

Royal Society of Edinburgh Enterprise Fellowships – Evaluation and Economic Impact Assessment

A report to Royal Society of Edinburgh
13th August 2019





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1.

Executive Summary

The Royal Society of Edinburgh Enterprise Fellowship programme makes a significant economic contribution and creates impact from academic research. It delivers RSE's mission to make knowledge useful.

The RSE Enterprise Fellowship programme creates significant economic impact: £77.3 million annual Gross Value Added (GVA) and 1,395 jobs in Scotland; £132.3 million annual GVA and 2,490 jobs in the UK; and £167.4 million annual GVA and 3,176 jobs globally.

The RSE Enterprise Fellowships generated £5.69 annual GVA in Scotland and £9.74 in the UK for every £1 it received in income.

The impact of Scottish Enterprise funded Enterprise Fellows is £52.6 million GVA and 949 jobs in Scotland each year.

Strategic Place: The Enterprise Fellowship programme is a long-established programme, but it delivers on current and pressing concerns of the UK and Scottish Governments and their agencies. There is a major opportunity for RSE to demonstrate on a national stage how it contributes to key drivers of productivity growth and delivers this important area of government strategy.

Rationale for Investment: The current funders of the Enterprise Fellowship programme are experiencing a period of significant change. There is an opportunity for RSE to ensure the role of the Enterprise Fellowship programme is clearly articulated and understood throughout these changing circumstances. The programme addresses market failure and delivers central tenets of Scottish Government policy, creating a strong case for continuing investment from Scottish Enterprise. There is also a robust rationale for continued investment from UK Research and Innovation (UKRI), with the Enterprise Fellowship programme delivering on its strategic priorities.

Governance: There is a case for strengthening the governance arrangements for the Enterprise Fellowship programme, reflecting a changing strategic context and rapidly

changing structures and functions within its funding organisations. The longer-term role of the Management Group may need to adapt and change to include additional funders and to preclude the role of funders and contractors in directing future strategy, because the strategic objectives of each of those bodies are also changing. The role of the Management Group could be considered within the remit of the Economy and Enterprise Committee, whose focus is on the outcomes targeted by the Enterprise Fellowship programme.

Resources: The financial investment in the programme has totalled £13.6 million since its inception in 1997, an average of £55,700 per Enterprise Fellow. The programme has been delivered by a very small team of staff, with training provision contracted out. There is a significant and unquantified resource applied to the programme from the RSE, its Fellows (FRSEs), university partners, UKRI and Scottish Enterprise staff, all working to deliver their interests to commercialise research. Considerable additional value is brought by the Management Committee Chair, who actively participates in the management and delivery of key elements of the programme, including maintaining funder relationships and developing and planning the future of the programme.

Outputs and Outcomes: A wide range of outputs have been created and outcomes achieved. 93% of Enterprise Fellows have started at least one business. In fact, 25% of Enterprise Fellows have started more than one business. 81% of Fellows' businesses are still operating or have been sold and are operating under another owner. This compares well with the average survival rates for spin-outs and technology start-ups, where around 45% survive to their fifth year. There is evidence that the programme also has a strong influence on research impact – an important objective of the research councils. A wealth of survey and consultation evidence shows strong attribution.

Performance: The Enterprise Fellowship programme is a strong performer, held in high regard by participants, funders and universities alike. Overall satisfaction with the programme is very high and views about the quality of training provision, support provided, confidence and business skills are all extremely positive. Since the new approach to training was introduced in 2012, this is even more the case.

There are eight recommendations:

RSE should develop a **strategic plan** that articulates the current and changing national context and positions the programme appropriately.

The strategic plan should frame the establishment of a **business plan** with clear and measurable actions for the future, and at least a three year, preferably a five-year, horizon.

There is an inherent risk in a significant amount of knowledge being held by a small number of individuals in an organisation. RSE should consider a **succession plan** so there are clear arrangements in place to ensure a smooth transition should there be changes in the small and expert team that run the programme.

A **governance review** should be undertaken, reviewing the role of the Management Group in the changing context for the operation of the programme.

A **review of resources** should include a consideration of the RSE staff resource and whether this is appropriate for the scale of this programme and its impact. There may also be value in considering the way resources are allocated within the programme itself.

The RSE should commit to showing **leadership in academic start-up and spin-out practice in the UK**, in a practical and actionable way.

There should be a **sustainability plan**, exploring options to create sustainable income and reduce the risks involved in relying on one dominant funder.

Finally, the RSE could consider the requirements to make more use of the **alumni network**, creating opportunities for alumni based on the existing pool of talent and experience in the Enterprise Fellows' community.

2.

Introduction

The Royal Society of Edinburgh Enterprise Fellowships programme, evaluation and economic impact assessment.

The Royal Society of Edinburgh (RSE) Enterprise Fellowships programme supports entrepreneurial researchers and innovators to grow their ideas into promising businesses. Established in 1997, this is a well-established programme of support for entrepreneurs with science and technology propositions, working with several universities and funders across the UK. Over the last two decades there have been more than 251 Fellows from 36 UK academic institutions, who have launched 166 new businesses.

The RSE commissioned BiGGAR Economics to undertake a study to evaluate the economic impact of the Enterprise Fellowship programme since its inception, to date. This report presents the findings of the evaluation.

2.1 The Enterprise Fellowship Programme

The Enterprise Fellowship is a UK wide programme that offers a one-year package of support to individuals within the UK academic research community and consists of:

- a year's salary with on-costs, through an academic host institution (the Enterprise Fellow is employed by the hosting university/institution on the institution's salary scale);
- bespoke business training;
- business support funding of £10,000;
- travel funds of £3,000 to attend the training;
- access to mentors, business advisors and investors; and
- membership of the RSE Entrepreneurs' Club (the alumni of the Enterprise Fellowship).

The programme is funded by public bodies through a number of individual contracts for the delivery of a specified number of Enterprise Fellows per funder. Between 1997 and June 2018 there have been 244 Fellows, supported by the following organisations:

- Scottish Enterprise (SE) – this scheme has supported 166 Fellows;

- the Science & Technology Facilities Council (STFC) – this scheme has supported 26 Fellows;
- the Biotechnology & Biological Sciences Research Council (BBSRC) – this scheme has supported 47 Fellows; and
- the Natural Environment Research Council (NERC) – this scheme has supported 5 Fellows.

2.2 Study Objectives

The purpose of the study is to evaluate the contribution and level of impact the Enterprise Fellowship Programme has made to the economy since established in 1997. This includes quantitative measures: the programme impact on Employment; Gross Value Added (GVA); the impact ratio (GVA per £1 of funder spend); the cost of creating a job.

In addition, the qualitative evaluation objectives are: the rationale for intervention and the contribution it makes to the Scottish and UK Governments' strategies; how programme supports Fellows; where else they could have gone; what worked and what did not; barriers; further support requirements; longer term benefits; how unique is the model and how it compares to others.

This evaluation has reviewed each element of the Enterprise Fellowship programme, exploring how these create impact. In line with evaluation good practice, the analysis describes the inputs to the programme from all stakeholders, the activities and outputs facilitated by those resources, and the outcomes and impacts they drive. These are summarised in Figure 2.1 and explored in detail throughout this report. Where the qualitative study objectives do not fit with this analysis framework, we have incorporated them into the body of the report and drawn conclusions as appropriate.

Figure 2.1 – Enterprise Fellowship Programme Route to Impact

> Inputs	<ul style="list-style-type: none"> • Financial Investment • University hosting, support, facilities 	<ul style="list-style-type: none"> • RSE expertise & human capital
+ Activities	<ul style="list-style-type: none"> • Marketing and promotion • Training and mentoring 	<ul style="list-style-type: none"> • Business development funding • Network, peer support and alumni
< Outputs	<ul style="list-style-type: none"> • Validation of business idea, markets & IP • Team building and recruitment 	<ul style="list-style-type: none"> • Business skills and processes • Investor ready enterprises
= Outcomes	<ul style="list-style-type: none"> • Companies formed and trading • Investors engaged 	<ul style="list-style-type: none"> • Further enterprise activity • A community of entrepreneurs
O Impacts	<ul style="list-style-type: none"> • Gross Value Added • Employment 	<ul style="list-style-type: none"> • Research commercialised • Improved innovation policy measures

2.3 Report Structure

The remainder of this report provides evidence and findings to deliver the study objectives. It is structured as follows:

- Section 3 outlines the approach and method used in the study;
- Section 4 discusses the strategic position of the RSE Enterprise Fellowship programme in the UK and Scottish policy landscapes;
- Section 5 considers the rationale for investment, past and future;
- Section 6 discusses the governance of the programme;
- Section 7 describes the resources applied to the Enterprise Fellowship programme;
- Section 8 considers the activities of the programme;
- Section 9 assesses the outputs and outcomes of the programme and the attribution of impacts;
- Section 10 evaluates the performance of the programme and the attribution of impacts;
- Section 11 presents the findings of the economic analysis; and
- Section 12 presents conclusions and recommendations

There are two appendices:

- Appendix 1 lists study consultees; and
- Appendix 2 provides a set of tables recording the Enterprise Fellow alumni's top three strengths of the programme.

3.

Approach and Method

The study is rooted in the experiences of the Enterprise Fellows and other stakeholders.

3.1 Study Method

The foundations of this study lie in the experiences of the stakeholders – those with a direct interest in the Enterprise Fellowship programme:

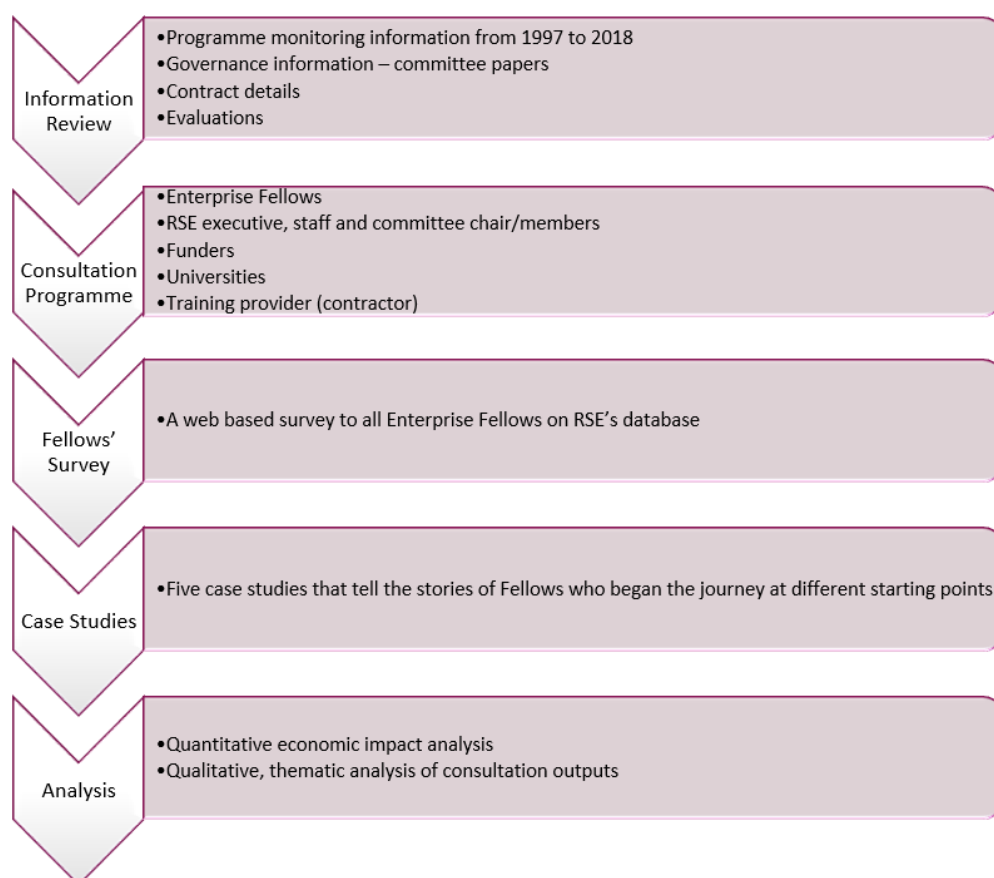
- the Enterprise Fellows themselves, generators of ideas, creators of businesses, drivers of science, whose experiences and reflections provided the evidence that forms the centrepiece of this study;
- the RSE, as the owner of the programme, providing governance and management oversight;
- universities, as hosts of each Enterprise Fellow, drivers of academic research with commercialisation potential and generators of intellectual property;
- Scottish Enterprise, Scotland's enterprise agency and long-term funder of the programme, with a remit to support Scottish businesses and economic growth;
- the research councils, BBSRC, STFC and NERC, that have provided funding for Enterprise Fellows to create businesses that translate the councils' funded research interests into impact; and
- the current training provider, Entrepreneur Business School Ltd, contracted to deliver the programme on RSE's behalf since 2011, as well as representatives of previous training providers.

Evidence was gathered through range of research approaches: information gathering and desk-based review; individual stakeholder interviews; facilitated group discussions; and a web-based survey.

The approach to quantitative economic analysis is set out step by step in Chapter 11. The qualitative research was subject to a framework approach to thematic analysis. The framework approach is a systematic structure to manage, analyse and identify themes, ensuring the qualitative outputs are analytical and evidenced. The thematic framework underpinning the qualitative analysis is matrix-based and involved the labelling, classification and organisation of data in relation to main themes, concepts and categories. These themes are explored and described throughout this report.

The method is summarised and described below.

Figure 3.1 – Study Method



3.2 Information Review

The Enterprise Fellowship programme dates back to 1997 so the information gathering process relied on the wealth of information collected and retained by the RSE over the years. Data sources include contracts, output and outcome data, governance information and an array of committee papers, thought pieces and other forms of reports, including previous external evaluations.

This was supported by the considerable corporate memory of RSE, with the Enterprise Manager, Anne Fraser, having been in place since the beginning, along with the RSE's Director of Finance, Kate Ellis and Chair of the Enterprise Fellowship Management Board, Edward Cunningham. Together, they provided a deep understanding and interpretation of the history and development of the programme, along with the changing context within which it has operated over the years.

3.3 Consultation Programme

To understand benefits delivered and challenges faced, as well as develop assumptions for the economic model, we undertook a series of consultations with each of the stakeholder groups listed in the bullets above: Enterprise Fellows; RSE managers and committee members (Fellows of the RSE); funders; universities; and training providers. 46 people participated in interviews in total, including 27 Enterprise Fellows, 5 university technology transfer representatives, 7 RSE executives or committee members, 6 funders and 1 training provider. A list of consultees is included at the appendix. Issues explored within the consultations included:

- the extent to which the programme delivers on the objectives of each of these groups;
- performance of the programme, including the selection process, interaction between the main partners, perceptions of value for money;
- reflections on the strengths of the programme and how to sustain and build on these in the longer term;
- challenges and issues in delivery, identifying barriers to development of companies;
- other sources of support and what would have happened in the absence of the EF programme, to feed into economic assumptions about the attribution of impact; and
- outcomes and benefits perceived by each group of consultees, including any unforeseen benefits created by the programme.

3.4 Fellows' Survey

To assess the quantifiable impacts of the Enterprise Fellowship programme, as well as some of the softer impacts, we directly gathered views of Fellows through a web-based survey. The objectives of the survey were to:

- enable us to quantify the benefits generated;
- help understand the extent to which the creation of each business can be attributed to the Enterprise Fellowship programme; and
- gather views on the effectiveness of the support provided through the Enterprise Fellowship programme and how this could be improved in the future.

