has placed serious pressure on global supply chains.

The [Global Supply Chain Pressure Index](#) has come down from its peak in December 2021 however, pressures remain high, relative to the last couple of decades. This may make it harder for businesses to fully explore new market opportunities.

How can clients penetrate new markets in this environment of supply chain pressures?
- Partner feedback

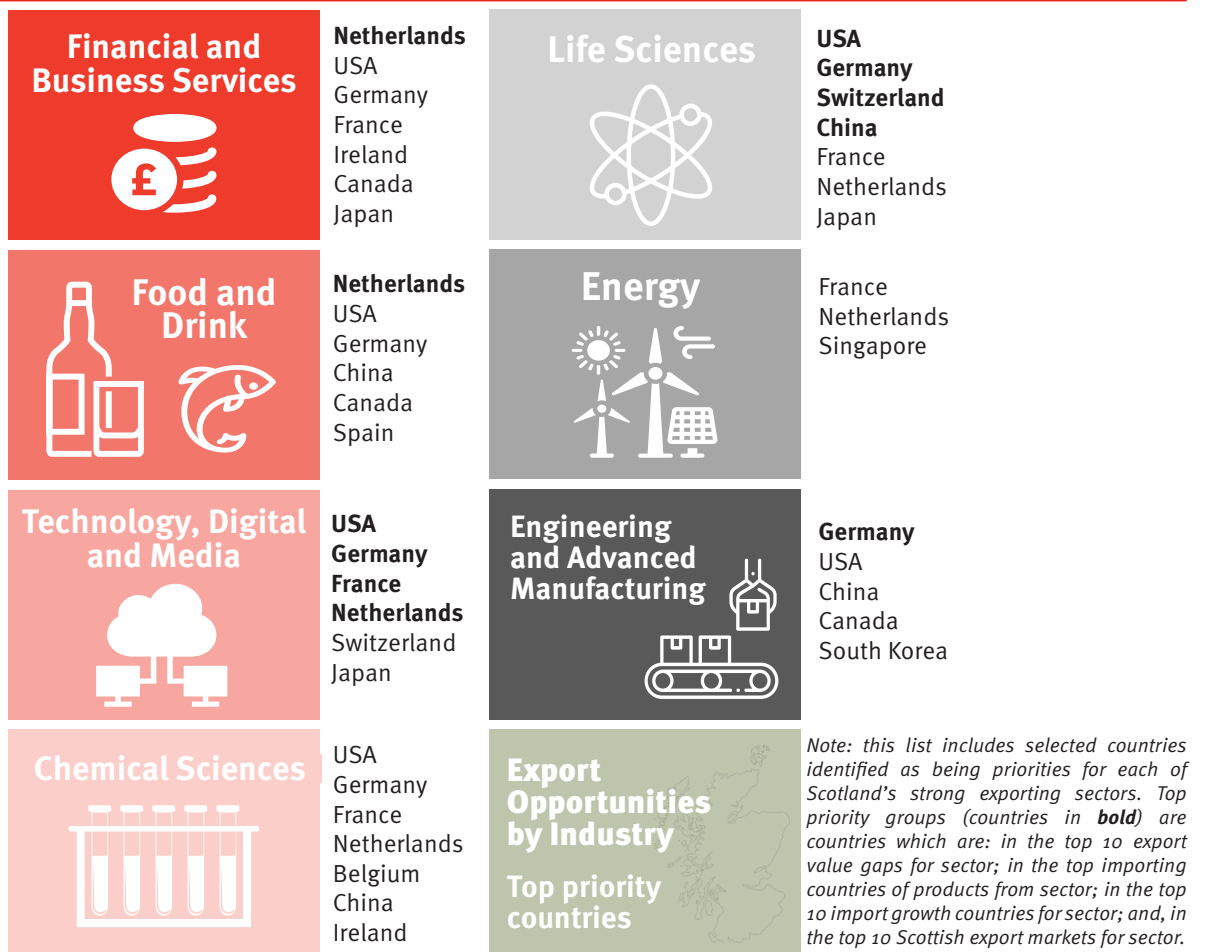
⁵ The export value gap is defined by the Scottish Government as the difference in value between Scotland’s exports to a certain market and the exports of similar competitors to that same market.

Chart 6: Scotland's markets of interest with specific sectoral opportunities in the mid to long term, 2021



Source: Export Statistics Scotland and OCEA calculations

Figure 1: Selected list of export opportunities by Scottish sector and destination country



Source: Scotland: A Trading Nation

Food and drink

The Food and Drink growth sector employed 119,000 people in 2020, down 2.5% on the previous year, and GVA in this industry totalled just under £5.4bn, down 8% on 2019's estimate.

The Industry-led [Food Tourism Action Plan](#) highlighted that each year, visitors to Scotland spend around £1billion on food and drink.

The plan sets out a range of actions to bring together the two sectors and ultimately double the amount visitors spend to £2billion a year by 2030. The plan emphasises collaboration between the sectors and public sector, driving spend in Scotland's tourism businesses while supporting local producers across the farming, fishing and food and drink industries.

Scotch whisky attracted over 2.2million visits to distilleries across the country in 2019, making the industry the third most popular tourist attraction in Scotland. The newly opened [Johnnie Walker Experience](#) in Edinburgh is a key example of bridging the two sectors to offer visitors a personalised whisky experience.

Food and drink plays an important role in Scottish tourism. Fine dining is growing in cities like Glasgow however, we need more luxury hotels and restaurants.
- *Partner feedback*

As noted, whisky does not just attract tourism, it is also Scotland's top international export.

The Institute published a [report](#) in 2021 on Scotland's whisky market which highlighted that Scotch whisky is the world's most internationally traded spirit worth almost £5billion annually.

Over the past decade, the value of Scotch sales to India has more than quadrupled from £40million in 2010 to £166million in 2019, with India now the 2nd largest export destination by volume and 7th largest export destination in terms of value. The recently proposed new trade deal with India holds potential for Scottish businesses in this industry.

The fishing industry is another important player and [Scottish salmon](#) in particular plays a significant part in Scotland's food and drink sector as the UK's biggest food export. [Overseas sales](#) of salmon increased to £614m in 2021, up 36% from 2020, and only marginally below sales of £618m in 2019.

Exports to France increased by 64% to £304m, followed by the USA – the second main market – up 45% to £152m, and China at £45m. Of global Scottish salmon exports, the EU accounted for 61% of the volume.

A recent paper by [Iverson et al. \(2020\)](#) found that just five countries made up 95.6% of salmon production in 2015. Scotland caught 10% of the global salmon market in 2010. However, ten years later, the nation's share had shrunk to just over 6%.

[The Griggs report](#) highlights that according to industry, Scotland's falling market share is in part due to the regulatory process slowing down the growth of the sector. The cost of the regulatory approach taken in Scotland is 64% more than the equivalent in Norway (Iverson et al., 2020). Overall, Scotland has a relatively high production cost base compared to its main competitors.

Enablers

Food and Drink



- Scotland punches above its weight with its food and drink sector.
- There are a lot of food (e.g. salmon) and drink (e.g. whisky) clients in Scotland.
- Growth in fine dining in cities like Glasgow can attract tourism.
- There are opportunities from Brexit for the whisky market - India is a huge importer.

Tourism



- Corporate tourism is a key driver of tourism in the West of Scotland.
- Scotland's key sectors like whisky and associated attractions such as the Johnnie Walker experience in Edinburgh helps attract tourism to the country.

Barriers

COVID-19



- Tourism has been hit hard by the pandemic, particularly corporate tourism.

Global Supply Chain Pressures



- Brexit, the pandemic, and the ongoing conflict in Ukraine have created significant supply chain issues.
- Labour supply shortages is a key challenge, particularly for businesses in the Food and Drink sector - support is needed to attract international workers and address labour supply shortages.
- "How can clients penetrate new markets in this environment of supply chain pressures?"

Business



- There are not many Scottish acquisitive firms.
- There is a degree of short-termism views among firms - many relocate for tax reasons and other incentives.
- There are few large Scottish firms in sectors like tech and finance - "while whisky is a true Scottish export, is finance?"
- "How do we promote International Scotland but keep Scottish firms?"
- Edinburgh is not seen as a big financial player compared to London or New York.