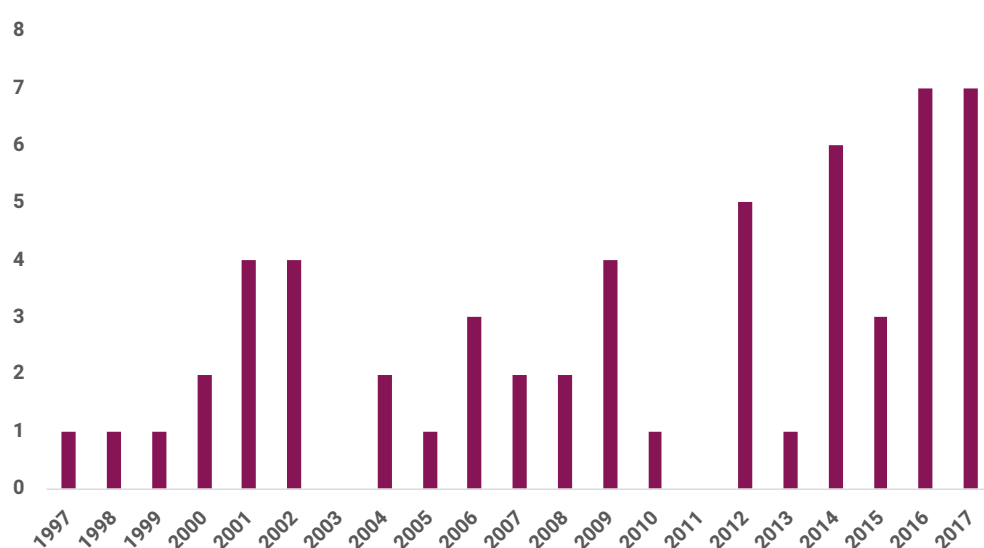
The initial invitation for participation was shared by RSE directly, with follow up reminders from BiGGAR Economics.

RSE held email addresses for 189 Fellows and invited all to participate in the web survey. There were 57 respondents to the web survey, a response rate of 30%. For a total population of 244 Enterprise Fellows, with a confidence level of 95%, this implies a margin of error of 10%.

3.4.1 Year of Participation

There was a good spread of participation by year, with a larger number of responses from Fellows that participated more recently, as shown below.

Figure 3.2 Year of Participation in EF Programme

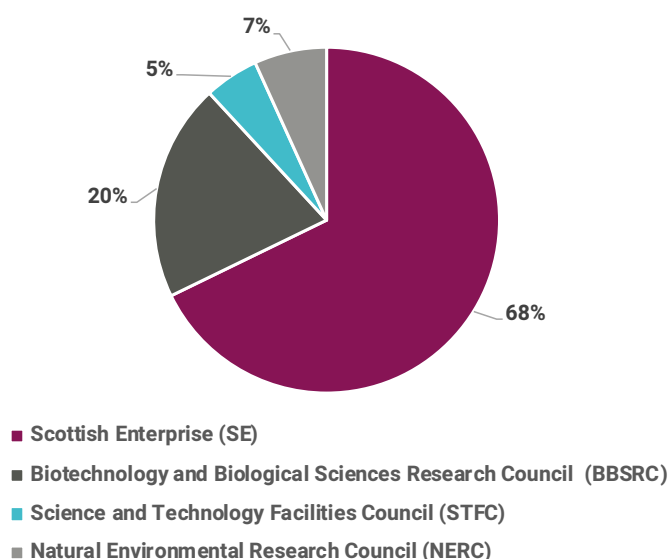


Source: Web Survey, N=57

3.4.2 Funding Organisation

Most of the survey participants (68%) received funding from Scottish Enterprise (SE), reflecting perfectly the overall population in which 166 of 244 Fellows are SE funded (68%). Two entrepreneurs were funded by two organisations, SE and the Biotechnology and Biological Sciences Research Council (BBSRC), and the other from BBSRC and Science and Technology Facilities Council (STFC). There were 12 other BBSRC funded Enterprise Fellows, with STFC and NERC having supported respectively three and four survey participants.

Figure 3.3 Funding Organisation



Source: Web Survey, N=57

3.5 Case Studies

Five case studies are presented in this report, based upon interviews with individuals who each have a different perspectives and story to tell. Case studies allow the special features of individual Enterprise Fellows to be identified, highlighting how the programme supports a diverse range of interests and academic backgrounds. Our sample of case studies include people funded by each of the funding organisations and from a range of universities across the UK, and reflecting a range of backgrounds before entering the Fellowship:

- a post-doctoral researcher, building an enterprise on his PhD technology;
- an Enterprise Fellow who took time out of an undergraduate degree to establish a business;
- a time served academic professional, who established a business based on his research interests later in his career;
- an Enterprise Fellow with a number of years' experience working in a commercial company as a scientist, before coming back into academia; and
- a post-graduate scientist with experience of working in a spin-out company already, who is now a successful, time-served, serial entrepreneur.

4.

Strategic Position

The RSE Enterprise Fellowship programme has an important strategic position within the UK and Scottish policy landscapes.

4.1 UK Industrial Strategy

The UK's Industrial Strategy aims to boost economic growth by focussing on five "foundations of productivity": ideas; people; infrastructure; business environment; and places. The RSE Enterprise Fellowship programme delivers the Industrial Strategy's aspirations on "*Ideas – to be the world's most innovative economy*".

"We need to do more to ensure our excellence in discovery translates into its application in industrial and commercial practices, and so into increased productivity. The government and the private sector need to invest more in research and development (R&D). We need to be better at turning exciting ideas into strong commercial products and services. And we must do more to grow innovation strengths in every part of the UK, as well as maintaining our position as a global leader in science and innovation."

UK Industrial Strategy: the foundations. <https://www.gov.uk/government/publications/industrial-strategy-the-foundations/industrial-strategy-the-5-foundations>

Government action to achieve this aspiration is through driving change with a huge increase public investment in R&D. The Government has established "Grand

Challenges” to establish partnerships between science and business throughout Britain¹. Key policies include:

- raising total research and development (R&D) investment to 2.4% of GDP by 2027;
- increasing the rate of R&D tax credit to 12%; and
- investing £725 million in new Industrial Strategy Challenge Fund programmes.

The Industrial Strategy Challenge Fund (ISCF) is delivered by UK Research and Innovation. It is part of government’s £4.7 billion investment in R&D over 4 years. Challenge areas shortlisted for future support include areas covered by Enterprise Fellows’ businesses: accelerating detection of disease, commercialising quantum, digital security by design, driving the electric revolution, future flight, industrial decarbonisation, manufacturing made smarter, sustainable plastic packaging and transforming foundation industries.

The Industrial Strategy presents important opportunities for the businesses established by Enterprise Fellows, with potential to support their continued growth and development and so increase their economic impact. For example, a current competition (until May 2019) has up to £2 million available to fund feasibility studies and collaborative R&D projects that develop electronics, sensors and photonics. A UK business SME must lead the project, working with other businesses, research, public sector or third sector organisations. Total project costs can be between £25,000 and £100,000. For collaborative research and development, a UK business of any size can lead a project, working with at least one SME and other businesses, research, public sector or third sector organisations. Total project costs can be between £50,000 and £250,000.

Many universities are acting on opportunities from ISCF, with staff members dedicated to pursuing opportunities. Enterprise Fellows’ businesses, by their very nature, are closely aligned to academic institutions, and RSE is in a strong position to promote and support alliances that might capture some of these Industrial Strategy opportunities, support business development and growth and drive economic impact. As well as delivering the RSE’s objectives, this would also be of interest to RSE’s wider stakeholders and the Enterprise Fellowship programme funders, who are looking for opportunities to capture Industrial Strategy investment. RSE could add additional value here.

¹ See the Industrial Strategy Challenge Fund at <https://www.gov.uk/government/collections/industrial-strategy-challenge-fund-joint-research-and-innovation>

4.2 UK Research and Innovation

UK Research and Innovation (UKRI) works in partnership with universities, research organisations, businesses, charities, and government to “create the best possible environment for research and innovation to flourish”.

Operating across the whole of the UK with a combined budget of more than £7 billion, UKRI was formed in 2018 and brings together the Arts and Humanities Research Council; Biotechnology and Biological Sciences Research Council; Engineering and Physical Sciences Research Council; Economic and Social Research Council; Innovate UK; Medical Research Council; Natural Environment Research Council; Research England; and Science and Technology Facilities Council.

We will be much more than a confederation of nine councils. We will catalyse by working across UKRI with researchers, innovators and entrepreneurs in academia, business, charities and government to develop and bring to fruition the most exciting ideas.

UKRI Strategic Prospectus, May 2018

Three of these bodies are current or past funders of the RSE Enterprise Fellowship programme: BBSRC, NERC and STFC. Innovate UK is a major funder of many of the Enterprise Fellows’ businesses and academic partners. Therefore, the strategic position of the RSE with regard to UKRI is of significant importance.

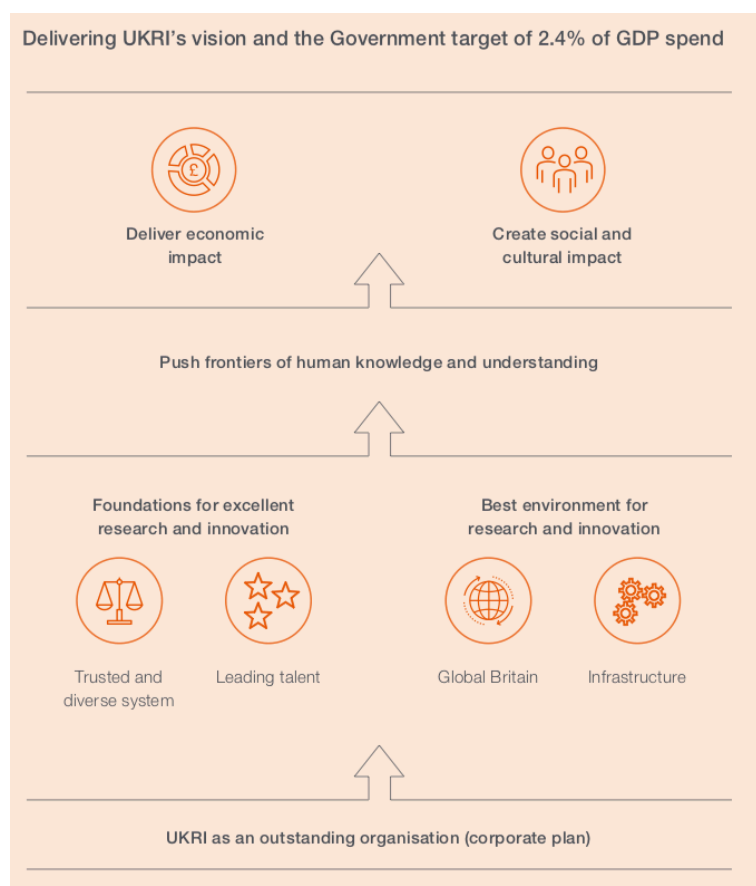
A key mission for UKRI is driving innovation and maximising the impact of its funded research. To achieve this, it works with universities and businesses, the higher education funding councils and government departments. UKRI “supports businesses to realise the potential of new technologies, develop ideas and make them a commercial success.”² The Industrial Strategy Challenge Fund (discussed above) is a major activity for UKRI, as is the grant making role of Innovate UK, and so RSE engagement with all of UKRI’s agencies should be carefully targeted.

The Industrial Strategy target to increase investment in R&D to 2.4% of GDP is ambitious, and UKRI recognises that reaching the target will require concerted effort by both Government and business. UKRI’s Strategic Prospectus sets out its vision

² Source: UKRI: <https://www.ukri.org/innovation/>

for meeting the target, summarised in the figure below. The impacts created by the Enterprise Fellowship scheme are closely aligned to those required to deliver the target, putting RSE in a good position to make a clear case for a strategic role in driving policy outcomes.

Figure 4.1: UKRI Impact



Source: UKRI Strategic Prospectus, May 2018

While the Industrial Strategy Challenge Fund is a major area of focus for UKRI and of interest to RSE's Enterprise Fellowship programme, the work of Innovate UK has equal relevance.

Many Enterprise Fellows' sponsor academic departments and spin-out companies are supported by Innovate UK. Innovate UK's 2017-18 annual report shows a total of £969.5 million of grants made in that year across all its portfolios in the UK. It may be of note to the Enterprise Fellowship programme's Scottish funders that the geographical split of Innovate UK funding shows 6% of grants were in Scotland (up from 4% the previous year)³. This is well below a population share of this grant (10%), and less that we would expect to see given the strength of the Scottish

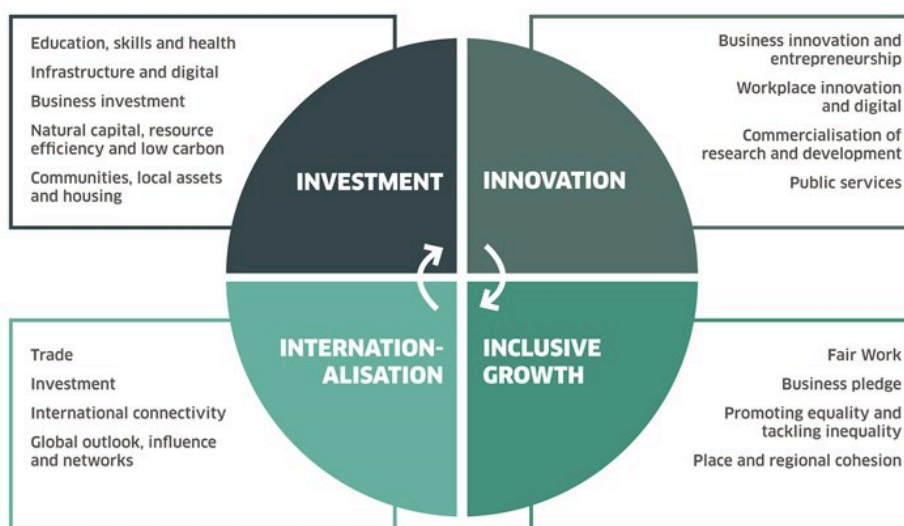
³ Source: UKRI Annual Report and Accounts, 2017-18

academic research base, which punches above its weight in attracting 14% of UKRI Research Council funding. Therefore, there is an opportunity here for RSE to position the Enterprise Fellowship programme to attract more Innovate UK funding into Scotland, adding value to the funding committed to it by other Scottish funding organisations, and supporting the aims of Scottish Government agencies.

4.3 Scottish Government

Innovation is an important element of the Scottish Government Economic Strategy, one of four priorities: along with investment, inclusive growth and internationalisation.

Figure 4.2: Scottish Government Economic Priorities



Source: Scottish Government Economic Strategy

The RSE Enterprise Fellowship programme also delivers on important ‘missions’ of the Enterprise and Skills Strategic Board. The Strategic Board was set up to improve the enterprise and skills system in Scotland and oversees the strategic direction of Scotland’s skills and enterprise agencies: Scottish Enterprise, Highlands and Islands Enterprise, the Scottish Funding Council, Skills Development Scotland, as well as the new South of Scotland Economic Partnership. It produced its strategic plan in October 2018.

The Enterprise and Skills Strategic Board aims to close the productivity gap between Scotland and others in the OECD, through four missions: business creation and growth; exporting; business models and workplace innovation; and future skills needs. RSE’s Enterprise Fellowship programme delivers across all of these areas. It is particularly relevant to the mission on promoting business creation and growth, which involves “helping to create a nation of dynamic and high achieving

entrepreneurs, with a focus on inclusivity (women, rural, minority ethnic groups and others) and providing a new structure of support for business scale up, as well as targeting global market opportunities, capitalising on Scotland's unique assets, and using innovation as a key driver of productivity growth.”

There are 14 actions listed in the plan and these include actions that the RSE can help to deliver effectively. For example, there is an action to support Scotland's businesses to lever maximum funds from the Industrial Strategy Challenge Fund (discussed above). An action that RSE should capitalise upon specifically sets out an increase in investment in college and university start-up/spin-out venture programmes and organisations focussed on driving entrepreneurship, innovation and research. There is a clear opportunity for RSE to lead this area for Scotland.

In pursuing the innovation agenda, the Scottish Government has established the Scotland CAN DO Innovation Forum, to help improve Scotland's innovation performance. Led by the Minister for Business, Innovation and Energy and the Minister for Further Education, Higher Education and Science, the Forum hosts membership from business, industry and academia, along with the Scottish Government and its enterprise agencies, to discuss, agree and take forward actions to improve Scotland's innovation performance. The Forum has produced an Innovation Action Plan for Scotland that aims to boost Scotland's innovation performance to match the levels of the best performing countries in the OECD. The RSE's Enterprise Fellowship programme delivers on one of the four actions included in the plan:

“Make best use of University research knowledge and talent to drive growth and equip Scotland's people with the tools and skills needed to innovate by:

- Implementing the university led Innovation Scotland Forum Action Plan to increase the conversion of academic research and knowledge into business growth, and optimise the University/Business interface;
- Working with universities to deliver leadership and entrepreneurial skills training for emerging entrepreneurs, innovators and businesses;
- Maximising knowledge exchange through the University Innovation Fund;
- Increasing business use of academic expertise and facilities through improved mapping and signposting; and
- Considering how best to take forward the recommendations of Professor Graeme Reid's independent review of Scotland's Innovation Centres.”