2. Invest in Scotland

Summary

- FDI plays an important role in the Scottish economy. Foreign-owned firms typically pay higher wages than domestically-owned businesses, invest more in business R&D, and produce more GVA per worker.
- The latest EY Attractiveness survey saw significant increases in FDI into Scotland in 2021. Digital technology (part of the **Creative Industries** growth sector) drove Scotland's FDI attractiveness performance in 2021, making Scotland the top location for digital projects in the UK after London.
- Outside London, Edinburgh and Manchester are the UK's top FDI locations, with Glasgow and Aberdeen also making the top 10 for investment attractiveness in the UK; the three Scottish cities are also key equity clusters in Scotland.
- Scotland's pool of world-class universities makes it an attractive location for investment, and Scotland has a significant number of spin-outs coming from its universities.
- Despite this, scale-up is a barrier to success, with Scotland's spin-out turnover share of the UK on a downwards trajectory. However, there are promising success stories of spin-outs from the Universities of Dundee and Strathclyde – particularly in Health and **Life Sciences**.
- Scotland's **Financial and Business Services** growth sector and fintech industry also contain significant potential for investors. Edinburgh is Scotland's main tech hub, ranking 6th in the UK for tech investment in 2020.
- Like many of Scotland's growth sectors, **Creative Industries** (including digital) pays well and experienced the greatest wage growth among growth sectors in the latest year.
- Although big cities like London offer larger salary packets than the north, the cost of living is much more expensive, and Scottish cities offer a good return on investment given their cheaper labour costs and property prices.
- However, planning permission will always be a key player in investment decision-making, and with planning permission wait times in Scotland increasing since the pandemic, this may act as a key barrier to inward investment.

Key barriers and enablers

- The reputation of Scotland's universities, and its affordability makes it an attractive place for talent and investment however, London salary packets may steal talent from Scotland, particularly in the era of homeworking as workers can live in Scotland but work for a London-based firm.
- There are a lot of opportunities for innovations in higher education, particularly in **Life Sciences**, and Scotland does produce a lot of spin-outs. However, scale-up and lack of infrastructure is a key challenge.
- Planning permission processes in Scotland hinder investment and there is a perception among those in business that it is trickier to invest in Scotland than rUK.
- Brexit has isolated Scotland and made attracting foreign investment more difficult however, there has been an uptick in non-EU students coming to Scotland, particularly for postgraduate study.

Inwards investment

Inwards investment makes a distinct and significant impact on Scotland's economy at both a national and regional level.

The Scottish Government's [Inwards Investment Plan \(IIP\)](#) highlights that foreign-owned companies typically pay higher wages than Scottish or rUK-owned firms, particularly in sector such as primary industries, other services, transport, and professional services. See Table 3.

Table 3: Gross wages and salaries per head (£), by ownership and sector, 2020

SIC	Sector	Scottish owned (£)	rUK owned (£)	Foreign owned (£)
ABDE	Primary Industries	35,864	46,742	68,730
C	Manufacturing	25,639	37,899	37,435
F	Construction	23,774	37,486	34,939
G	Wholesale, retail and repairs	16,552	13,034	19,141
H	Transport and storage	21,180	35,071	40,426
J	Information and communication	9,931	11,122	10,186
M	Professional, Scientific and Technical Activities	21,917	35,057	40,788
N	Administrative and support service activities	16,452	26,995	18,753
I	Accommodation and food service activities	25,407	46,348	42,869
L	Real estate activities	20,710	19,278	25,428
PQ	Education, human health and social work activities	21,906	17,122	17,210
R	Arts, entertainment and recreation	25,765	12,458	17,217
S	Other service activities	15,030	23,748	30,592
	Industry Average	20,829	22,466	32,114

Source: Scottish Government

However, it is not just the location of an inwards investment project that benefits from jobs and associated capital.

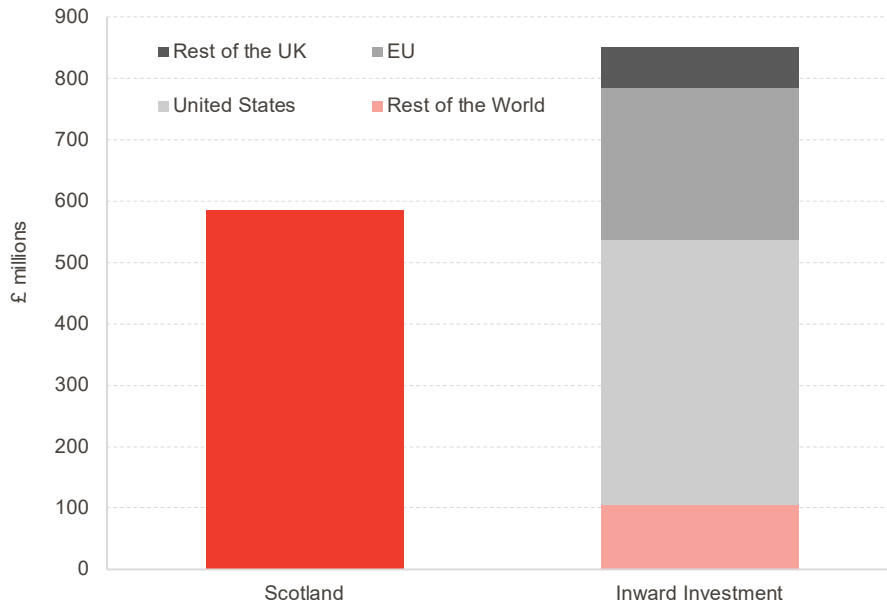
Wider benefits can also be felt across Scotland's economy, such as supply chain opportunities, and productivity improvements through innovation.

These additional spill-over benefits also act to create opportunities for existing Scottish-owned businesses, providing them with access to markets and technology they may not otherwise benefit from.

On aggregate, foreign-owned firms invest more in business R&D spending than Scottish (& UK) firms, boosting the levels of innovation in Scotland's economy. See Chart 7.

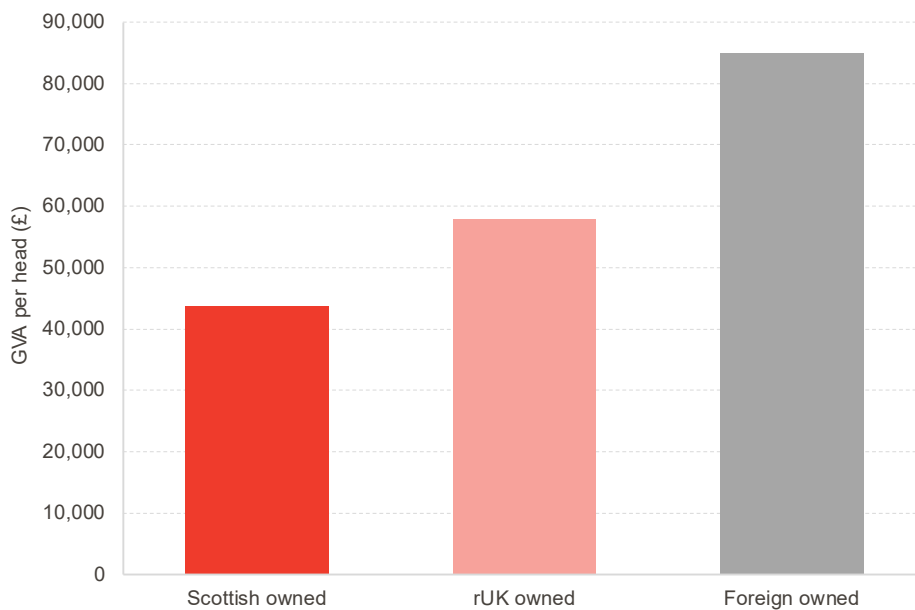
Additionally, the GVA per worker from foreign-owned business tops Scottish- and rUK-owned firms. See Chart 8.

Chart 7: Expenditure on R&D performed within businesses in Scotland by country of ownership, 2020



Source: Scottish Government, BERD Statistics

Chart 8: GVA per worker in Scotland by country of ownership, 2019



Source: ONS, Annual Business Survey

Where to invest?

In terms of investment value, the ‘Golden Triangle’ leads the UK, receiving markedly greater amounts of investment than other parts of the country, however, when looking at the number of deals, the picture is slightly different. Edinburgh had the second highest annual number of deals with an average of 127 deals per year, ahead of both Oxford and Cambridge. See Table 4.

Forming clusters that are attractive to inward investors can create value not just for the cluster area but surrounding areas too through spill-over effects.

Table 4: Top 20 equity clusters by number of equity deals, 2019-2021

Rank	Cluster	Average yearly number of deals (2019-2021)	Average yearly investment rate (2019-2021)	Largest sector by deal count
1	London	1,086	£7.9bn	Software
2	Edinburgh	127	£195m	Business and professional services
3	Cambridge	87	£616m	Life sciences
4	Manchester	74	£333m	Business and professional services
5	Oxford	60	£574m	Software
6	Glasgow	58	£83m	Business and professional services
7	West of England (Bath and Bristol)	53	£222m	Business and professional services
8	West Yorkshire	38	£64m	Software
9	West Midlands	31	£160m	Software
10	Cardiff	30	£34m	Software
11	Newcastle	29	£70m	Business and professional services
12	Cheshire	24	£51m	Business and professional services
13	Belfast	21	£29m	Business and professional services
14	Aberdeen	20	£54m	Energy
14	Sheffield City Region	20	£29m	Industrials
16	County Durham	18	£13m	Industrials
16	Liverpool City Region	18	£14m	Business and professional services
18	Guildford	14	£41m	Business and professional services
19	Swansea	12	£7m	Business and professional services
20	Cornwall	11	£35m	Industrials

Source: British Business Bank (Beaughurst)

The latest Ernst & Young's (EY) [Annual Attractiveness Survey](#) estimates a 1.8% rise in Foreign Direct Investment (FDI) in the UK in 2021, compared to 5.4% across European countries however, the UK remains the 2nd top FDI location in Europe after France.