Source: Scotland CAN DO: an innovation action plan for Scotland, 2017

(<https://www.gov.scot/publications/scotland-innovation-action-plan-scotland/pages/1/>)

4.4 Conclusions and Opportunities

The Enterprise Fellowship programme is a long-established programme, but it delivers on current and pressing concerns of the UK and Scottish Governments and their agencies. There is an evidenced need to drive innovation across the UK, and in Scotland in particular, with a policy focus on translation of academic research and development of new innovative companies with high growth potential.

Within the context of the UK Industrial Strategy, there is a major opportunity for RSE to demonstrate on a national stage how it contributes to key drivers of productivity growth and how it delivers this important government strategy area across the UK. RSE is in a position to support investment from the Industrial Strategy into its alumni businesses.

There is a strong case to be made to UKRI and its component councils about the role the RSE Enterprise Fellowship programme plays in delivering their strategic objectives. As a major supporter and creator of academic start-up and spin-out companies, with a wide-ranging experience of supporting research commercialisation into new businesses, the RSE could play a role in shaping policy and practice in this area.

RSE already has relationships with three of the nine councils under UKRI, as funders of the programme. There is an opportunity for a wider piece of strategic positioning of the RSE and the Enterprise Fellowship programme with Innovate UK and with UKRI overall, raising the profile of the programme as a provider of a service, a test bed for approaches, and a pipeline of innovative companies that deliver Industrial Strategy outcomes. This in turn may lead to opportunities for growth and development of the programme itself.

In Scotland, the RSE Enterprise Fellowship programme delivers on key elements of the Economic Strategy. It is already delivering outputs against the Enterprise and Skills Strategic Board's action plan, and the Scotland CAN DO Innovation Forum, although this is unlikely to be being recognised within Scotland's policy circles. The Strategic Board's recommendation for action to increase investment in academic start-up and spin-out programmes and organisations that drive entrepreneurship, innovation and research presents a clear opportunity for RSE to show how it can lead this area for Scotland.

5. Rationale for Investment

Each funding body has its own objectives for investing in the Enterprise Fellowship programme. Together these reflect the overall case for investment.

The case for investment in the programme varies for each funder. Scottish Enterprise is concerned with driving economic growth and its rationale relies on identifying market failures that justify public sector intervention. The research councils support translation and commercialisation of their research investments and their rationale for investment is focussed on research impact. The current case for investment also includes the role of the programme in delivering national economic policy objectives.

5.1 Market Failure

The rationale for Scottish Enterprise investment in the Enterprise Fellowship programme since 1997 has relied on a market failure argument, with government intervention justified in order to adjust the market. When the Enterprise Fellowship programme was launched in 1997, the rationale for intervention was based on the market failures listed below. Our review of the strategic landscape in the UK set out at Section 4 and interviews and case studies with individual Fellows shows the extent to which these market failures remain.

5.1.1 Imperfect Information

When the programme was established two decades ago, Scotland's universities had a successful track record of developing technologies with market potential, but people working in academia lacked the knowledge necessary to develop a business plan, attract investment, market their product and run a business. This "imperfect information" underlies the market failure and justified public investment from Scottish Enterprise.

The interviews undertaken with Enterprise Fellows for this study demonstrate clearly that this market failure remains. Those who have participated in the programme most recently told us they did not have the knowledge and skills to establish a business. This is the case even for people who had some prior business training, or who had worked in commercial companies, or who were more seasoned professionals later in their academic careers. The case studies and consultation evidence presented throughout this report show that prior to establishing their

businesses, Enterprise Fellows did not feel equipped to spin out a company based on intellectual property, and/or from the academic research base. The 30 diverse individual Enterprise Fellows interviewed for our research were unanimous on this.

Indeed, the qualitative evidence presented throughout this report shows that creating a business from the academic research base takes a particular set of knowledge and skills, not available through mainstream business support services. More detail about these findings is presented later in this report and highlighted within the conclusions.

5.1.2 Positive Externality

A positive externality is a benefit that is enjoyed by a third party as a result of an economic transaction. Limited activity in commercialisation and low levels of company formation means there is a lack of economic and social benefits from new technology and products. As well as bringing personal benefits to the Enterprise Fellow, a technology-based start-up brings benefits to Scotland and the UK as a whole, through employment, tax contributions, spill-overs to other businesses and the contribution of export sales to the balance of payments.

Our discussions with funders and universities demonstrate that there remain considerable unexploited commercialisation opportunities within universities that would benefit from public support. Indeed, the need for support for this is recognised within the Scotland CAN DO framework reviewed above, along with the aspirations of the Strategic Board on Enterprise and Skills and the UK Industrial Strategy.

5.1.3 Asymmetric Information

Asymmetric information is an information failure where one party in an economic transaction has greater knowledge than the others. Enterprise Fellows, universities, funders and the Enterprise Fellowship programme trainers have all provided evidence for this study to show that, without the knowledge, skills and confidence generated through the Enterprise Fellowship, the market opportunities within the research base cannot be properly articulated/pitched to investors. Also, as academics, these entrepreneurs would have limited investor readiness and would lack the track record to justify support from investors.

5.2 Commercialising Research

Along with Scottish Enterprise, three research councils have invested in the Enterprise Fellowship programme: Biotechnology & Biological Sciences Research Council (BBSRC); Science & Technology Facilities Council (STFC) and Natural Environment Research Council (NERC). These all now sit under UK Research and Innovation (UKRI). A key mission for UKRI is driving innovation and maximising the

impact of its funded research - the UK and Scottish policy focus on translating academic research reflects the urgent need to drive innovation.

Commercialisation of research is a primary output of the Enterprise Fellowship programme and this fits closely with the strategic outcomes pursued by UKRI and its component bodies. In fact, the selection of Enterprise Fellows is highly competitive and one of the criteria for selection is having an appropriately positioned technology/idea for commercialisation that fits the research priorities of the funder. There are separate selection committees for each current funder, BBSRC and STFC, with experts in their respective research areas represented on each committee. This means that only the very best intellectual propositions are carried forward into the Fellowship programme, and only those that directly fit with the research councils' interests.

5.3 Conclusions on Rationale for Investment

All of the current funders of the Enterprise Fellowship programme are experiencing a period of significant change. There is an opportunity for RSE to ensure the role of the Enterprise Fellowship programme is clearly articulated and understood throughout these changing circumstances.

In Scotland, a major review of Scottish Enterprise is underway, in the wider context of the developing strategy of the Enterprise and Skills Strategic Board. There is uncertainty about where responsibility will lie for investment in innovation, commercialisation of academic research, business start-up and entrepreneurship, all of which the Enterprise Fellowship programme delivers. It is clear, however, that these will remain central tenets of Scottish Government policy in the pursuit of innovation outcomes. Together with the market failure arguments, this forms the central rationale for investment from Scottish Government and its enterprise agencies in whatever form they take after the review.

Nine organisations were brought together under the auspices of UKRI in 2018, and so the research council funders of the Enterprise Fellowship programme are also experiencing a period of uncertainty while the new arrangements settle in. The rationale for continued investment from UKRI remains, with the Enterprise Fellowship programme clearly delivering on its strategic priorities, while each of the technology areas allow a continuing focus the delivers for the individual research councils.

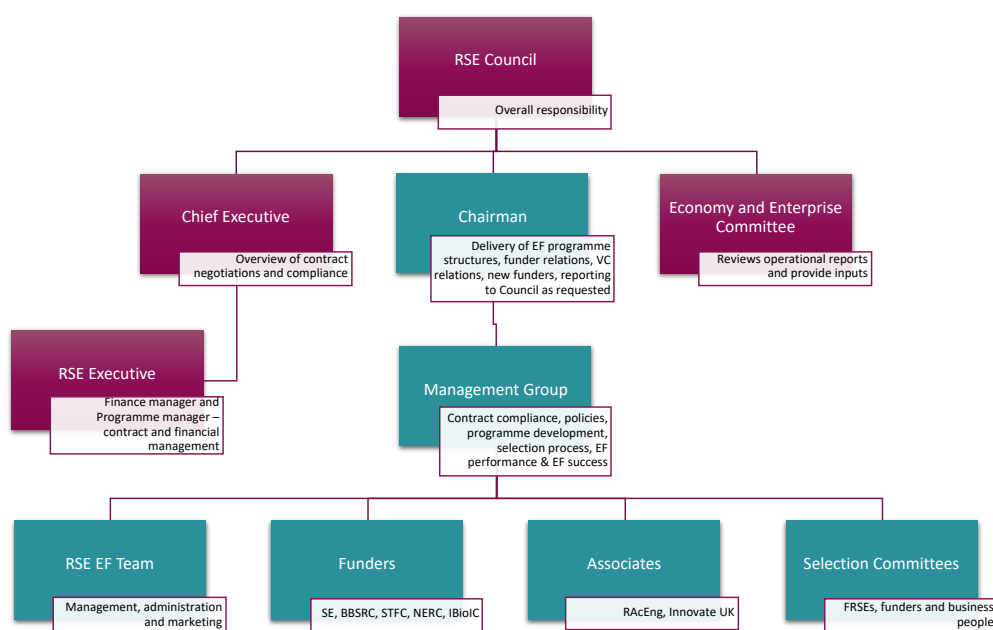
The rationale for investment from UKRI includes not just its research councils, but also its innovation agency, Innovate UK. The Enterprise Fellowship programme's strategic position with respect to Innovate UK is presented in the previous section. It is recommended that there is dialogue about an investment case with UKRI itself, given the past and current roles of research council funding and the clear opportunities to deliver Innovate UK objectives.

6. Governance

RSE's oversight of the Enterprise Fellowship programme sits within a collaborative Management Group including a range of stakeholders.

The Enterprise Fellowship programme belongs to the RSE with overall governance responsibility lying with the RSE Council. A Management Group sits under the Council, consisting the RSE executive team, funders and associates of the programme, also including chairs of the selection committees. The RSE's Economy and Enterprise Committee has a role to review operational reports and provide inputs to the Management Group, and the chair of this committee attends Management Group meetings.

Figure 6.1 – Enterprise Fellowship Programme Governance



Source: Management Group Chair

6.1 Enterprise Fellowship Management Group

The RSE's governance oversight of the programme sits with a Management Group, chaired by a Fellow of the RSE (FRSE), and supported by an RSE Executive Team. The group includes the funders of the programme and the training provider contractor, as well as selection committee chairs and associates. The Chair is

nominated by the RSE Council and has been in post since the programme started. The Management Group meets at least twice a year.

The purpose of the management group is set out in its terms of reference as: “to co-ordinate the management of the Enterprise Fellowship Scheme in a manner which facilitates the achievement of the objectives of the funders and of the aspirations of the Enterprise Fellows”. Its scope is to review and make recommendations to the managers of the Enterprise Fellowship programme and to the funders, including:

- the process for selecting Enterprise Fellows;
- provision of training by the training providers;
- performance of Enterprise Fellow and their welfare during the Fellowship;
- commercialisation outcomes achieved by Enterprise Fellow during and subsequent to their Fellowship;
- promotion of the programme in respect of its contribution to commercialisation and the economy;
- evaluation of the outcomes of the programme;
- development of a forward strategy with particular reference to its relevance and to innovative approaches towards commercialisation and enterprise leadership;
- the fulfilment of the objectives of the funders; and
- the remits of the Chairman and Enterprise Manager.

6.2 Selection Committees

The RSE forms a selection committee for each funded programme chaired by an FRSE Fellow (FRSE) and comprising other FRSEs, representatives from the funding organisations and business people recommended by them.

The committees comprise people with considerable relevant experience and skills for each area of interest of the funder, together with the addition of experts as may be required.

6.3 Economy and Enterprise Committee

The RSE Economy and Enterprise Committee (formerly the Business Innovation Forum) was convened in 2010 with the aim of stimulating processes to increase collaboration between business and academia in Scotland. The membership comprises a broad range of experience from Scotland’s business and academic communities.

The Committee remit was revised and updated in 2019, with a focus on enhancing the economy (defined to include wider economic and social well-being) through consideration of issues such as skills, fair work, business development, enterprise and innovation. It will⁴:

- inform and respond to key policy developments and initiatives relating to the economy (including fiscal policy) through, for example, consultation responses, policy advice and facilitating discussion and debate.
- be forward-thinking and proactive in identifying and addressing longer-term issues and policy challenges relating to the economy / economic well-being.
- liaise with the Education Committee and other RSE Committees in areas of mutual interest.
- advise the Executive and Council on the future direction and development of the RSE's Enterprise Fellowships programme and any future programmes in this area.
- advise the Executive and Council on effective engagement with the business community and be proactive with regard to that engagement.

This committee does not have governance oversight of the Enterprise Fellowship programme, although the chair sits on the Management Group to ensure effective liaison between the two groups.

6.4 Stakeholder perspectives

A wide range of stakeholders engaged for this study provided evidence about the effectiveness of governance arrangements for the Enterprise Fellowship programme and perspectives about the RSE that are relevant to the evaluation conclusions and recommendations. These include funders, universities, FRSEs, and others. There were a series of common themes within the qualitative evidence, as follows.

6.4.1 Management Committee

The Management Committee is considered by stakeholders to be the site of strategic and operational planning for the Enterprise Fellowship programme. However, the remit of the Economy and Enterprise Committee suggests that this is the forum for providing leadership to the executive team and Council about the Enterprise Fellowship programme. And it appears to consultees that the RSE Council itself does not have a formal process of governance oversight for the programme. This leads to a somewhat confusing picture about governance and leadership.

⁴ Source: RSE <https://www.rse.org.uk/policy/standing-committees/economy-enterprise/>

The majority of consultees consider the Management Group a good forum for meeting to ensure operational cohesion between the various bodies involved in planning, managing, funding and delivering the programme. However, most consider that strategic planning issues are best considered outside a group that contains RSE's clients (funders) and contractors (training provider). While these organisations have an interest in long term planning for the programme, these interests may be vested, and not necessarily the same as those of the RSE. The strategic future of the programme would be better considered under a governance structure whose sole interest is the pursuit of RSE's vision and goals with respect to the programme. The pursuit of funding and tendering for a contractor would follow this and be framed to deliver the overall vision.

6.4.2 Strategic and Operational Planning

Consultees pointed to the fact that there is no clear strategic or operational plan mapping out the future of the Enterprise Fellowship programme. In April 2016, the Management Committee tabled a set of strategic goals for the programme, which may be adopted during the first part of 2019, subject to discussion. However, concerns have been raised about the appropriateness of these and their fit with wider policy goals and what should be the overall strategic direction of the programme.

Scottish Enterprise has created its own business plan to support the delivery of its funding stream for Phase V of its investment. While it provides a useful set of targets and programme activities to be delivered under the Scottish Enterprise contract, this business plan serves the needs and interests of the funder, not the Enterprise Fellowship programme itself. It is a part of the contracting relationship.

Contracting relationships (between funders and RSE, and between RSE and the training provider/contractor) are managed separately:

- there are regular informal meetings between the RSE and contractor every two months;
- there are annual meetings between the Chair of the Management Committee and Enterprise Manager and the Chief Executive of each research council; and
- an ongoing relationship between Scottish Enterprise and the Enterprise Fellowship executive team on the delivery of Scottish Enterprise's contract and business plan, which have clear and specific target outputs and outcomes.

6.5 Conclusions on Governance

Evidence from stakeholders, both internal and external to RSE, would suggest a case for strengthening the governance arrangements for the Enterprise Fellowship

programme. There is no question about probity - the governance structures reflect the history of the programme's development and have been fit for purpose.

There is a changing strategic context for the programme, and rapidly changing structures and functions within its funding organisations. There is also an aspiration for the programme to grow. Both these issues mean the longer-term role of the Management Group may need to adapt and change to include additional funders and to preclude the role of funders and contractors in directing future strategy, because the strategic objectives of each of those bodies are also changing. The role of the Management Group could be considered within the remit of the Economy and Enterprise Committee, whose focus is on the outcomes targeted by the Enterprise Fellowship programme. It would make sense, therefore, to consider formal governance oversight of the programme sitting with the Economy and Enterprise Committee in the first instance, before the RSE Council.

It is good practice to ensure that governance is refreshed and kept up to date, and committee membership should reflect this. Many members of the Management Committee are long-standing participants, with several years of experience on this committee. While having committee members with a depth of knowledge is a real strength, this needs to be balanced with considerations about how to ensure fresh membership. The terms of reference for the Management Group could be revisited with RSE's representation in mind.

One of the strengths of this programme lies in the corporate knowledge at RSE, with a Management Committee Chair and Enterprise Manager who have years of experience of developing the programme to meet current needs, as well as holding very long term and constructive relationships with a wide range of stakeholders, crucial to the successful implementation of the programme. These individuals are held in the highest regard by RSE's stakeholders.

There is, however, an inherent risk in a significant amount of knowledge, including details about future strategy and operational plans, being held by individuals in an organisation. It is in RSE's interests to ensure that should these individuals leave RSE, the programme does not suffer the loss of knowledge that would go with them. To mitigate this risk, there are two recommendations. Firstly, RSE should consider a succession plan so that there are clear arrangements in place to ensure a smooth transition at the appropriate time. Secondly, RSE should develop a strategic plan that articulates the current and changing national context and positions the programme appropriately. This should guide the establishment of a business plan with clear and measurable actions for the future. This will allow the RSE to position its 'offer' to funders and investors appropriately and avoid allowing funders' objectives to drive programme strategy.

7. Resources

Resources applied to the Enterprise Fellowship programme include financial investment, human resources from RSE, funders and universities, and infrastructure from host universities.

7.1 Financial Investment

Investment in the Enterprise Fellowship programme is from Scottish Enterprise, funding since 1997, STFC, since 2000, and BBSRC, since 2005 and NERC, for one year, in 2017. The financial investment made by each funder is shown below. The total investment of £13.6 million has funded 244 Fellows at an average cost of £55,700 per fellow.

Table 7.1 – Financial Investment, 1997 – 2018

Funder	Value (£m)	No. of Fellows
Scottish Enterprise	9.0	166
BBSRC	3.0	47
STFC	1.3	26
NERC	0.4	5
Total	13.6	244

7.2 The RSE

The RSE hosts the management team for the programme and provides governance and financial oversight. There are now two full time equivalent staff:

- the Enterprise Manager, working half time (50%) on the Enterprise Fellowship programme;
- Enterprise Officer, recruited in September 2017, prior to which there was no additional support for the administration of the awards; and
- Enterprise and Awards Marketing Officer, a part time post that previously included all of the RSE's marketing needs, but now does not. The priority focus of this post is to market the Enterprise Fellowship programme.

Additional staff resources involved in delivering the Enterprise Fellowship programme include the finance team under the Finance Director, with responsibilities for contract negotiations and financial control, and the Director of Programmes and Chief Executive, with an overview of contract negotiations and compliance and overall executive responsibility for delivering the programme.

A key strength of RSE's hosting of this programme are the additional benefits brought by the Fellows of RSE (FRSE), who provide their time in a voluntary capacity. This has been cited by several Enterprise Fellows during this study's consultation programme as a strength of the programme. There is significant value in the presence of FRSEs at selection committees, during interim and final presentations and at alumni dinners. This value lies in the advice and support received by Fellows, the validation of ideas that make it through a tough and competitive selection process, and the ongoing support provided to alumni. The FRSE network provides a high level of skill, as well as giving Enterprise Fellows' ideas and businesses credibility, as can be seen within some of the case studies presented in this report.

Finally, the time commitment made by the Chair of the Management Group, Chairs of the Selection Committees and selection committee members should not be undervalued. These include senior academic figures, entrepreneurs and influential figures in business, all of whom contribute large amounts of time to key operational elements of the Enterprise Fellowship programme, at no financial cost.

The RSE has recently developed its own assessment of the financial (proxy) value of the time of FRSEs and committee operations. For the year 1 April 2018 to 31 March 2019 RSE Fellows gave around 1,000 hours of their time to the Enterprise Fellowship programme, at no charge as they are no employees. If we assume they would charge on average £500 per hour, this amounts to around £500,000 worth of in-kind support for that year. This is an important part of the resource inputs to this programme, adding value to the financial investment made by funders.

"It's an absolutely wonderful programme. It's unique, it's different, there is buy in from people through the RSE. Senior academics and successful business people. These are people motivated to see young smart people succeed - they are talented altruists. The value of their time must be huge – it would be impossible to buy."

John Nicholls, MSquared Lasers

7.3 Universities

Each Enterprise Fellow is hosted by a university, which acts as employer and charges the cost of employment back to RSE. The universities bring other resources to the table. These include facilities to house each Fellow, including laboratory facilities in some cases. Scottish Enterprise provides a contribution to the host university for each Enterprise Fellow for support services, with a £6,000 hosting fee per person, while the research councils do not.

Human resources applied by universities include support from academic departments and technology transfer offices, or equivalent. During the course of this study, we have spoken to universities and Enterprise Fellows that show it is common for universities involved in the programme to provide staff support for:

- information and promotion activities about the programme;
- administration and management functions related to being the employer of the Fellow;
- support with the Enterprise Fellowship programme application process;
- support for commercialisation from the technology transfer office.

Some of these activities, as well as facilities, are funded by research councils, others form part of the core activities of the institution. Scottish Enterprise Fellows are supported by a hosting fee provided to each institution of £6,000.

These inputs to the programme have not been quantified and form part of universities' overall contribution to innovation and commercialisation of research.

7.4 Funders

The RCUK and Scottish Enterprise funders have each contributed staff resource to the programme. They manage procurement processes, attend management group meetings in Edinburgh, provide panel members for selection committees and attend other meetings and events to support the programme as required. This contribution has not been costed as part of this study, as it is outwith the scope, but should be noted as a contribution by the funders.

University of Aberdeen

The University of Aberdeen has a strong track record of creating businesses, spinning out around two enterprises a year, many of which have grown to become important generators of economic growth. The University has hosted several Enterprise Fellows and has a long-standing relationship with the RSE. It supports applications from staff or students who come to the University's Research and Innovation team with a credible idea to develop an enterprise.

“Our objectives are to satisfy the demands of our staff and students - they are at the centre of this. Where we spin out companies it’s helpful for our staff to have time away from normal duties to work on their business full time. It’s a fantastic scheme not available anywhere else.”

Dr. Ann Lewendon, Commercialisation Manager, explains: “It’s not just the salary support. People speak very highly about the training and mentorship and building follow-on relationships with mentors after the Fellowship has finished.”

“The programme really trains someone to drive a business and so we have a degree of confidence when it’s an Enterprise Fellow taking forward one of our spin-outs.”

Commercialisation competes for attention in an academic career with research and teaching - because the Enterprise Fellowship belongs to the RSE, it is regarded as prestigious and with academic merit. This is an important selling point for potential academic entrepreneurs.

7.5 Conclusions on Resources

There has been a significant financial contribution to the Enterprise Fellowship programme since 1997. The total investment of £13.6 million has funded 244 Fellows at an average cost of £55,700 per fellow.

There is a significant and unquantified resource applied to the programme from the RSE, its Fellows (FRSEs) and university partners, all working to deliver their interests to commercialise research. RCUK and Scottish Enterprise funders contribute the time of their staff to the governance functions of management group and selection committees.

The administration and management of this programme is complex, including: maintaining relationships with multiple funders, each with different objectives; almost 40 individual universities, each with very different approaches to commercialisation; managing selection committees and programme presentations and other events; and managing a wide-ranging contract with the training provider. It is remarkable that a programme of this value, scope and scale has been delivered with fewer than two full time equivalent employees, with support from RSE's finance team and executive management.

Considerable additional value is brought by the Management Committee Chair, who actively participates in the management and delivery of key elements of the programme, including maintaining funder relationships, and developing and planning the future of the programme. In the context of the need for a succession strategy to plan for the longer term, RSE should give consideration to opportunities to develop the executive team to include an employed resource to develop and maintain the strategic position of the programme, liaise with funders, develop new funding opportunities and work with policy makers to help shape the innovation policy environment.



Neil Gibbs – Curapel

An award-winning skin healthcare company. <http://www.curapel.com/>

Neil took part in the Enterprise Fellowship from 2012-13, funded by BBSRC. He established Curapel in 2014 as a skin healthcare company that spun-out of the University of Manchester, is registered in Scotland and is based in Cardiff. Curapel is developing innovative products based on naturally-occurring ingredients under its brand name, *curapella*. Curapel launched *pellamex*, a food supplement for eczema-prone skin, in 2017 and currently has two further products undergoing development and dermatological testing. Investment (£1.85 million) has been secured from BBSRC, Innovate UK, Lancaster Capital and the Development Bank of Wales. Curapel currently markets its products through its web-based sales platform, <https://curapella.com/> and has recently signed a multi-million pound deal to expand into Europe. Before the Enterprise Fellowship, Neil was a time served academic researcher, a dermatology specialist with over 60 scientific papers to his name and an editor of well-known scientific journals. He was a successful professional scientist, with many relevant transferable skills. But Neil explains that these skills don't equip a scientist to run a business.

“Academia is a completely different ball game to running a business and although there is increasing encouragement to demonstrate an impact in the REF, the majority of academics are still pretty hazy about the skills required to translate their research into products that benefit consumers and the economy.”

Neil explains that as an academic research scientist, it was hard to find time to develop the business skills needed to create a successful spin-out. This is what the Enterprise Fellowship provided - without the Fellowship, some of the technology may have reached the market, but the added value that Curapel has been able to create in its products would not have happened.

“We got our initial investment because of the Fellowship, we set up a company because of the Fellowship, we made crucial contacts through the Fellowship, and it gave us the ability and confidence to talk to those contacts in a business-like way.”

The mentoring included in the Fellowship was comprehensive and contained everything Neil needed to launch and develop an investible company. Six years on, Neil finds the Enterprise Fellowship continues to have an impact. It provided skills and confidence that are the foundations upon which the business has been built, as well as continuing to provide a network of business contacts and investors.



8.

Activity

The activities delivered by the Enterprise Fellowship programme have developed over many years, to produce a time-served initiative.

Each Enterprise Fellowship provides a one-year package of support, provided to around 15 Enterprise Fellows per year. The current incarnation of the programme includes:

- marketing and promotion of the Enterprise Fellowship programme to universities and individuals;
- a year's salary with on-costs, through the academic host institution;
- business training;
- business support funding and travel funds attend the training;
- access to mentors, business advisors and investors; and
- membership of the RSE Entrepreneurs' Club.

8.1 Marketing and Promotion

A previous (2013) evaluation of the Enterprise Fellowship programme identified a need to increase marketing activity⁵. Responding to this, RSE took over responsibility for marketing, appointing a new part time marketing officer. More recent marketing activities include:

- a video of successful past Fellows on the RSE website;
- application preparation workshops;
- a "Meet the Entrepreneur" blog;
- updated power-point presentation materials;
- production of case studies; and
- broadening of the coverage of marketing activities through roadshows and working in partnerships with others.

Scottish Enterprise promotes the programme in Scotland to its innovation stakeholders. The research councils promote the programme across the UK to their

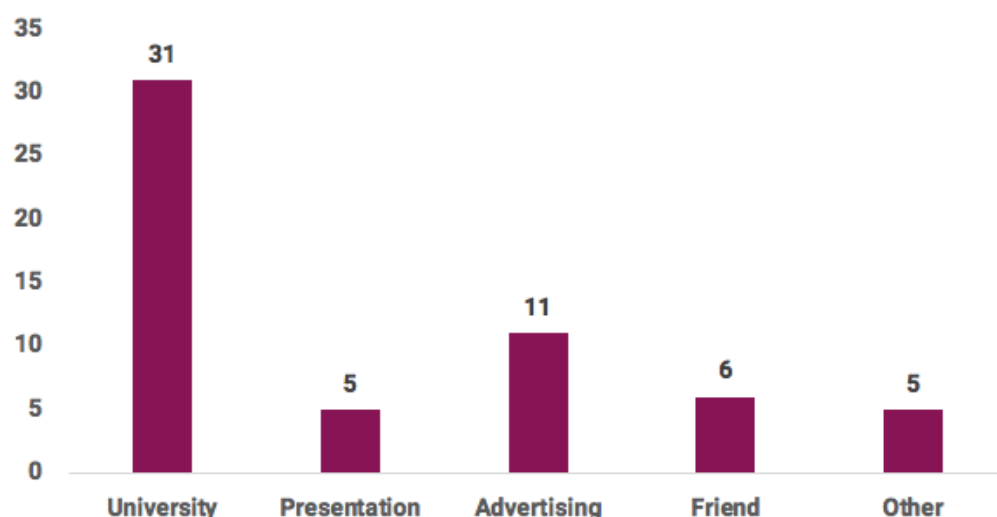
⁵ Frontline, for Scottish Enterprise (2013), Evaluation of Enterprise Fellowships

pool of funded university departments and individuals, in particular those with previous research council funding whose projects have potential for commercialisation.

This has shown positive results with applications increasing from 15 in 2013 to 47 in 2017. This means that the selection process has become increasingly competitive.

The largest proportion of survey respondents (54%, 31 people) heard about the programme through their University. 16 were introduced to the programme as a result of other promotion activities - presentations or advertising. The remaining 11 participants were referred to the programme either by friends or in some other way.

Figure 8.1 How did you hear about the EF programme?



Source: Web Survey, N=57

During the consultation programme, University technology transfer officers explained how they raise the opportunity of the Enterprise Fellowship programme with relevant academics where they think there would be a good match, or where they feel they have a potential start-up or spin-out that would benefit from the commercial leadership inspired by an Enterprise Fellow. It is clear, therefore, that the marketing focus on university technology transfer offices remains valid.

8.2 Application and Selection Process

There is a three-stage selection process, with responsibility for selection lying with the RSE, and including co-ordination with each of the funders.

The first stage includes a paper application form. This has evolved over the years, and feedback during consultations shows a range of views about this initial engagement. The form includes a requirement to review applicant details and

details of the business proposition. There is a section for the host institution to complete, that confirms support for the Enterprise Fellow, along with a statement about intellectual property.

Several consultees, including universities and Fellows, commented on the complexity of the form. Some university technology transfer offices assist their prospective Fellow to fill it in. In fact, one university consultee remarked on the application form: “It’s a mountain to climb and we give vigorous advice about how to make each application better.”

An alternative, minority, view is that this complex form provides a good initial screening and an opportunity for the Fellow to properly think through the pitch being made.

8.2.1 Stage 1 – Initial Review

The Selection process starts with an eligibility review which includes IP status, Visa requirements, and host institution agreement. This review is carried out by the RSE and confirmation of eligibility sought from BBSRC and STFC due to the requirement of their applicants being linked to previously funded research from these research councils.

The applications are circulated to the relevant Selection Committee members, who provide scores and comments on suitability for the award. These are then submitted to the short-listing teams.

8.2.2 Stage 2 - Short Listing

This stage is conducted by the RSE in partnership with each funder and the short-listing teams are taken from the larger selection committees. The shortlisting teams are chaired by the RSE Executive or an FRSE. This stage does not involve an interview with the applicant. Instead, the teams base their recommendations on the written applications together with the results of the initial review. Their purpose is to ensure that only those applicants who will be able to take up their fellowship if they are successful are put forward for interview by the Selection Committees.

8.2.3 Stage 3 – Interviews by the Selection Committees

The composition of each Committee is arranged to ensure that there is proper coverage of the range of subject matter which is likely to arise. The chair of each Committee is an FRSE as agreed with each funder. A representative from the training provider and relevant funder will also attend.