Despite FDI growth in the UK in the latest year, Brexit has appeared to have an impact on manufacturing FDI and there are concerns over trade restrictions and labour shortages.

It is more difficult for firms to do what they used to do pre-Brexit – attracting foreign investment is now more difficult.
- Partner feedback

London remains as the UK's top spot for FDI – with 27% of investors rating the capital as the most attractive FDI location in the UK, increasing its inwards investment by 2.9% on 2020 figures.

16% of investors now rate Scotland as the UK's most attractive FDI location, up almost 1-p.p. to a record high. EY estimates a 14% rise in Foreign Direct Investment (FDI) in Scotland in 2021.

Outside of London, Edinburgh and Manchester are the UK's top FDI locations, with both cities securing 31 projects in 2021. Glasgow and Aberdeen also made the top 10.

The sectors driving this growth in FDI in Scotland included digital technology (part of the creative industries growth sector), utilities, professional services, and machinery.

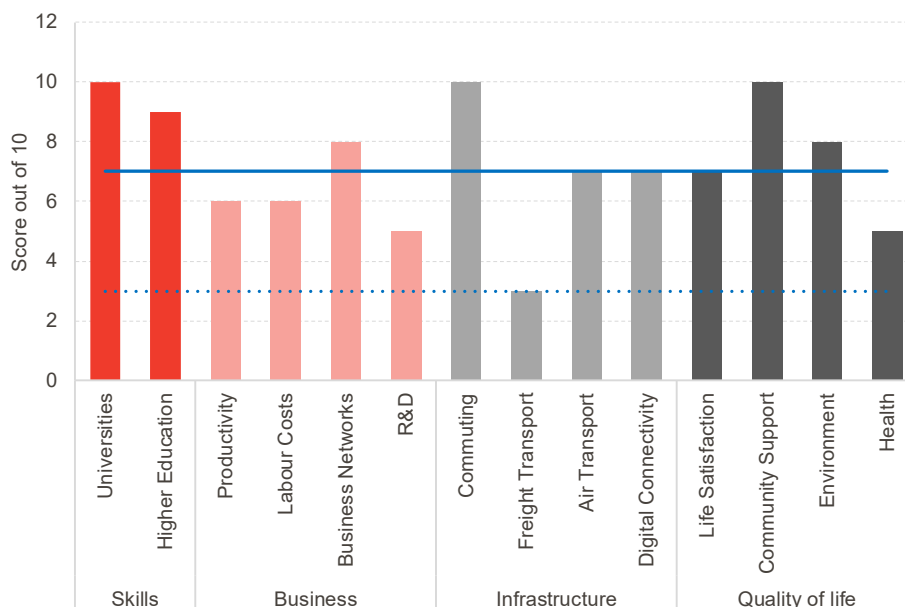
Digital projects in Scotland saw a 74% rise in 2021 compared to a 7% increase across the UK, making Scotland the top FDI location in the UK for digital after London.

What makes Scotland an attractive investment opportunity?

Looking at the Scottish Government’s Inward Investment Plan we can see that Scotland performs well in all skills indicators, particularly in terms of its universities, and across a range of quality of life indicators, with the exception of health, when compared internationally. See Chart 9.

Of all 14 indicators, freight transport is the only indicator that performs in the bottom 30% among comparator countries⁶.

Chart 9: Attractiveness of Scotland for Investing



Source: Scottish Government (Inward Investment Plan 2020)

Universities

Universities play an important role in Scotland’s economy, making a substantial contribution to the economy.

Scotland has three universities in the world’s top 100 global university [rankings](#) (2023), and when it comes to higher education, Scotland’s performance on the international stage is impressive – particularly when you take into account the number of world-class universities per head of the population.

[HESA](#) data shows that the number of EU students studying in Scotland has slipped slightly from an average of around 21,500 in 2016/17-2018/19 to around 20,500 in 2020/21. Roughly a 5% fall in enrolments from EU students over the past few years.

However, since 2016/17, the number students in Scotland from non-EU countries has been on an upwards trajectory, rising from over 31,000 in 2016/17 to now over 47,500 in 2020/21 – a 53% increase. Enrolment of non-EU students increased by 28% for undergraduate studies and 74% for postgraduate.

We thought it would be difficult to replace EU students post-Brexit but there has been an uptick in international students.
- Partner feedback

⁶ The pool of comparator countries varies by indicator. For example, the universities indicator is compared with 26 global countries, whereas the R&D indicator is compared with OECD countries.

Due to the internationally renowned strength of their research, universities are a major source of start-ups in the UK.

In terms of higher education-industry collaboration, there are many positive examples where public R&D or universities' own investments have helped to leverage major industry investments in innovation – e.g., [The Advanced Manufacturing Innovation District](#), [The Medicines Manufacturing Innovation Centre](#), [The Informatics cluster in Edinburgh](#), [Dundee Life Sciences](#), and [Aberdeen's Net Zero Technology Centre](#).

The [British Business Bank](#) found that In Glasgow and Edinburgh, over 20% of equity deals go to university spinouts, compared to the overall UK market figure of just 9%.

However, both the rate and viability of university spinouts must be considered.

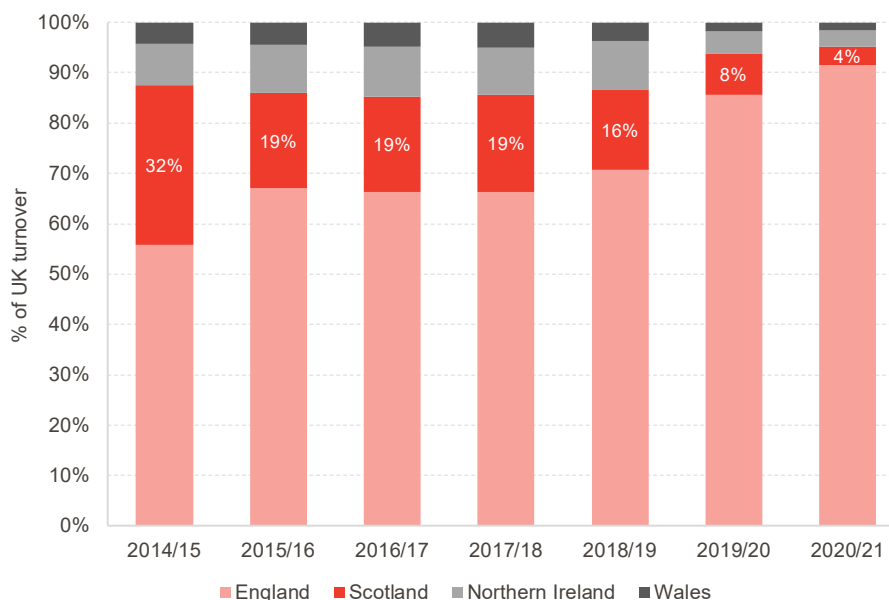
In the [Logan Review](#), it was highlighted that Scotland's spinout rate is heavily bolstered by relatively high levels of government investment, but in terms of spin-out businesses that have grown to scale or exited at high valuations, there are few success stories.

There are a lot of good things universities are doing for spin-outs, but we need an eco-system for scale up after innovation. We need the infrastructure to support spin-outs.
- Partner feedback

[Muscatelli](#) found that spin-outs are often expensive and “almost always a cost base to innovation rather than an income stream”.

In recent years, the turnover of active spinouts and start-ups in Scotland as a proportion of the UK has fallen considerably indicating a slowdown in success when compared to England. See Chart 10.

Chart 10: Current turnover of all active spinouts and start-ups as a % of UK total, 2014/15 – 2020/21



Source: Scottish Government (Inward Investment Plan 2020)

However, looking at the last decade, of the [ten most successful spinouts in the UK](#), the University of Dundee and the University of Strathclyde rank first and ninth, respectively, and the top 10 is made up fully by health and life science spin-outs.

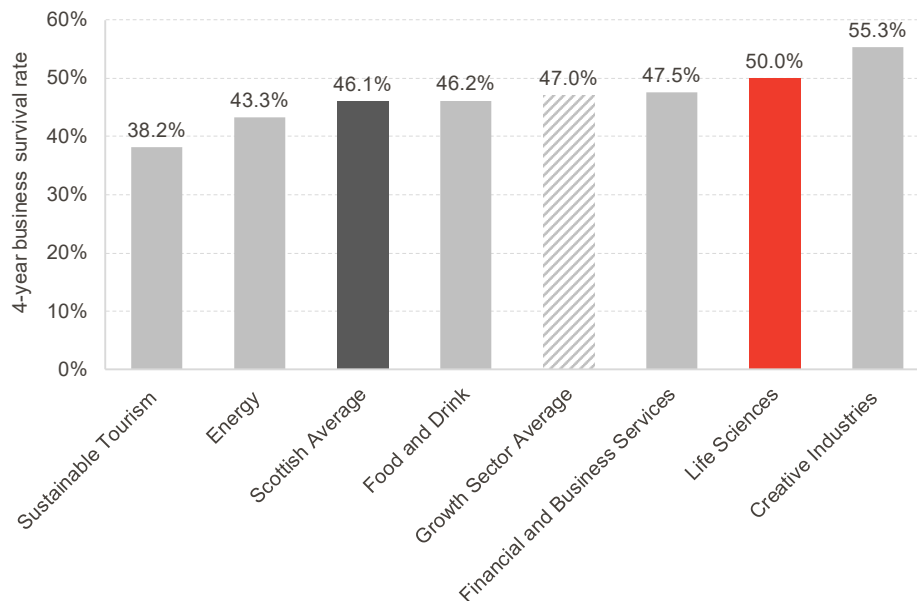
Comparative advantage

Life Sciences

The life sciences growth sector is a significant contributor to the Scottish economy, and employment in this growth sector increased by over 11% in 2020 to 20,000. Life sciences is the only growth sector to experience growth in employment in 2020.

GVA in life sciences was also up 4% on the year to 2020 to just under £1.7bn, and when looking at business survival rates since 2015, the sector performs above average among growth sectors, and the whole Scottish economy. See Chart 11.

Chart 11: 4-year business survival rate, Growth sectors and Scottish average, 2015-2019



Source: ONS (Business Demography 2020)

Box 1: Edinburgh BioQuarter

The [Edinburgh BioQuarter](#) is a leading location for medical research and life sciences innovation that is supported by four partners – City of Edinburgh Council, NHS Lothian, Scottish Enterprise, and the University of Edinburgh – and brings together health and life sciences businesses and organisations into one hub.

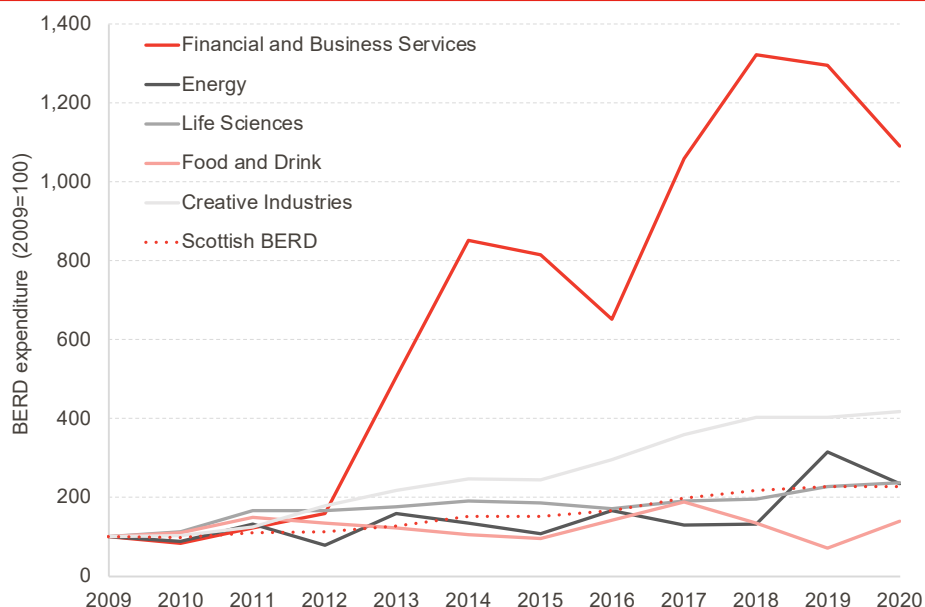
The BioQuarter hosts over 8,000 people across a 167-acre site, ranging from frontline health workers to academics. The aim of this collaborative cluster is to foster innovation opportunities to improve patient care and develop new medical treatments.

Building clusters of expertise in a dynamic sector such as life sciences offers an attractive opportunity to inward investors and has positive knock-on effects in the surrounding areas of the clusters.

Currently, Scotland has [one of the largest life science clusters in Europe](#) with over 770 life sciences organisations.

In 2020, Business Enterprise Research and Development (BERD) expenditure in life sciences reached £366m, the most of any growth sector. However, financial and business services, and creative industries have experienced the greatest BERD growth over the past decade, totalling £207m and £238m respectively in 2020. Overall, Scotland's growth sectors accounted for almost 70% of this BERD spending. See Chart 12.

Chart 12: Growth Sectors BERD Expenditure, Scotland, 2009-2020



Note: Sustainable Tourism has been omitted

Source: Scottish Government

Financial Services and Creative Industries

Financial and business services and creative industries (including digital) are some of Scotland's strongest performing growth sectors for R&D and both have a high business survival rate.

Financial services employed over 225,000 people in 2020, down 4% on the year however, accounted for a significant 9% of employment in Scotland. Employment was highest in Edinburgh (60,000) and Glasgow (58,000); both cities make up over half of Scotland's financial services employment.

[Scotland's fintech](#) industry is a growing part of Scotland's financial services.

According to the [Tech Nation 2021 Report](#), global investment in Fintech has doubled since 2015.

Edinburgh and Glasgow are Scotland's main tech hubs, with the capital ranking 6th in the UK for tech investment in 2020. See Table 5.

Table 5: Scotland's tech hubs, 2020

City	2020 Investment	UK rank
Edinburgh	£74m	6
Glasgow	£29m	12
Aberdeen	£0.3m	32

Source: Tech Nation Report 2021

London, unsurprisingly is the UK's main tech hub, with £6.5bn investment in 2020, and the world's 4th biggest tech city.

Box 2: CodeBase

As highlighted in the [Logan Review](#), CodeBase in Edinburgh has become regarded as the heart of the city's tech scene. The tech ecosystem support organisation runs one of the largest tech incubators in the UK. Codebase was recently awarded the £42m Tech Scaler contract by the Scottish Government to establish seven new tech scaler hubs across the country. The investment aims to support start-ups in scaling up their businesses by accessing advice and mentorship from industry experts.

The creative industries growth sector, which includes digital technology industries, employed 87,000 people in Scotland in 2020, down 3% on 2019's employment. The sector produced over £4.4bn in GVA in 2020, up 3% on 2019's estimates. Creative industries and life sciences were the only two growth sectors which saw their GVA increase in 2020.

As discussed, the EY attractiveness survey saw Scotland's FDI performance improve significantly in the latest year. Digital technology was the country's leading sector, with 33 FDI projects. Projects in this industry rose by 74% in 2021 across Scotland. Over the same period, digital technology projects fell by 7% in Europe and rose by just 7% in the UK. As mentioned, Scotland is now the top location for digital projects in the UK after London.

When it comes to wages, the creative industries was the best performing growth sector in 2021 for growth. Wages were up 15% and stood at £660 per week - £40 more than the Scottish median overall. See Table 7.

The energy sector is the highest paying growth sector while sustainable tourism is the lowest paying. Financial services typically pay more than the Scottish median however, 2021 saw wages contract which leaves this growth sectors median pay slightly below the Scotland overall.

Table 6: Gross median weekly earnings, full-time employees, Scotland & Growth Sectors, 2020 - 2021

	2020	2021	% change
Creative Industries (including Digital)	£575	£660	14.8%
Scotland	£592	£622	5.1%
Growth Sector Average	£596	£613	3.0%
Sustainable Tourism	£393	£402	2.4%
Food and Drink	£574	£576	0.3%
Financial and Business Services	£612	£609	-0.4%
Energy (including Renewables)	£804	£800	-0.5%
Life Sciences	£721	£689	-4.6%

Source: Scottish Government; ASHE (ONS)

Median weekly gross earnings are slightly lower across the UK overall (£610.7) than in Scotland however, London wages are significantly higher than both the UK and Scotland (£766.6).

Those earning over £25,689 annually pay more income tax in Scotland than they do in rUK due to Scotland's differing income tax bands.

Differing tax rates between Scotland and rUK may deter investment in Scotland.
- Partner feedback

London is an attractive hub for investment and talent – particularly given its high wages and lower income tax than Scotland. However, Scotland and its big cities are much more affordable than the UK's capital.

Cheaper property and lower wages are attractive to businesses while a cheaper cost of living is attractive to global talent – particularly in 2022 with the cost-of-living crisis squeezing the budgets of households across the world.

But, since COVID-19, there has been an increase in homeworking or hybrid jobs on the market ([Darby, McIntyre and Roy, 2022](#)), and this has the potential to reduce the attractiveness of Scottish firms as workers can work for a London firm while still living in a cheaper region like Scotland.

Homeworking is driving up wages as more people compete for jobs down south.