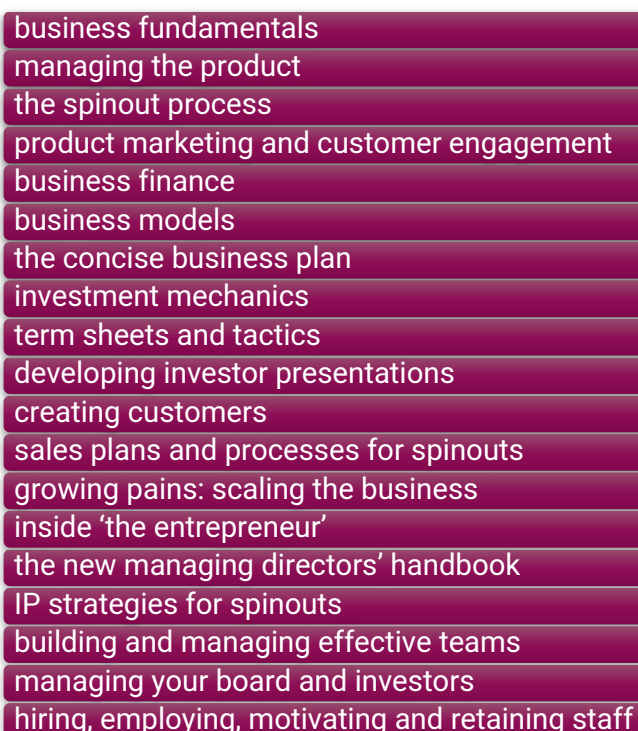
8.3 Training Provision

The contracts between the RSE and the funders provide for a coordinated approach for the procurement of a Training Provider. The selection of the Provider is on a competitive basis, with the latest contractor, Entrepreneur Business School Ltd. (EBS) having been in place since 2012. The training is normally contracted for 3 years, or 6 rounds of Fellowships. The current contract began on 1 September 2017 and runs to 31 August 2020. Performance is reviewed on an on-going basis.

As the programme has evolved over 22 years, RSE has moved away from academic-based training to contract with companies that have the experience of starting up and spinning out businesses. During the consultation programme we have noted whether there are different outcomes associated with these different approaches, and this analysis is provided in Section 9, which follows, reviewing outcomes and outputs.

The current model of provision involves monthly business training sessions lasting between one and four days, over the course of a year in which the Enterprise Fellow is employed by the university to develop the business. Topics covered are listed in the figure below. It should be noted that feedback from the Enterprise Fellows that participated since 2012 demonstrate a high level of bespoke provision tailored to each individual, which cannot be easily captured through a contract. This is discussed in more detail in Section 10, Performance and Attribution.

Figure 8.2 – Topics Covered by Training (2018)



- business fundamentals
- managing the product
- the spinout process
- product marketing and customer engagement
- business finance
- business models
- the concise business plan
- investment mechanics
- term sheets and tactics
- developing investor presentations
- creating customers
- sales plans and processes for spinouts
- growing pains: scaling the business
- inside 'the entrepreneur'
- the new managing directors' handbook
- IP strategies for spinouts
- building and managing effective teams
- managing your board and investors
- hiring, employing, motivating and retaining staff

8.4 Mentoring

Mentors are matched with the key features of the business proposal involved and sourced from a pool of people identified by the RSE and the training provider. The responsibility for mentoring lies with the business Training Provider and the matching process is conducted by it. Each Enterprise Fellow has at least one core mentor assigned for the period of the fellowship year, and s/he is encouraged to identify others as the business progresses.

8.5 Business Support and Travel Funding

Each Enterprise Fellow receives up to £10,000 in business support funds. The first £5,000 is paid in arrears through an expense claim process. The second £5,000 is provided based on an Additional Support Funding report being approved by the funder.

Scottish Enterprise and STFC provide an additional £3,000 in travel and subsistence support to attend the business training. This is not available to BBSRC Enterprise Fellows, although BBSRC does consider requests for additional funding on a case by case basis. Feedback from Enterprise Fellows during the consultation programme has raised this as an issue of concern for some. Enterprise Fellows not funded by

Scottish Enterprise and based out with the central belt of Scotland, including Aberdeen and at English Universities, express concerns about being “disadvantaged”. Several of these have told us that they have had to use the business support funds to travel to the training sessions. The further disadvantage they raise is their need to pay for overnight accommodation for a one-day course, so in fact their travel and subsistence costs are higher again. This eats into the business support funding, which they would otherwise use to visit and engage with customers and investors.

8.6 Follow on Support

Since 2012, the training provider, EBS, has signposted follow on support for Enterprise Fellows wherever possible. In particular, this includes the Scottish Enterprise SMART Award. Scottish Enterprise tracking data shows that 31% of SE funded Enterprise Fellows go on to receive a SMART award. Other additional relevant support is suggested where relevant to the individual, including other Scottish Enterprise products, Innovate UK’s ICURE, Converge Challenge, EDGE and others.

8.7 Peer Network and Alumni

Fellows have a lifetime membership of the RSE Entrepreneurs’ Club, which consists of alumni of the Enterprise Fellowship programme. This is facilitated through the programme’s website. The RSE Entrepreneurs’ Club holds two dinners each year in various parts of the UK where clusters of Enterprise Fellows are to be found. In keeping with the terms of its contract with Scottish Enterprise, the RSE is currently in discussion with the Royal Academy of Engineering about running joint activities involving their respective Enterprise Fellows.



James McIlroy - EnteroBiotix

Improving healthcare through unlocking the therapeutic potential of the microbiome. <https://enterobiotix.com/>

James took part in the Enterprise Fellowship in 2016-17, funded by Scottish Enterprise and hosted by the University of Aberdeen. Now a qualified medical doctor, he took part as a medical student because he had a highly ambitious vision and as someone with no prior business experience he knew that he “needed a huge amount of high quality help and support to succeed”. Further support has been received from Converge Challenge, Scottish Enterprise, Aberdeen University and Scottish EDGE.

EnteroBiotix has launched in 2017, has attracted over 2.5 million of investment and already employs 12 people, 90% of whom are based in Scotland. An exporting business, 75% of sales are outside the UK. The benefits created by EnteroBiotix include economic impacts from employment and GVA, as well as innovation in medicine with its market entry product offering being used in Scottish Hospitals. In addition, the Company’s product pipeline has potential world-wide impact on therapeutic approaches to a range of diseases, ranging from the acute infection caused by the bacterium *C.difficile*, to complicated chronic conditions like obesity, liver disease and inflammatory bowel disease.

How are these benefits related to the RSE Enterprise Fellowship?

“I don't know where I'd be with the business and with my career. The Fellowship allowed me to challenge the status quo and pursue an alternative path as a doctor and entrepreneur”

“Equipping people with skills and expertise and the intangible things they need to start a business are really important. It really did allow me to pivot from being a medic to a highly entrepreneurial person.

“It gave me knowledge and skills to critically evaluate new business concepts and gave me the tools you need to take a concept and turn it into something that's tangible and valuable.

“It's really allowed me to refine and focus in on what I really enjoy and make that transition from someone with an idea to someone with financial backing, a toolkit and the skillset required to deliver on a plan.

“On the back of that we raised our first round of investment and that really allowed me to kick things off and accelerate.”

“One of the best years of my life for sure, I loved everything about it, loved the cohort, loved the training, loved the variety - it was really excellent.”

9.

Outputs and Outcomes

Data collected from the Fellows' survey and interviews with a range of individuals has provided evidence about outputs and outcomes of the programme.

RSE's objective is that each Enterprise Fellow should be in the position to launch their business proposal as a new enterprise by the completion of the Enterprise Fellowship year. The RSE does not have a specific, measurable set of target outputs and outcomes for the project, however Scottish Enterprise has created a logic model outlining the outcomes anticipated for its investment. Performance against these is outlined in the sections that follow.

Figure 9.1 – Target Outputs and Outcomes, Scottish Enterprise



Source: Scottish Enterprise Logic Model

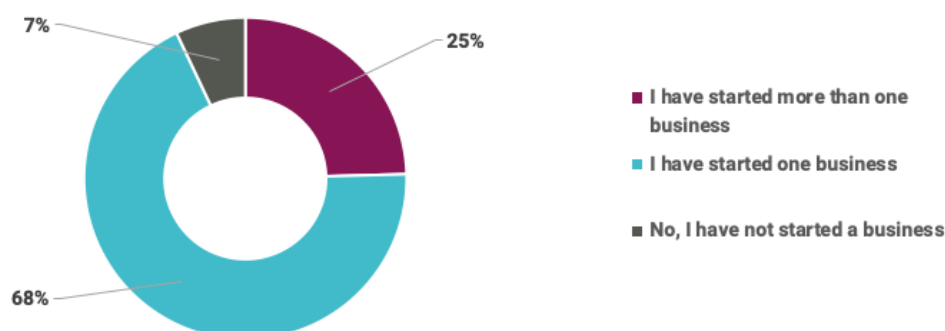
9.1 Business Start Up and Survival

Forming a company is a key outcome for Scottish Enterprise funding. Enterprise Fellows who have established businesses provided information about these through the web survey, group discussions and individual consultations. These include serial entrepreneurs.

9.1.1 Fellows that Started a Business

Most survey participants started a business (68%) or started more than one business (25%). Only 7% of survey participants did not start a business. Of these four people, two have remained as academic researchers, one is employed elsewhere and one is on a career break.

Figure 9.2 Have you started a business since taking part in the EF programme?



Source: Web Survey, N=57

About four-fifths (81%) of those who reported the current status of their business, said that it was either still operational (70%) or had been sold (11%). A further 14% of businesses started are no longer operating (n=37).

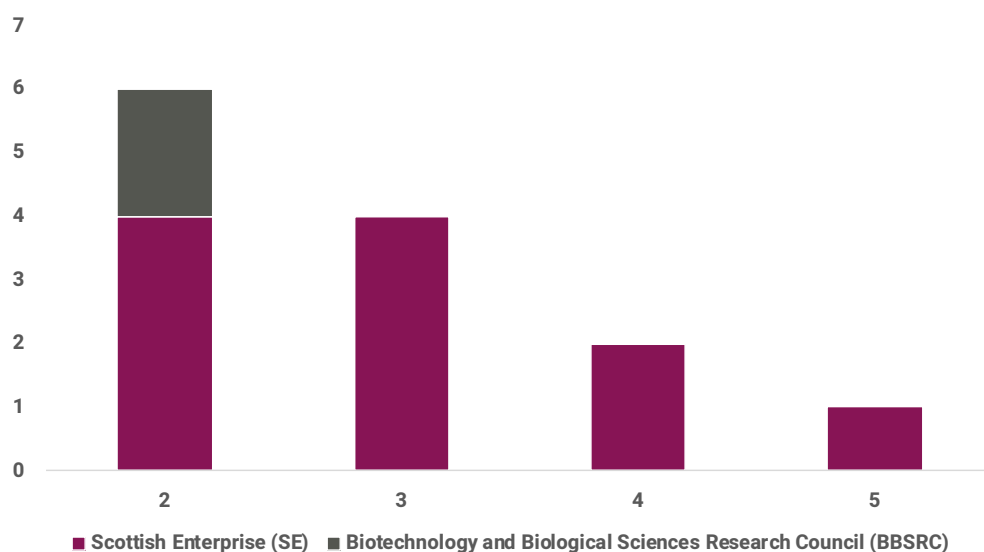
“The RSE Fellowship was critical in all areas of starting a technology company; understanding how to raise grants, raise investment, training to recognise value of IP, importance of building a board and senior management team, what research to conduct to understand the competitor landscape. The list could go on!”

Source: Survey respondent

9.1.2 Serial Entrepreneurs

Out of the 57 survey respondents, 13 were serial entrepreneurs and almost half of these created two businesses. Most of the serial entrepreneurs (85%) were funded by SE and the remaining 15% received funding from BBSRC. SE funded 68% of the total survey sample, suggesting a higher tendency for SE Fellows to be serial entrepreneurs although caution is required due to the small sample of research council Fellows.

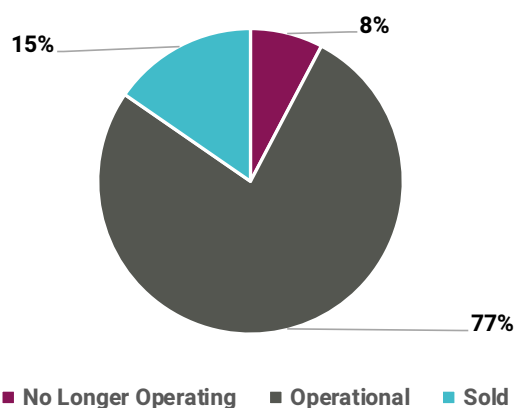
Figure 9.3 Businesses Created by Serial Entrepreneurs by Funding Institution



Source: Web Survey, N=13

Of the second businesses created by respondents 10 (77%) are still operational. One business (8%) is no longer operating, and two businesses were sold (15%).

Figure 9.4 Status of Second Business



Source: Web Survey, N=13

9.2 Influence of the Programme on Business Starts

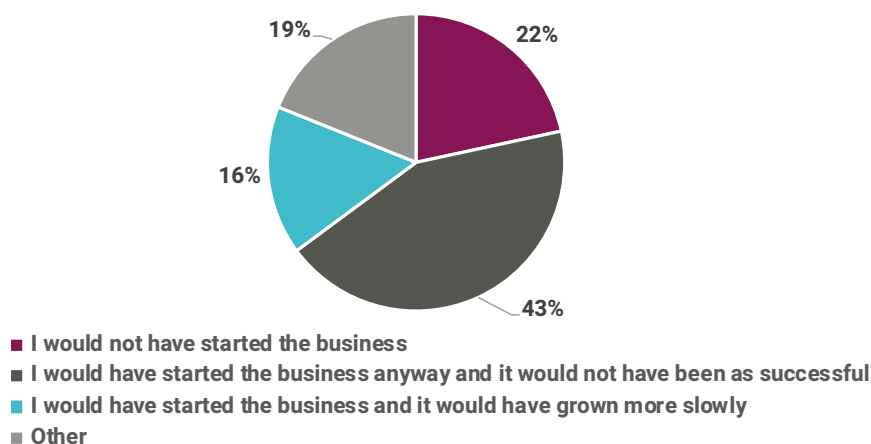
When asked what would have happened without participation in the Enterprise Fellowship programme, survey participants suggested it was instrumental to the creation of their business, its growth and success.

“It was simply the start of everything. Gave me a fabulous business training within a supportive peer group, gave me time to think and plan away from other pressures of work, gave me credibility that opened doors to commercial opportunities and investment. It gave me the chance to be a successful entrepreneur.”

Source: Survey respondent

For 22% of respondents, creating their business would not have been possible without the programme. Almost two thirds of survey participants suggested that participation in the programme made it possible for their businesses to be more successful or achieve relatively higher growth. 19% of respondents report “other” things would have happened. Of these, two people reported they were “not sure” what would have happened, one would have gone into employment, two would have made no progress, and one had already started the company and reports it would have “closed or remained a side project”.

Figure 9.5 What would have happened if you had not taken part in the EF programme?



Source: Web Survey, N= 37

It is important for defining the economic impact assumptions (Section 11) that we understand the extent to which the programme is responsible for the development of the Fellows' businesses. The consultation programme explored this issue in more depth and each of the five case studies in this report consider this question specifically. These have informed our economic impact assumptions (Section 11).

Enterprise Fellows who reported in the survey that they "would not have started the business", provided more information during interviews. The majority of these would have remained in academia or left to enter the commercial sector as an employee. Some would have left the UK altogether to pursue other opportunities. Even when challenged about the availability of other business training available in the market, these Enterprise Fellows are convinced they would not have started a new business. We were satisfied during the interview process that these businesses would not, indeed, have been created without the Enterprise Fellowship.

"It's 100% responsible. The Enterprise Fellowship gave me the opportunity to do what I'm doing just now. Without it I would have been an employee, there would have been no business."

David Heath, Cutitronics Ltd.