- *Partner feedback*

Darby, McIntyre and Roy (2022) found that IT, accounting and finance, and sales had the highest share of jobs offering working from home opportunities in January 2022. Homeworking opportunities have been increasingly common in vacancies for higher-paid jobs. On the other hand, lower-paid job openings, i.e. in customer services, have quickly reverted back to pre-pandemic norms.

However, while homeworking may present some challenges, the affordability of Scotland still plays a key role in attracting global talent to the country.

Affordability

A recent survey by [Mercer](#) evaluated the cost of living for over 200 cities across the world in 2022. Out of 227 cities surveyed, Edinburgh, Glasgow and Aberdeen are ranked in the top 100 most expensive cities globally. See Table 8.

Table 7: Cost of living ranking, 2021-2022

Rank 2021	Rank 2022	City	Location
2	1	Hong Kong	Hong Kong SAR
8	3	Geneva	Switzerland
14	7	New York	United States
16	11	Copenhagen	Denmark
18	15	London	United Kingdom
33	35	Paris	France
39	49	Dublin	Ireland
80	59	Hamburg	Germany
-	66	Edinburgh	Scotland (UK)
84	78	Barcelona	Spain
131	86	Glasgow	Scotland (UK)
128	93	Aberdeen	Scotland (UK)
121	94	Birmingham	United Kingdom
40	98	Dhaka	Bangladesh
148	121	Belfast	United Kingdom

Note: 1=most expensive city; red = UK/Scottish cities

Source: Mercer

The rankings of these cities in the latest years shown in Table 7 demonstrate how affordability has significantly worsened in these Scottish cities, particularly in Glasgow, in just a year.

Cities across the UK have moved up global rankings considerably and as inflationary pressures intensify amidst the ongoing cost of living crisis, we may see the affordability of UK cities worsen further, potentially impacting the attractiveness of our cities to talent on the global stage; particularly if wages fail to keep up with inflation.

However, when looking at the UK, Scotland is generally considered more affordable than south of the border.

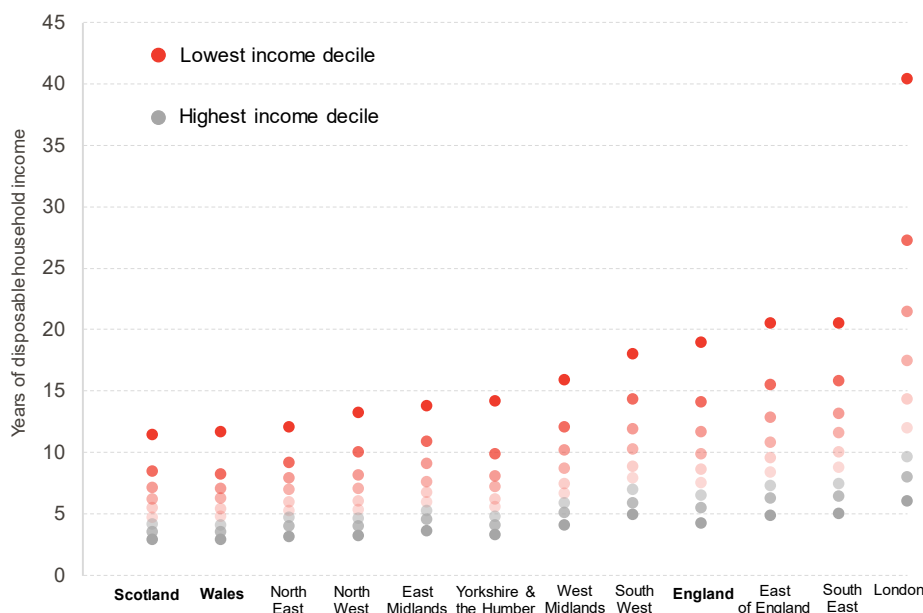
The average property price in Scotland in 2022 was £185,457, this compares to £280,001 in the UK, and £526,264 in London. An average-priced home in Scotland cost the equivalent of just over 11 years of income for a low-income household (10th percentile) compared with 40 years in London. See Chart 13.

Nonetheless, housing in Scotland is becoming increasingly unaffordable. In the year to 2022, Scotland recorded the largest house price growth, where house prices increased by 11.6%. Over the same period, average house prices in the UK increased by 7.8%.

Supply shortages for housebuilding materials coupled with significant housing demand have led to heightened availability pressures and surging prices, while poor wage growth and increasing interest rates makes it increasingly more difficult for individuals to get on the property ladder.

The situation is only expected to become more challenging in the coming months as expected interest rate hikes by the Bank of England lead to increases in mortgage costs.

Chart 13: Number of years income equivalent cost of a median-priced house, by income decile, country and English region, 2021



Source: Registers of Scotland; ONS

It is not just homeowners that are feeling the bite of the cost of living crisis – [private rental prices](#) increased in Scotland by 5.6% between February 2020 and August 2022. This is the second highest increase across UK nations after Northern Ireland (13.9%).

Rents in London have actually grown very slowly on pre-pandemic (Feb 2020) levels (2.9%), with lower growth than most regions across English regions and England overall (5.4%). However, in recent months rents have picked up.

The Cost of Living (Tenant Protection) (Scotland) Bill 2022 legislates a rent price freeze and moratorium on evictions for private and social landlords until 31 March 2022.

While this Bill will provide some respite for tenants over the coming months, there is a risk that landlords significantly increase rents come April 2023 given that they are facing higher costs which they can only absorb for so long.

Planning

Of course, when it comes to inwards investment, and particularly developing new infrastructure, planning permission is crucial.

[The latest planning performance statistics for Q2 2021](#) show that the average time for major development applications to be concluded took over 46 weeks in Scotland, with over half (56%) of applications (with processing agreements) concluded within agreed timescales.

It is worth noting that planning wait times have been impacted by COVID-19. The typical wait time in 2019 ranged from 30 – 40 weeks.

There is a perception that it is more difficult to do business in Scotland than rUK.
- Partner feedback

Major housing developments took the longest to reach a decision with an average time of over 59 weeks. Just a third of applications concluded within the agreed timescales.

The overall approval rating for applications was 94.7% in Q2 2021 in Scotland.

Enablers

Universities



- The reputation of Scottish universities helps attract global talent.
- There has been an uptick in international students, primarily postgraduates, post-Brexit.
- There are a lot of opportunities in University spin-offs, i.e. in Life Sciences.

Affordability



- Scotland is more affordable than London which can attract international talent. Scotland also offers significant returns on investment which can attract investors also.

Perception



- Highlighting attractive sectors to invest in - i.e. where Scotland has competitive advantages - will help attract global investment and global talent.

Collaboration



- Collaboration is needed between industry, academic providers, and government - it gives confidence to investors.

Barriers

Attracting & retaining talent



- Bright students from top Scottish universities move south of the border for better opportunities.
- Competing with London salaries makes it difficult to attract talent.
- Homeworking has driven up wages as more people compete for jobs down south. It has also created an inwards mentality which hinders teamwork.

Tax



- Stamp duty and income tax differences between Scotland and the rest of the UK may deter investment and international talent.

Infrastructure



- Scotland struggles to commercialise innovations from higher education due to a lack of infrastructure.
- Scotland has a lot of great ideas but fails when it comes to scaling these innovations up.

Brexit



- It is difficult for firms to do what they used to do pre-Brexit - attracting foreign investment is also more difficult.
- A new regulatory environment has brought significant challenges, restricting supply chains.
- “Brexit has isolated Scotland”.

Planning



- Planning permission timescales are a major challenge - for large projects, it can take a long time to reach a decision.
- Investors must account for delays in their planning and clients are often confused by the lack of clear timescales in the planning process.
- Uncertainty is frustrating for investors and deters investment.
- There is a perception that it is more difficult to do business in Scotland than rUK.
- There is a degree of NIMBYISM.

3. Scotland's transition to net-zero

Summary

- Scotland leads the UK when it comes to green growth opportunities, and its natural resources make it an attractive green investment location.
- Scotland's green economy potential is significantly supported by its higher education institutions. Relative to population, Scotland has the highest number of higher education students enrolled in green-related subjects in the UK.
- The transition away from oil and gas does present challenges, particularly around infrastructure, labour, and skills. However, it is important to note that Scotland already has significant infrastructure and skills needed for a green economy. Investment is needed to repurpose existing oil and gas infrastructure and retain and retrain oil and gas workers.
- High wages in Scotland's **Energy (including renewables)** growth sector make it an attractive industry for international talent that is needed in the transition to net-zero.
- The Scottish Government has a target to reach net-zero by 2045, 5 years before the UK. This commitment to net-zero can help drive investment in the green economy.
- But, while Scotland met its emissions target in 2020, this was primarily driven by reductions in transport emissions, driven by lockdown restrictions. Therefore, we may see emissions rise as parts of the economy reopened in 2021.
- Despite significant reductions in 2020, domestic transport is Scotland's largest emitter and investment in EVs present an opportunity to reduce CO₂ emissions from the transport sector. However, EVs are costly, and with the ongoing cost of living crisis, more and more households may struggle to afford such an expensive vehicle.
- But, it is not just how we fuel our cars; how we heat our homes will be crucial in successfully transitioning to a net-zero economy.
- Around half of all Scottish properties still do not have adequate energy efficiency. Given the ongoing cost of living crisis is fuelled by a global energy crisis, improving the energy efficiency of homes will play an important role in both reducing household energy bills and alleviating fuel poverty across Scotland.
- There is a risk that the ongoing energy and cost of living crisis could slow down net-zero progress. With incomes and profits squeezed, households and businesses may delay green investments.