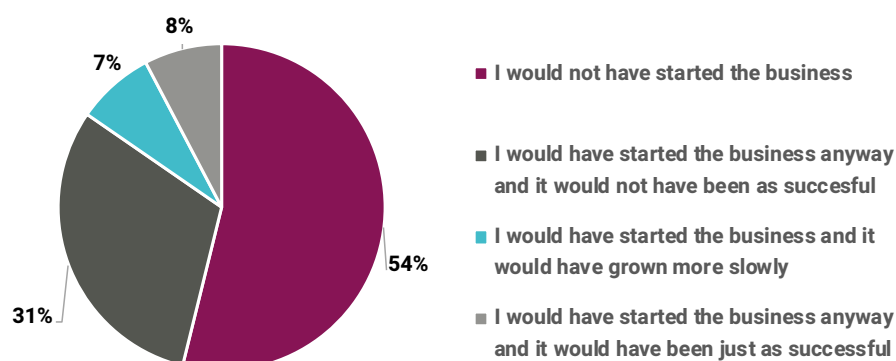
Enterprise Fellows who told us they would have started the business, but it would not have been as successful or would have grown more slowly, provided more detail about these responses during consultations and group discussions. The reasons

given for the slower growth they would have experienced without the Fellowship fell into a small number of themes:

- they would have lacked knowledge and skills specific to spinning out a company from the academic base, this was not available elsewhere;
- they would have had more limited access to networks, especially to people that subsequently became board members, advisors and colleagues;
- they would not have been as able to establish fit for purpose business processes;
- they would not have had access to investors; and
- they would have lacked the credibility provided by association with the RSE programme, and in all respects been less investible.

The influence of the Enterprise Fellowship scheme flows into subsequent businesses started by Enterprise Fellows. According to over half of the serial entrepreneurs surveyed, it would not have been possible to start a second business without participation in the Enterprise Fellowship programme. A further 38% report the programme had some importance either in the growth or success of the second business.

Figure 9.6 Would the creation of a second business have been possible without EF?



Source: Web Survey, N=13

During interviews, serial entrepreneurs talked about the ongoing role of the Enterprise Fellowship in establishing each of their businesses, with an influence lasting the whole of their career. This can also be seen in our case studies.

It was absolutely instrumental, it's the touch fuse that we lit to get to where we are today. It's hard to put into words how significant it is.

John Harrison, SAS Environmental

9.3 Alternative Provision

The interview programme provided evidence about where else the Enterprise Fellows could have gone for support, in the absence of this programme. This was one of the qualitative objectives of the study.

22% of respondents to the web survey said they would not have started the business without the Enterprise Fellowship (Figure 9.6 above). During interview, none of these Enterprise Fellows were able to suggest where they might have found support to help develop their business idea and skills, even when prompted with suggestions of providers such as business gateway. All of this group said they would not have sought support to develop a commercial venture.

Almost 60% of survey respondents said they would have started their business, but it would have grown more slowly or not have been as successful (Figure 9.5). During interview, this group of Enterprise Fellows provided information about the awareness and attractiveness of other support available at the time (prior to start up):

- academic researchers that reported a good relationship with their institution's technology transfer office would have sought support and advice there;
- the majority of those interviewed did not know what other (non-university) support was available at that time to an academic researcher or where they might access this. While they think they might have been able to establish a business, there was little awareness of how they would have developed the skills or knowledge to do that;
- one Enterprise Fellow had already received some business training from their university employer, although reported this did not equip them to start up in the same way as the Enterprise Fellowship programme had;
- two Enterprise Fellows would have sought employment in a small commercial firm in order to "learn the ropes" and one had already done this prior to starting their Fellowship, with the intention of developing business skills by doing the job;
- none of those interviewed had been aware of support from an enterprise agency prior to starting the Fellowship, although all of those interviewed became aware of the additional support available during the Fellowship (reported in section 9.7, below).

This demonstrable lack of awareness of alternative support is not simply about a lack of profile of other programmes within Universities. Our discussions with Enterprise Fellows demonstrated that for those who successfully set up academic start-ups and spin-outs, including historical and highly successful companies, there was nothing else available that would have met their particular needs. Some of

these Enterprise Fellow alumni are now well-known entrepreneurs, with an excellent grasp of the UK innovation landscape, and they report that the unique package of support provided by the Enterprise Fellowship is not available elsewhere.

The unique aspect of the Enterprise Fellowship programme, reported by the alumni are:

- the time out and support created by one year of salary to allow an individual to focus entirely on establishing a business; combined with
- an integrated package of training, advice, networking, mentoring, peer support, target setting and management that is tailored specifically to each individual business venture.

Other start up support may have some of these elements, but it is the combination of all of these into an individualised package that makes the Enterprise Fellowship different and allows it to cater specifically to employed academic researchers, who would otherwise not develop a commercial venture. For example, university-based accelerator programmes such as SETsquared's Business Acceleration⁶ provide bespoke packages of support for academic commercialisation, without the salaried focussed year. Innovate UK's ICURe⁷ offers some elements of support, but again not packaged (note that RSE is seeking opportunities to work collaboratively with this and other programmes). Other support, such as Elevator and its Accelerator Programmes are unlikely to attract an employed academic researcher because they are more generic and less focussed on the challenges faced by STEM spin-out/start-up companies.

The Enterprise Fellowship programme undoubtedly creates entrepreneurs, although there other publicly funded interventions that do this across the wider economy. This programme, however, helps people to start IP and technology-based companies directly from the academic science and engineering research base, as well as supporting their individual development as entrepreneurs. Every business person interviewed for this study said the RSE Enterprise Fellowship programme is unique. (Two interviewees noted that its model has been followed more recently by the Royal Academy of Engineering.)

9.4 Investment

Some Enterprise Fellows responding the web survey provided information about investment. There has been investment of £86.9 million in survey respondents' companies. Of this, £64.2 million was sourced from private investors (73.9%) and a

⁶ See <https://www.setsquared.co.uk/programme/business-acceleration/>

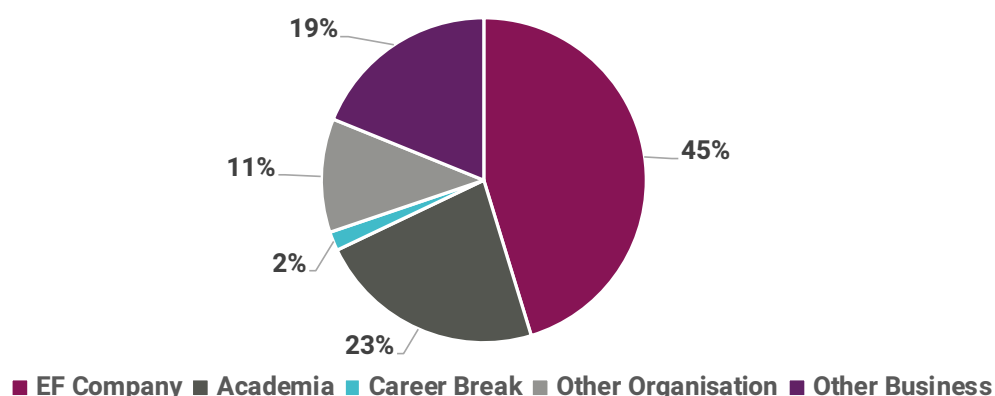
⁷ Innovation to Commercialisation of University Research (ICURe), evaluation of pilot: <https://www.gov.uk/government/publications/icure-evaluation-of-pilot-programme>

further £22.7 million was sourced from public funds (26.1%). These investment figures should be seen as an underestimation and are indicative only, because a number of people chose not to share this information.

9.5 Career Influence

Out of the 53 survey participants that provided information about their current role, 45% still work for the company they established as part of the Enterprise Fellowship, 23% are working in academia, and 30% work for another business or organisation. These latter respondents include those who are employed by the acquiring company, are retired, or studying for another PhD.

Figure 9.7 Current Role



Source: Web Survey, N=53

Of 47 Enterprise Fellows who gave their opinion about how important the Fellowship was in securing their current position, 75% said it had been either extremely important or very important. This reflects the important role the Fellowship has on the career progression of the individual participants.

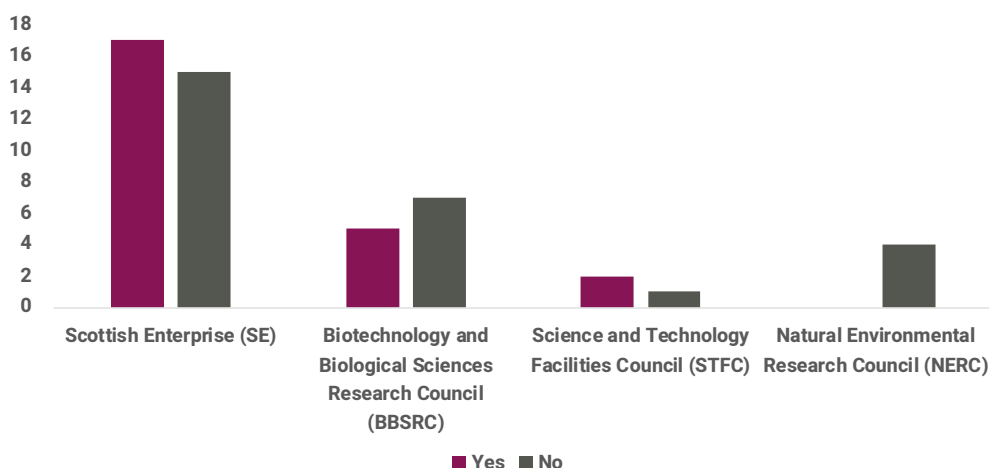
“The Enterprise Fellowship was the catalyst to my whole career which has now run internationally for almost 20 years.”

Source: Survey respondent, CEO of Enterprise Fellowship company

9.6 Intellectual Property

Almost half (23) of survey respondents that started a business created intellectual property during the Fellowship (N=49), and 71% of people that created IP were funded by SE. The remainder were funded by BBSRC (21%) or STFC (8%).

Figure 9.8 IP Creation by funding institution



Source: Web Survey, N=51

The sample has relatively more participants funded by SE, so to provide a measure of relative success in IP creation by the participant's funding organisation, the ratio of IP creation per participant funded was taken. The table shows that over half of participants funded by SE created IP during their Fellowship, while 42% of BBSRC Fellows and 67% of STFC Fellows did so. Because of the small number of research council funded Fellows answering this question, these figures should be seen as indicative only for the research councils.

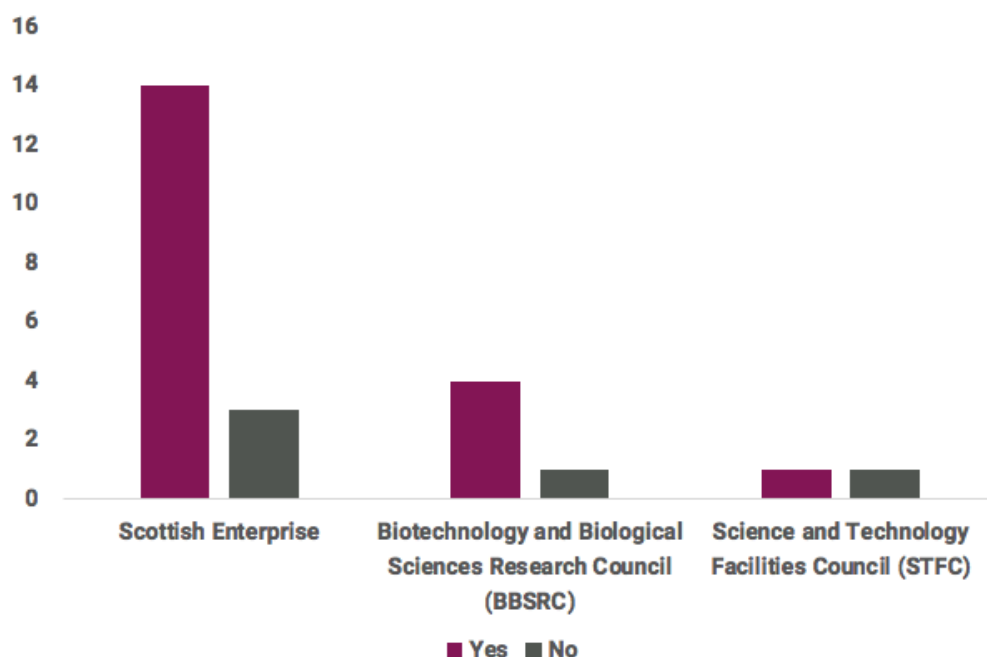
Figure 9.9 IP Creation by Funding Organisation

Funder	% of Fellows creating IP during Fellowship
Scottish Enterprise (SE)	53%
Biotechnology and Biological Sciences Research Council (BBSRC)	42%
Science and Technology Facilities Council (STFC)	67%
Natural Environment Research Council (NERC)	0%

Source: Web Survey, N=51

Of the survey participants who created IP, 78% also owned it. Of these, there were 14 entrepreneurs who received funding from SE, with the remaining five entrepreneurs receiving funding from BBSRC (four) or STFC (one).

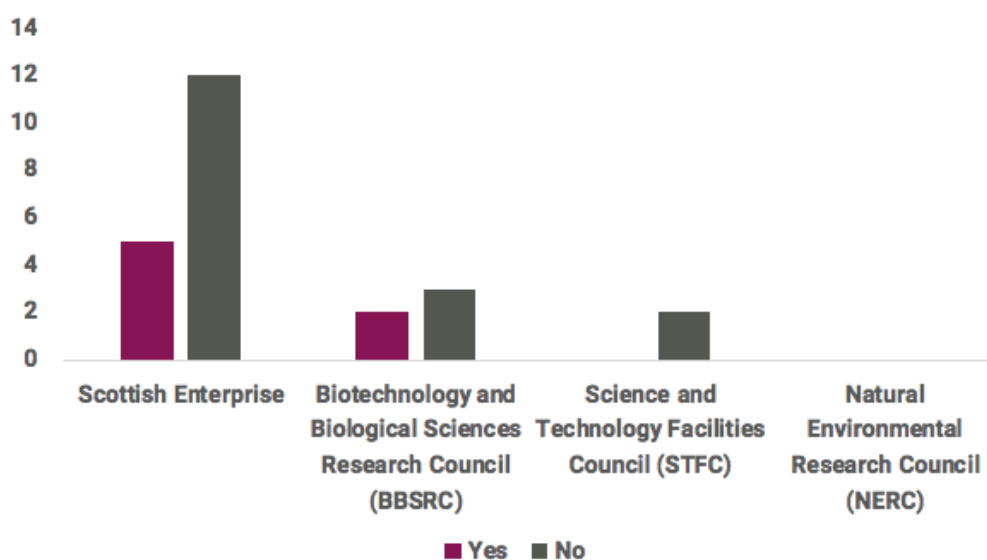
Figure 9.10 IP ownership by funding organisation



Source: Web Survey, N=24

Of those Fellows retaining IP ownership, 26% licensed it (N=23) and 71% of those who licensed their IP were funded by SE, with the remaining two survey respondents who licenced their IP receiving funding from BBSRC.

Figure 9.11 Licensing by funding organisation



Source: Web Survey, N=24

Intellectual Property is the foundation stone of academic commercialisation. The Enterprise Fellowship programme is hosted by 36 universities across the UK and each has a different approach to commercialising intellectual property. It became clear during the consultation programme for this study, that each Enterprise Fellow also has their own thoughts about the ownership of their ideas. Where the two are aligned, there has been a smooth transition to start-up/spin-out a company based on intellectual assets. Where there isn't alignment, the process has been more challenging, in some cases leading to a total barrier to company creation.

In general, Enterprise Fellows have been supported by the parent university throughout the process of business development, often from well before an application to RSE for the Fellowship is even made. There is a general trend over the years of operation for more recent Enterprise Fellows to have found the process more straightforward, probably reflecting universities' development of commercialisation policies and a renewed appetite for spinning out intellectual property through a company route. There are a small number of notable exceptions.

Terms and conditions for the Enterprise Fellowship set out the relationship between the host university and RSE and include conditions covering intellectual property rights (IPR). These are comprehensive, with conditions about background IPR, foreground IPR, and rights to exploit these. However, the terms and conditions do not, and cannot, address all the challenges posed by this complex area of operation.

Where universities have a strategic intent to spin out companies, they have a range of policies and practices in place to facilitate technology transfer. Some university consultees reflected on their institution's view that an aggressive approach to intellectual property might lead to a loss of an entrepreneur to the institution. In this case, the risk for the institution is intellectual property that creates no impact and defeats the purposes of that particular institution. Many Fellows have commented on a smooth and supportive process where this is the case.

At the other end of the spectrum, some universities vigorously protect all intellectual property and require large (often majority) equity shares of any business. These institutions argue the case for protecting their property and the option to create an income stream from it in future. Some Enterprise Fellows have felt disempowered by a perceived barrier to success created by this approach. We have reports from some Enterprise Fellows who endured years of negotiations to reach a resolution, others who have chosen not to spin out a business and remain employed within the universities, and another who has chosen to dissolve a business with intractable intellectual property challenges. There are no easy solutions to these issues.