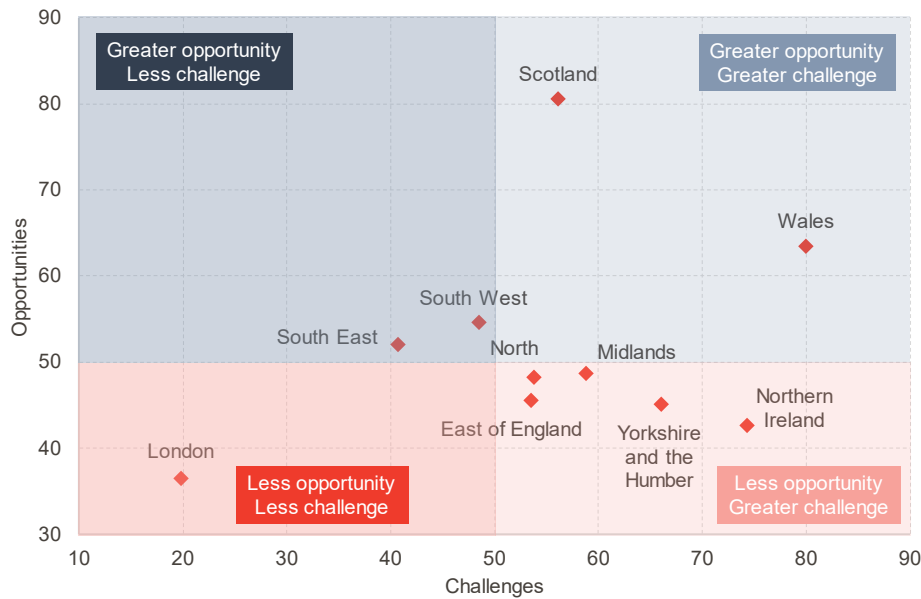
Key barriers and enablers

- Scotland has rich natural resources and there is a perception that green infrastructure in Scotland is better than the rest of the UK. Also, the Scottish Government's commitment to its ambitious net-zero policies makes it an attractive investment location.
- However, there is clear competition from countries like Norway in terms of exporting clean energy and expertise.
- Repurposing oil and gas infrastructure and retaining and retraining oil and gas jobs will be crucial in supporting sustainable growth of Scotland's **Energy (including renewables)** sector.
- Planning is a key challenge, with long wait times and NIMBYISM hindering investment.

Opportunities and Challenges

Of the 10 UK nations and regions, Scotland takes pole position in the Green Growth Opportunity Index where a higher value denotes where green economy opportunities could be strongest. See Chart 14.

Chart 14: Green Growth Index Challenges and Opportunities



Source: Oxford Economics

Scotland is definitely a leader in the green economy in that:

1. It benefits from natural resources (very well placed); and
2. There has been consistency in policy in committing to de-carbonisation.

- Partner feedback

Scotland is already home to an existing base of green economic activity and assets from which to build and has strong competitive advantages in several areas across the energy transition.

However, as highlighted by [Oxford Economics](#), Scotland is also faced with a number of challenges on the road to net-zero.

For example, the Scottish economy remains relatively reliant on carbon-intensive industry and is therefore more exposed to labour market and other economic disruption from scaling back or re-orientating such activity during the transition to net-zero.

On the other hand, Scotland's green economy potential is supported by its universities. Relative to population size, Scotland has the highest number of higher education students enrolled in green-related subjects than the rest of the UK, see Chart 15.

With its green skills base, Scotland has the potential to export its green expertise internationally.

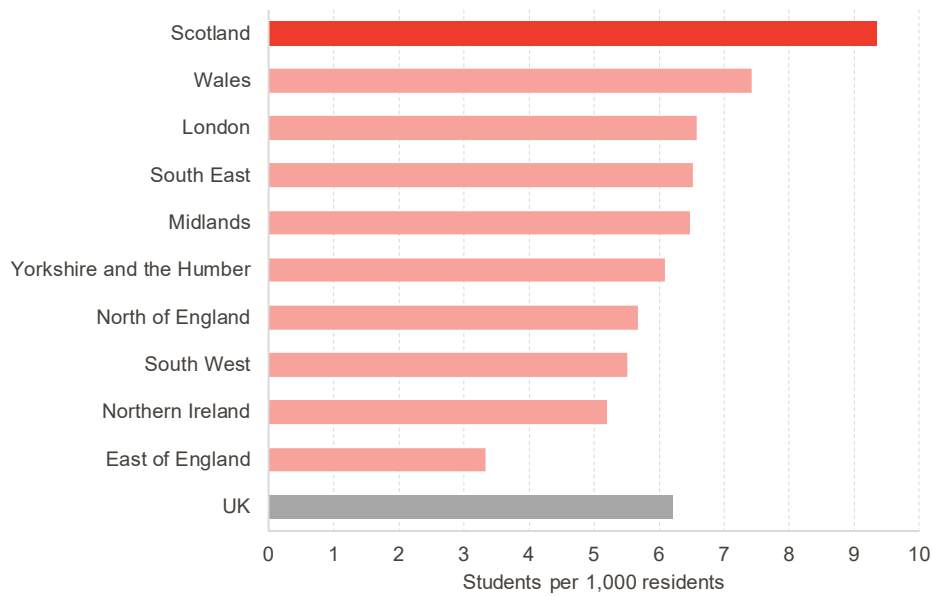
There is clear competition from countries like Norway in terms of exporting clean energy and expertise.

- Partner feedback

The Scottish Government has a target to reach net-zero by 2045, 5 years before the UK, and as we move towards this date, these subjects will increasingly be in demand and offer a key source of future skills to support the nation's green economy growth.

However, it is not all about higher education. Focus on further education, apprenticeships, and upskilling and retraining policies will be crucial.

Chart 15: Higher education students in green-related subjects, 2020/21



Source: HESA, ONS

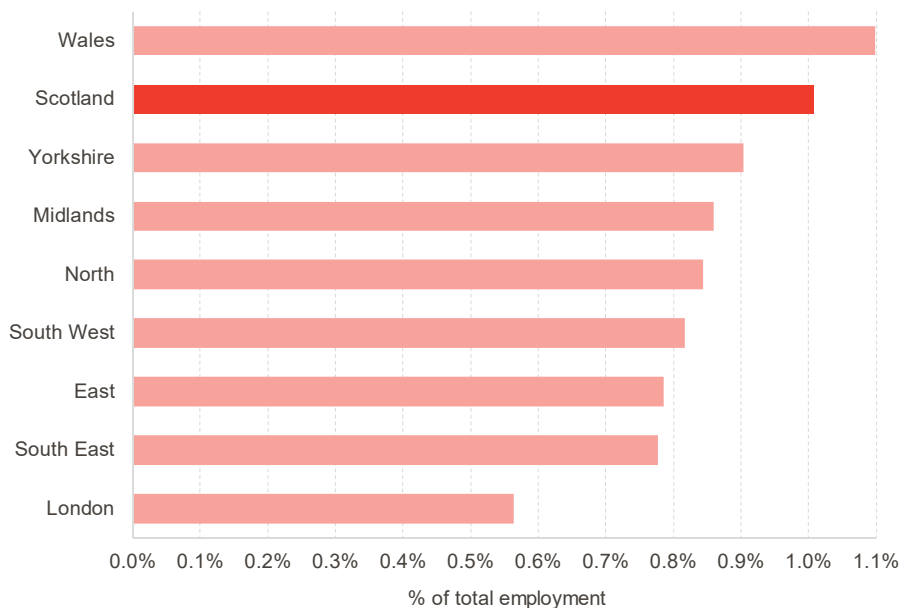
There is an impression that green technology needs different skills, and they do not. Oil and Gas technologies are not redundant in the transition to net-zero.

- Partner feedback

There are already some 21,000 green economy jobs in Scotland, defined as those in the low-carbon and renewable energy economy (LCREE). See Chart 16.

Partly driven by the well-developed renewable energy sector, Scotland’s green economy is the second largest in the UK relative to the size of the overall workforce. With 10% of the UK’s green economy jobs, the existing base of the nation’s green industry provides a good foundation for future growth.