It should be noted that almost half of Enterprise Fellows have produced intellectual property during the Fellowship, the vast majority of whom have spun out a business.

So, while imperfect, the system is working. The question for RSE is how it can help to make it work better.

During the consultation programme, several examples of what worked well were provided:

- the training provided by the Fellowship was useful in preparing Enterprise Fellows for negotiations, understanding the negotiating position and positioning the Fellows' interests appropriately;
- several Enterprise Fellows reflected on technology transfer offices that were experienced in the start-up/spin-out space and had a "reasonably realistic view of IP's true value pre-spinout". This led to a more promising starting point for negotiations;
- in some cases, a university provides support to the Enterprise Fellow from two separate people – one taking the position of the University, in protecting its intellectual property, and the other from outside the technology transfer office, to support and represent the interests of the Enterprise Fellow;
- agreements have been easier to come to where an assignment trigger was included in the start-up/spin-out agreement. For example, where the intellectual property was exclusively licensed and assigned once a trigger was passed, for example a level of equity reached.

There were also cases described where the transfer of intellectual property did not work well. For example:

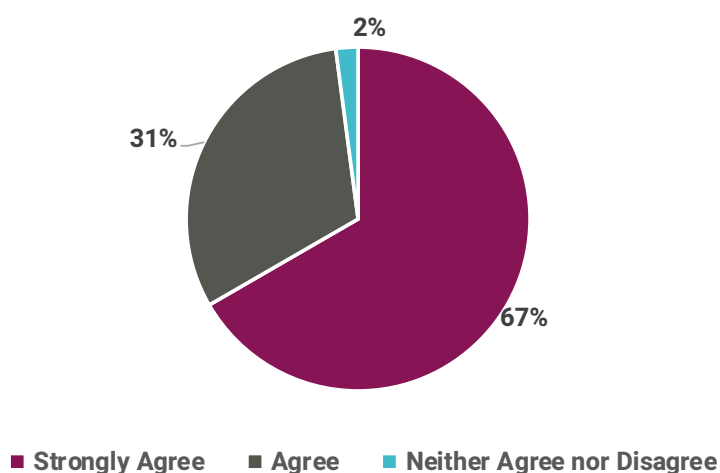
- where the university expected the start-up/spin-out to maintain the patent, incurring the cost of patenting, while also keeping a majority share of equity in the company;
- where an Enterprise Fellow left intellectual property with the host institution. There were various staff changes at the institution, and as a result, the IP is currently unable to be licensed by any prospective spinout, nor used by its inventor.

9.7 Business Skills and Confidence

The Enterprise Fellowship programme had a strong impact on business skills and confidence, as 47 respondents (98%) either agreed or strongly agreed with the statement: "The Fellowship increased my business skills".

This is reflected in survey responses and in the case studies presented throughout the report.

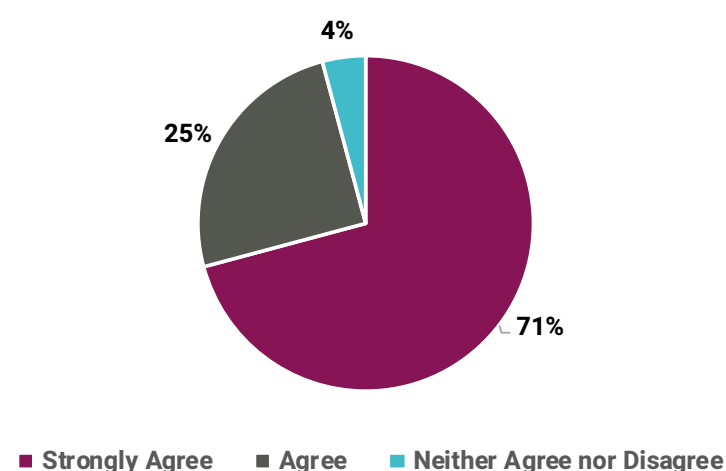
Figure 9.12 “The Fellowship increased my business skills”



Source: Web Survey, N=48

Out of the 48 respondents, 96% either agreed or strongly agreed that the Fellowship increased their confidence.

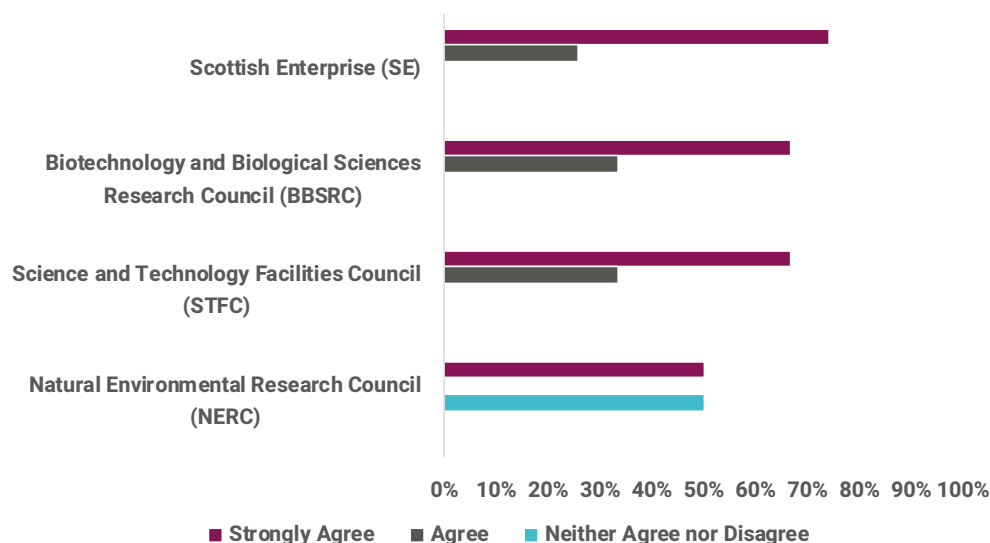
Figure 9.13 “The Fellowship increased my confidence”



Source: Web Survey, N=48

Those who participated in a Scottish Enterprise funded Fellowship ranked the impact of the programme on their confidence the highest, with 74% strongly agreeing with the statement.

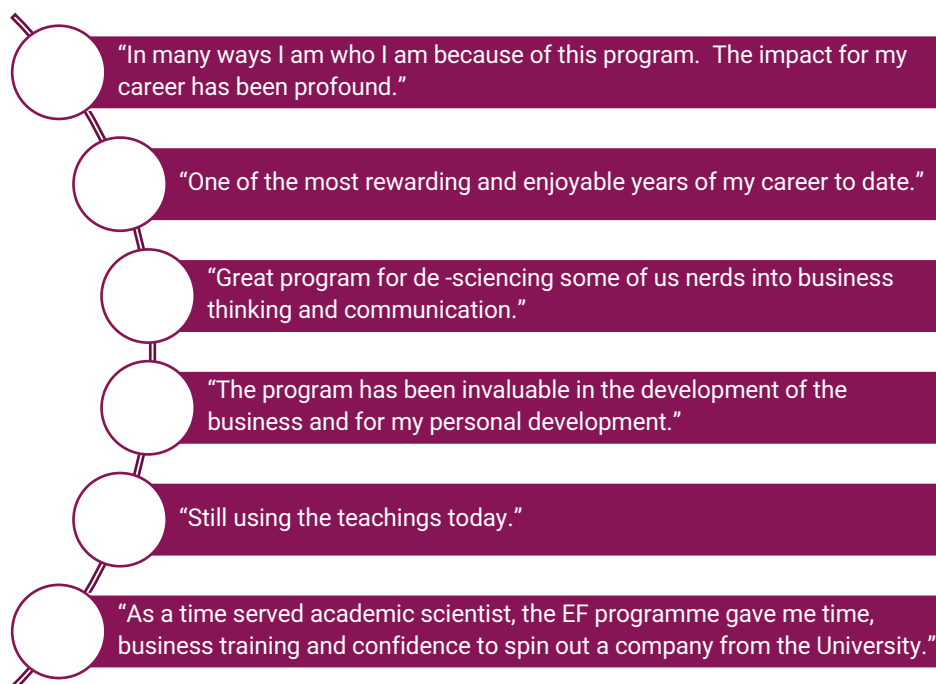
Figure 9.14 The Fellowship increased my confidence, by funding organisation



Source: Web Survey, N=48. *some respondents funded by two organisations have been counted twice

In fact, the evidence suggests the programme has been transformational, not just in developing skills, but in shaping participants as people and as entrepreneurs. A sample of responses provided within the web survey evidence this.

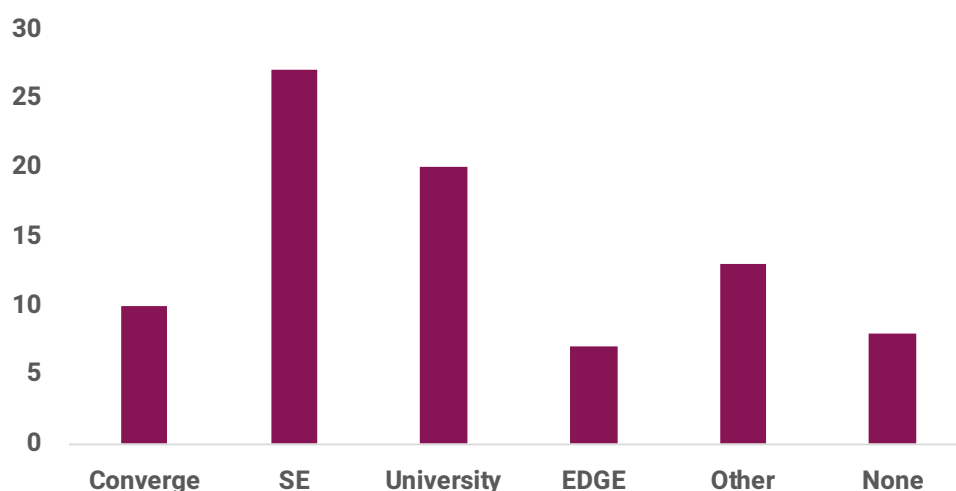
Figure 9.15 The influence of the programme – survey quotations



9.8 Other Enterprise Support

When participants received additional support, this was mainly through SE or a University. SE provided enterprise support to 27 Fellows (59% of the total) and 20 Fellows (43%) received support from their University. Converge provided support in another 10 Fellows (22%), and EDGE provided support to 7 Fellows (15%).

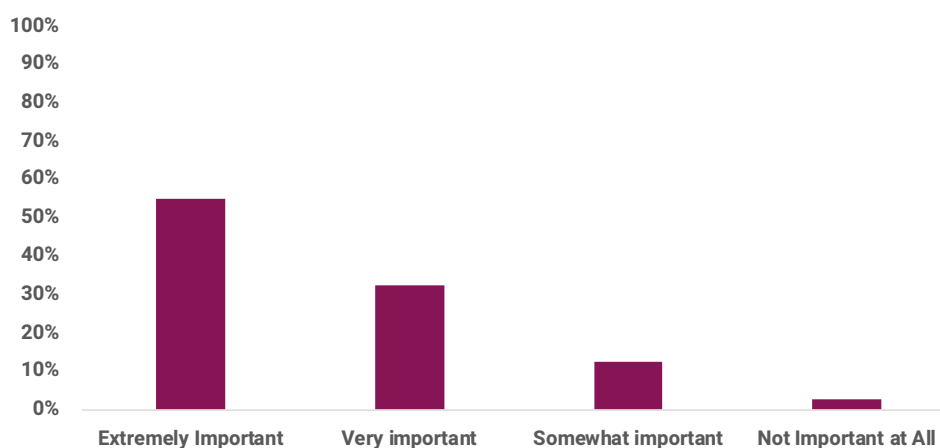
Figure 9.16 Source of Other Support



Source: Web Survey, N=46. *respondents were able to select more than one option

The majority of those who answered the question about the importance of the Enterprise Fellowship programme in securing additional support reported the role of the Enterprise Fellowship was extremely important (54%) or very important (32%).

Figure 9.17 Role of EF in Securing Other Support

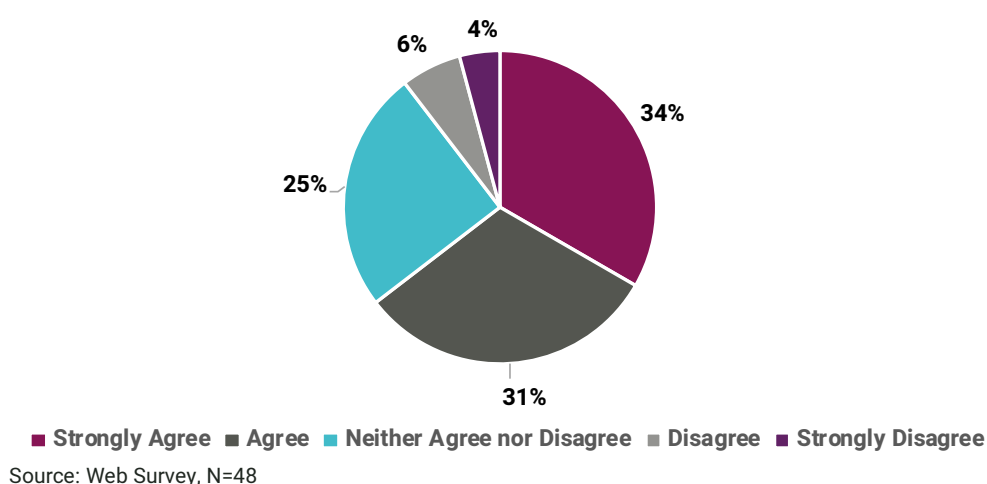


Source: Web Survey, N=41

9.9 Alumni Network

Almost two-thirds of the respondents (65%) either agreed or strongly agreed with the statement “The Alumni Network has been useful”. One in ten fellows disagreed or strongly disagreed with the statement and a quarter (25%) neither agreed nor disagreed with the statement.

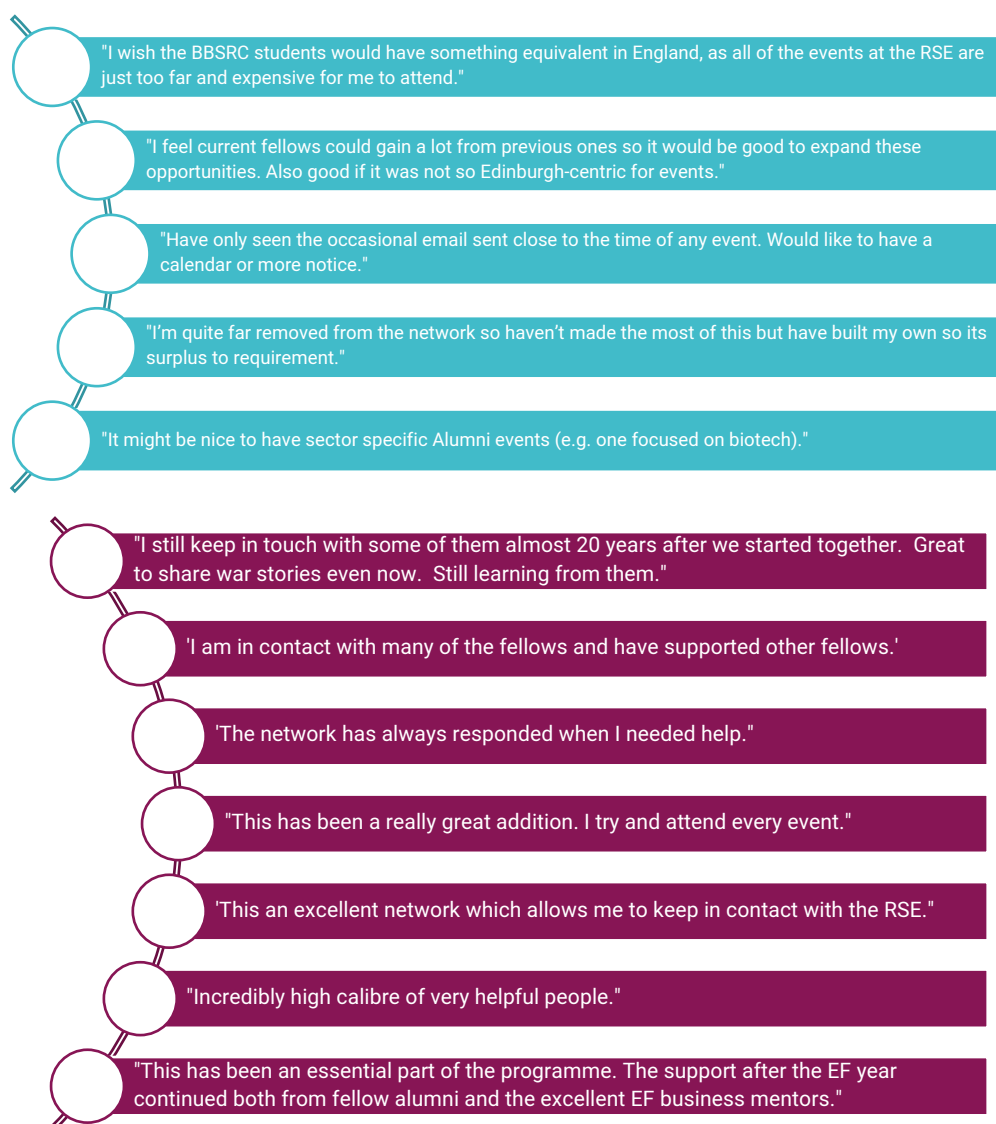
Figure 9.18 “The Alumni Network has been useful”



Fellows were asked to provide comments about the alumni network and events. There was general satisfaction with the helpfulness of the network and events organised. Some of the main challenges that respondents highlighted were that events are mostly in Edinburgh and as a result difficult to attend for people in England and elsewhere in Scotland, and the desirability of sectoral specific events.