Chart 16: Green Economy Jobs, 2020



Source: FAI analysis of ONS LCREE and BRES data

LCREE methodology

Using ONS estimates of jobs in the [Low Carbon and Renewable Energy Economy](#) (LCREE) and data from the ONS Business Register and Employment Survey, LCREE jobs relative to total employment were estimated in each country of the UK. NUTS₁ regions of England were assumed to follow a similar trend to the UK; estimates were imputed using the share of total FTE employment that corresponds to an LCREE category at the industry level and then applied to the industry mix of each region. Northern Ireland has been excluded due to a lack of data for the year 2020.

At present, the entire energy sector (including renewables) is an identified growth sector in Scotland, supporting £13.6bn in Gross Value Added (GVA) and 69,000 jobs in 2020.

GVA in this growth sector fell by over £6bn, or 32%, in 2020 however, employment levels remained unchanged on the year.

As highlighted in Section 2, the energy sector is the highest paying growth sector in Scotland, and pays significantly more than the Scottish, and even the London, median. High-skilled, high-paying jobs in this sector will play an important role in attracting talent into Scotland's green economy.

Scotland's energy

The Scottish Government has ambitious targets to reach net-zero by 2045, and a key driver of this transition is renewable energy.

Scotland's [Energy Strategy](#) sets out a target for 2030 that an equivalent of 50% of Scotland's energy for heat, transport, and electricity use must come from renewable sources – an [indicator](#) tracked in Scotland's National Performance Framework.

[Scottish Energy Statistics](#) provides the latest estimates of Scotland's renewable energy performance.

The Scottish Government set a target to generate the equivalent of 100% of Scotland's own electricity demand from renewable sources by 2020.

The balance of electricity generated from renewable sources has risen from over 10% in 2000 to around 98.6% in 2020, which falls just short of the 2020 target. Scotland's 2020 renewable electricity generation was mostly comprised of onshore wind (61%), hydro (19%), and offshore wind (11%).

Although Scotland missed its renewable electricity target last year, it appears that we are on track to reach 100% in the future, and the performance to date of this metric is a success.

However, when it comes to renewable energy, electricity demand is not Scotland's greatest challenge.

Non-electrical heat demand from renewables stood at just 6.2% in 2020, far off its target of 11%. Most renewable heat is driven by biomass and biomethane, with heat pumps contributing 8% to renewable heat energy output in 2019.

Therefore, despite clear improvements in Scotland's transition to renewables, there is still a while to go before Scotland is no longer reliant on fossil fuels. The key to Scotland reaching its goal is understanding the challenges it faces – none of these are new, but they are now more pressing.

In moving beyond oil and gas, Scotland must ensure that it does not leave the people currently working in the industry behind.

Following the discovery of North Sea oil in the 1960s, Aberdeen became the Energy Capital of Europe and the economic success story for Scotland and the UK. With [415 oil and gas companies](#) per 100,000 people, the sector supports tens of thousands of jobs across the Aberdeen city region.

The big question is how an area such as Aberdeen can attract non-oil business on account of its skills base and infrastructure. The high skill, high-productivity jobs associated with the North Sea are unlikely to be easily replaced in the local economy but, the repurposing of existing infrastructure, as well as the transfer of workers' expertise presents opportunities for former oil and gas hubs.

Why not use the technology and skills we have for new methods of cleaner production that can be exported internationally?
- Partner feedback

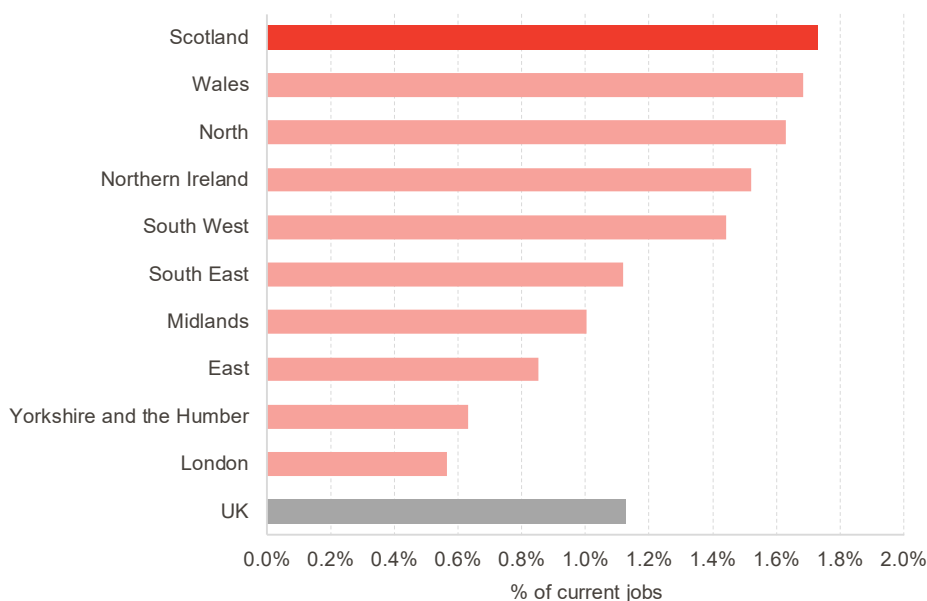
Greater targeted support to help workers and infrastructure transition into clean energy will be key.

The UK Government's [North Sea Transition Deal](#) identifies carbon capture, usage and storage (CCUS), and hydrogen power, as key areas which could secure investment and support jobs. Scotland's competitive advantage in CCUS is based on the built and natural assets of the North Sea oil and gas industry and the offshore engineering skills and experience of that workforce.

Orkney is also home to the [European Marine Energy Centre \(EMEC\)](#), an organisation at the forefront of hydrogen energy storage research. EMEC is located in Scotland given the tidal energy potential in the North, and in 2017 generated the world's first tidal generated hydrogen.

The continued growth of onshore and offshore wind power, however, will drive the need for almost 50,000 renewable-related jobs alone in Scotland by 2050. See Chart 17.

Chart 17: Energy jobs needed by 2050, as a percentage of current jobs, UK



Source: National Grid, [Building the Net Zero Energy Workforce](#)

With a net-zero target five years sooner than the UK's, ambitious plans to scale up renewables and decarbonise the power grid will be essential to create secure jobs in Scotland's green economy and support businesses in getting the staffing they require, and workers to get the skills they need.

Scotland's emissions

The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 sets out targets to reduce Scotland's greenhouse gas emissions to net-zero by 2045, with interim targets of 56% by 2020, 75% by 2030, and 90% by 2040.

Consistency from the Scottish Government in policy committing to decarbonisation attracts investment.
- Partner feedback

[The latest greenhouse gas statistics for 2020](#) show that Scotland did meet its interim target of 56%, achieving a reduction of 58.7% on the baseline period.

It is worth noting that this was driven significantly by reductions in domestic transport emissions. However, since 2020 was an unprecedented year, and a significant number of cuts in domestic transport were due to temporary COVID-19 measures, emissions could rise in 2021.

As of 2020, in terms of sectoral emissions, domestic transport was the primary source of emissions in Scotland, followed by business, agriculture, residential, and energy supply, all of which make up 90% of Scotland's emissions.

Domestic transport remains the number one source of greenhouse gas emissions in Scotland, despite the significant reduction of 21% in 2020 – primarily driven by lockdown measures imposed at this time.

The scale of response in managing COVID-19 cases demonstrates the type of reaction needed to reduce emissions from key sectors such as transport.

One of the main shifts seen in the transport sector in recent years to help reduce carbon emissions has been the adoption of electric vehicles.

As part of this, the [Scottish Government](#) aims to ensure that the majority of new buses purchased from 2024 are zero-emission, phase out the need for new petrol and diesel cars and vans by 2030, and remove the need for new petrol and diesel HGVs by 2035.

This year, the [Scottish Government is providing over £30m](#) to boost zero-emission transport across the country, including funding for interest-free loans for electric vehicles (EVs). However, it has been shown in the [literature](#) that subsidies for electric vehicles are one of the costliest policies for reducing carbon emissions.

Further to this, as the ongoing cost of living crisis worsens and household finances are spread thinner, adopting electric vehicles is neither a priority nor a possibility for many households. In the UK, the average electric car price was estimated to be around [£44,000](#) at the beginning of 2022, with the lowest price around £17,500.

And, given the tight fiscal settlement the Scottish Government is working with and the increasing need for higher social security spending to tackle the current cost of living crisis, it is essential that public finances are spent efficiently.

Public finances are not the only challenge facing Scotland in its transition to net zero. The automotive industry is changing, and EVs, by their design, demand different supplies and skills to fossil-fuelled vehicles and will demand significant infrastructure investment for charging points. But with this change comes opportunities for those working in the automotive industry or related sectors.

Currently, Scotland performs very well in terms of electric vehicle charging infrastructure.

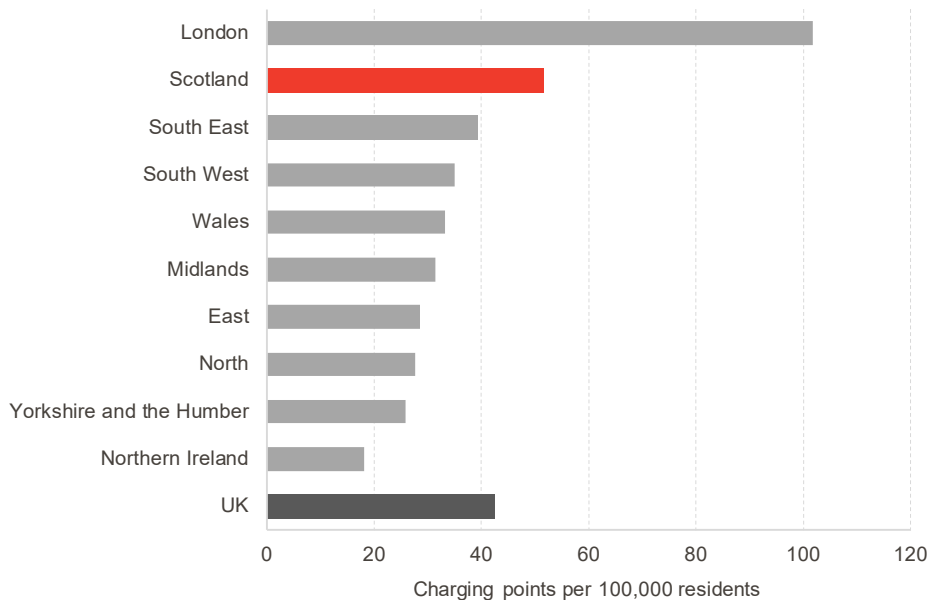
Out of all UK nations and regions, Scotland has the second greatest density of charge points with over 50 per 100,000 residents. See Chart 18.

To meet growing demand over the years, however, both the scale and pace of investment in EV charging infrastructure will need to be accelerated with appropriate planning and delivery to maintain equitable access across Scotland.

[Transport Scotland](#), in their report on EV infrastructure in Scotland, recognise *'the need for access to charge points across the whole of Scotland, including both rural and urban areas'*.

It is important to note that tackling climate change is not just how we fuel our cars; how we heat our homes is also be vital.

Chart 18: Electric vehicle charging points per 100,000 residents, 2022



Source: Department for Transport, ONS

Existing residential buildings pose a significant challenge to Scotland’s chances of achieving its net-zero ambitions. The latest [Scottish House Condition Survey](#) estimates the energy efficiency of Scottish Homes in 2019. In the past decade, energy efficiency in Scottish homes has increased – the median Energy Efficiency Rating (EER) in 2019 increased from 68 to 69, moving the median efficiency of Scottish homes to Band C for the first time.

The share of properties with an Energy Performance Certificate (EPC) band of C or above has risen from 24% in 2010 to 51% in 2019. However, around half of all Scottish properties still do not have adequate energy efficiency.

Due to the ongoing global energy crisis, households, particularly those on lower incomes, are feeling the pinch from rising energy bills. And, while the [Energy Bills Support Scheme](#) discount of £400 and the [Energy Price Guarantee](#) will provide some support for households over the winter, this cost of living crisis will have a serious impact on household poverty in Scotland, where already [a quarter of households were in fuel poverty in 2019](#). Therefore, building more energy efficient homes and improving existing inefficient properties will be crucial.

Box 3: Soaring costs for businesses

It is important to note that businesses are not protected by Ofgem's price cap and so have been facing significant increases in their energy bills over the past year. However, the [Energy Bill Relief Scheme](#) will be in place from 1st October 2022 - 31st March 2023 to support businesses over the winter. Although, whether this scheme will be continued after March remains uncertain.

Retrofitting, i.e., the addition of new technology or home improvements to older homes to improve energy efficiency, will be essential to ensure older properties become more energy efficient.

The Scottish Government’s Heat in Buildings Strategy highlights that around 3,000 renewable heating systems have been installed annually in Scotland in recent years.

However, the government highlight that 124,000 zero or near-zero emissions heating systems – i.e. heat pumps or biomass boilers – must be installed between 2021 – 2026, with the installation rate required to peak at over 200,000 in the late-2020s – a significant retrofitting scale up for government.

The Scottish Government is currently developing regulations, the [New Build Heat Standards \(NBHS\)](#), which would require all new homes, from 2024, to only use zero direct emissions heating.

Overall, significant progress will need to be made to meet the [Scottish Government's target](#) for every Scottish home to achieve at least a band C in its EPC by 2040.

[SPICe](#) note that the Local Government, Housing and Planning Committee heard concerns about the availability of skilled labour in rural areas of Scotland to scale up retrofitting activity to the level set out in the government's HiB strategy.

The supply of labour will not be the only challenge. Embodied carbon may encourage the use of local supplies, putting pressure on local supply chains to mitigate transportation emissions. There will therefore need to be sufficient local supply to meet demand.

Box 4: Embodied carbon

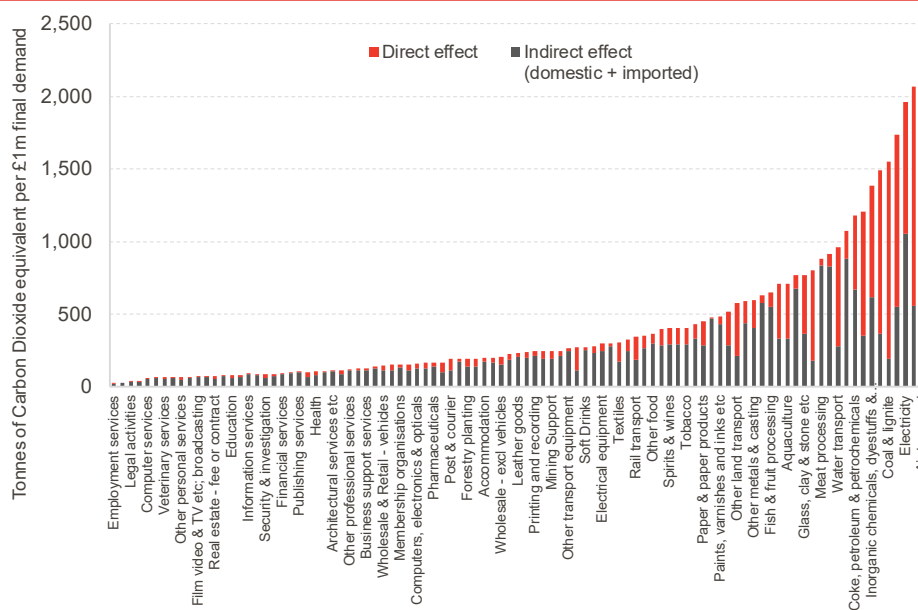
To better understand embodied carbon, we can consider a project that requires a new road to be built. When considering embodied carbon, there is a focus on the life cycle of the project i.e., we account for the extraction or creation of materials - in this case concrete. Also, we account for the transportation to and from project sites, and the processes that make the actual road. Embodied carbon is essentially capturing all CO₂ emissions of a project before it becomes operational.

The Scottish Government provide estimates for the direct and indirect tonnes of carbon dioxide equivalent per £1m of final demand i.e., for every £1m of final expenditure from household or government expenditure and exports, how much carbon dioxide is produced.

These estimates suggest that for sectors which emit the highest CO₂, such as air transport, the majority of their emissions come from direct effects i.e., as a result of firm's activities. However, for sectors such as travel services - which despite having relatively low direct emissions, emit much higher emissions indirectly.

Therefore, for government and firms, finding the right balance between choosing suppliers who foster clean energy practises without putting too much pressure on local supply chains will be crucial, particularly for sectors who incur the majority of their CO₂ emissions indirectly.

Chart 19: Tonnes of Carbon Dioxide equivalent per £1m final demand in 2022/23 prices



Source: Scottish Government

Enablers

Competitive Advantage



- Scotland is rich in natural resources with a competitive advantage in renewables.
- Scotland has green energy expertise which can be exported.

Skills



- Scotland is well placed to train up green jobs:
 - It is home to some of the best universities in the world; and,
 - It has as an existing pool of labour that is skilled in energy (oil & gas).

Investment



- There is a significant amount of international investment into renewables in Scotland.
- There is a perception that green infrastructure is better in Scotland than rUK.

Policy



- Consistency from the Scottish Government in policy committing to decarbonisation attracts investment.
- Scotland has more ambitious targets for achieving net-zero than rUK - signalling to investors that the green sector in Scotland has significant opportunities

Barriers

Competition



- There is clear competition from countries like Norway in terms of exporting clean energy and expertise.

Skills



- Retraining the existing oil and gas workforce for green energy, and addressing a skill gap, particularly in the North East, will be a challenge.

Planning



- Planning is an important issue for clients, particularly for wind, and can cause uncertainty for investors. NIMBYism can hinder the planning process.
- There is a huge time investment involved in green infrastructure, taking 10+ years before construction begins. Permission can change the path of plans significantly and at any stage of the process.

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