Examples of comments about the Alumni initiative are provided below.

Figure 9.19 – Views on the Alumni Network



Source: Web Survey

Interviews with Enterprise Fellows, RSE executives and committee members and funders explored this issue further, and several themes emerged. There are mixed feelings about the current operation of the alumni network, as the survey shows, and a number of suggestions from Fellows about ways that it could add value. These include:

- tracking the interests of alumni and providing information about particular issues and opportunities of relevance to their business. This is something that the Royal Academy of Engineering does for its comparator programme;

-
- moving away from a generic “dinner” style event, which a number of Fellows find unattractive, towards a more targeted event with speaker on a particular theme, for example, or from a specific industrial sector;
 - advertising that named Enterprise Fellow alumni will be present at an event, and facilitating an opportunity to meet them, profiling these events around particular sectors or business specialisms.

9.10 Research Impact

Some Fellows choose to remain in academia. While this does not meet the objectives of Scottish Enterprise to create new companies, there is strong evidence from our consultation programme that it does help meet SE and research council targets about commercialising research – it helps develop academic researchers who can create impact.

“The Enterprise Fellowship has completely changed my approach to science with a much greater focus on impact/commercialisation at an earlier research stage. We are still developing the technology from the fellowship however we are targeting larger commercial markets based on customer feedback collected during the fellowship.”

Source: Web survey respondent

Many of the Enterprise Fellows commented on the value they bring to their host universities, through creating impactful research and a more commercially focussed approach from people that choose to stay in academia. University consultees also point to this impact, commenting on the changes in culture within academic research teams that host an Enterprise Fellow.

Benefits include creating impact from research, an important metric in the Research Excellence Framework, international profile, attracting employees and students, attracting commercial research income and grant funding.

“We did five subsequent Innovate UK projects that brought over £2 million of research funding into the University. This has highlighted our department as the place that founded the most innovative and exciting technology that's been developed in our industry for some years.”

Oliver Hardick, Puridify Ltd. April 2019

9.11 Conclusions on Outputs and Outcomes

The evidence shows a wide range of outputs have been created and outcomes achieved, including those listed within the Scottish Enterprise Phase V plan. The outputs and outcomes described above show the variety of ways in which the Enterprise Fellowship programme supports Fellows and creates impact.

93% of Enterprise Fellows have started a business. In fact, 25% of Enterprise Fellows have started more than one business. Of those who reported the current status of their business, 81% said it was still operational (70%) or sold (11%). This compares very well with the average survival rates for spin-outs and technology start-ups, where around 45% survive to their fifth year⁸.

The Enterprise Fellowship programme has proved instrumental to the creation and growth of these businesses. A wealth of survey and consultation evidence shows strong attribution, with almost a quarter of Enterprise Fellows stating the business would not have been created without the Fellowship. This holds, even when challenged in interview about the possible role of other mechanisms of support. Two thirds of businesses would have growth more slowly, for lack of skills, knowledge, networks, processes, business confidence and credibility that lead to an investible proposition. Fellows responding to the survey secured almost £90 million investment.

One of the objectives for this evaluation is to explore where else Enterprise Fellows could have gone for support, and to explore whether the model is unique. The evidence shows there was very low awareness of alternative opportunities for support among Enterprise Fellows. This is not because of a lack of profile of other

⁸ Source: The Real Rates of Business Survival (Fleximize), quoted in Scottish Enterprise Phase V business plan for the Enterprise Fellowship programme.

programmes, but because there was no available support that could offer a fit for these academic researchers. Analysis of evidence from the web survey and interview programme show the RSE programme's uniqueness lies in the integrated *package* of support tailored specifically to individual academic scientists and engineers, along with a full year of salaried time to develop their venture. This package is focussed to help people to start IP and technology-based companies directly from the academic research base, as well as creating entrepreneurs. For an academic scientist, the opportunity offered by the Enterprise Fellowship is demonstrably unique.

The Enterprise Fellowship has had a profound effect on individuals' careers, whether they start-up or spin-out a business or take another path.

Intellectual property remains a complex issue, with a variety of approaches from the host universities, making a one-size-fits-all solution impossible. There are examples of good practice and arrangements that work to the benefit of both the company, the Enterprise Fellow and the university. RSE could work to share this good practice and look to ways of influencing the environment in which institutions work. The context for higher education is framed by many competing pressures, to deliver government objectives while sustaining income, for example. The RSE, positioning itself as a leader in innovation, could work to influence the context by communicating with policy makers at funding councils, research councils and government, as well as through Universities' representative bodies.

Business skills and confidence are impacted by the Enterprise Fellowship programme, with 96% of survey respondents agreeing. The influence of the programme on people's personal and professional development is tangible.

The Enterprise Fellowship has been important in helping secure follow on support from other agencies and programmes, including Scottish Enterprise, EDGE, Converge, and others. In fact, almost 90% of Fellows found the programme important in securing this support.

The alumni network is important to many Fellows, and there have been a range of suggestions about ways to make it more relevant to particular parts of the alumni community, and to have greater reach across geographies and sectors.

Finally, there is evidence that the programme has an influence on research impact – an important objective of the research councils. As well as helping to attract funding to departments associated with Fellows' businesses, universities report the presence of an Enterprise Fellow creates a tangible shift in culture and attitudes, raising the profile of commercial and/or impactful research. For Fellows who choose to remain in the academic research community, there are reports of a strong shift in emphasis, because of a new understanding about how research can be made to fit a market demand or 'customer' needs.



Oliver Hardick – Puridify Ltd

Innovative bioprocessing platform technologies, allowing the cost effective manufacture of a wide range of existing and new biomolecule products.

<http://puridify.com/>

Oliver took part in the Enterprise Fellowship in 2012, funded by STFC and hosted by University College London. The technology was developed during a collaborative research project between the Advanced Centre for Biochemical Engineering, UCL and STFC.

Puridify Ltd launched in 2013, has is developing and commercialising a number of products serving a global marketplace and attracted investment from private venture capital and Innovate UK. The business was sold to GE Healthcare in 2017, by which time 18 people were employed. Oliver continues as Director of Puridfy Ltd, and leads the acquired team based in Stevenage as Business Leader for GE Healthcare. The benefits created by the company include economic impact from employment and GVA from an exporting company competing with global market players, as well as benefits from innovating in bioprocessing manufacture, improving efficiency, flexibility and productivity of biotherapeutic manufacture.

How are these benefits related to the RSE Enterprise Fellowship?

“There is absolutely no way I would have turned my research into a commercial venture without the Fellowship, because I had no exposure”

Oliver’s career plan was to go into management consultancy in London. During his PhD studies, a previous fellow mentioned the RSE Enterprise Fellowship – he knew there was potential to start a company from his research but didn’t have a clear desire to take an entrepreneurial path. He had completed some new venture business training London Business School during his PhD studies, but says: “Just because you’ve got business skills training doesn’t mean you can set up a viable business”.

“The most important aspect of the fellowship is the time, the fact you have 12 months to build a network of contacts and advocates to begin the journey with the support that you need to succeed.”

“It’s much more about having the EBS team there constantly throughout the 12 months process, so they can support at all stages. To be able to have a sounding board to bounce your own specific problems or questions off is incredibly useful. The fact it can be moulded to each individual Fellow is one of its greatest strengths.”

10. Performance

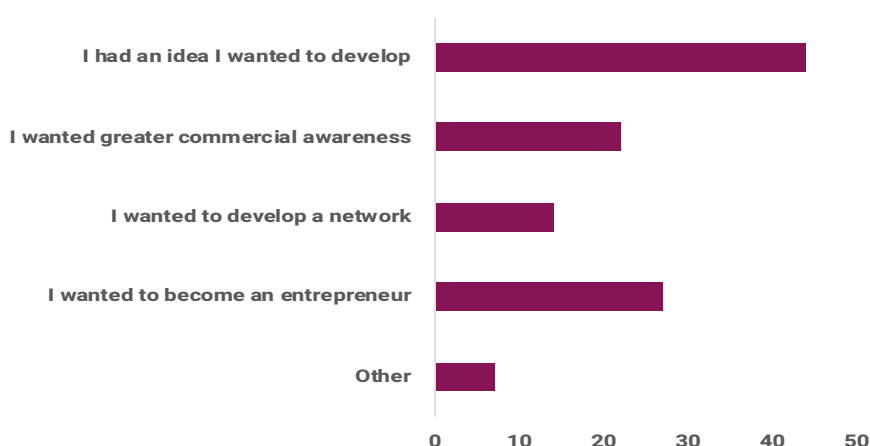
The performance of the Enterprise Fellowship programme is best reviewed by its participants. In addition to Enterprise Fellows, this section presents the views of universities, funders and RSE executives and committee members.

A web survey of Enterprise Fellows attracted participation from 57 Enterprise Fellows, with the sample described in Section 3, above. Together with a programme of in-depth interviews with 27 Enterprise Fellows and 24 other stakeholders, this provided a detailed and in depth understanding of the performance of the programme and its influence on commercialisation outcomes and economic impact.

10.1 Motivation for Participation

When asked about the reason for participating in the EF programme, 44 of the survey respondents said they participated in the programme because they had an idea that they wanted to develop. The desire to become an entrepreneur was another important driver in programme participation for 27 participants, alongside the development of commercial awareness (22). Developing a network was mentioned as a reason for participating in the Enterprise Fellowship programme by 14 respondents.

Figure 10.1 Motivation for Participation in EF



Source: Web Survey, N=57 *respondents were able choose more than one option

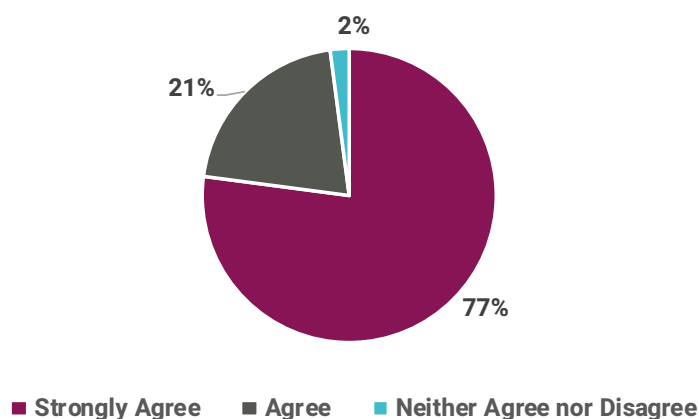
I realised I wanted to go down the commercial route, but I had no experience, I was a technical person. I couldn't have made a step from academic to a commercial role.

Source: Web survey participant

10.2 Quality of Provision

There was a high level of satisfaction with the programme, with 77% of the 48 respondents to the question strongly agreeing with the statement "I was satisfied with the Enterprise Fellowship Programme".

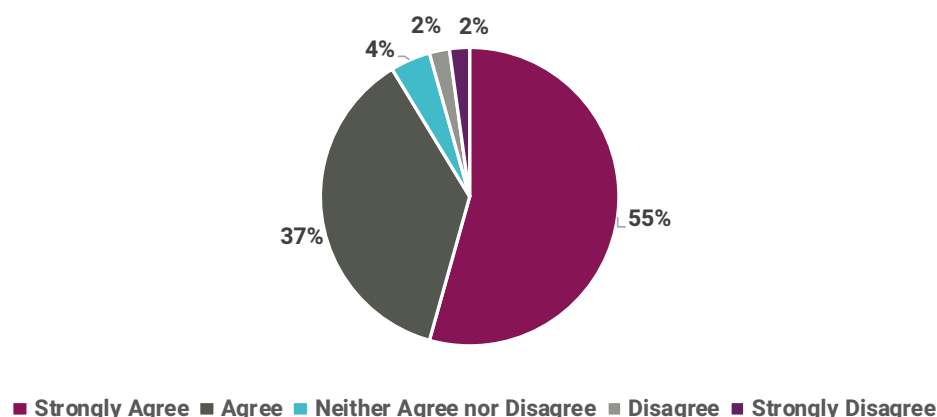
Figure 10.2 "I was satisfied with the EF Programme"



Source: Web Survey, N=48

Fellows were satisfied with the quality of the training received, with 92% of those responding either agreeing or strongly agreeing that the training was of high quality.

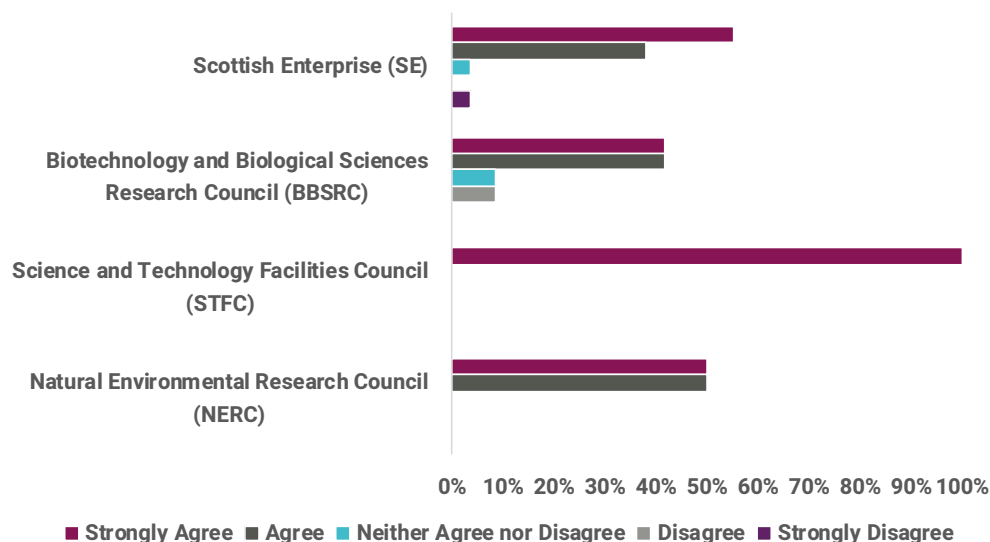
Figure 10.3 "The training was of high quality"



Source: Web Survey, N= 46

While levels of satisfaction with training were high among respondents from all funding organisations, respondents who did the Fellowship with SE (29) and BBSRC (12) had a wider spectrum of opinions over the quality of training. Yet, only one respondent from each group disagreed with the statement. All the respondents doing the fellowship with NERC and STFC were satisfied or highly satisfied with the quality of the training received.

Figure 10.4 "The training was of high quality", by funding organisation



Source: Web Survey, N=48. *some respondents funded by two organisations have been counted twice

10.3 Effect of Changing Type of Provision

The approach and service offered by the Entrepreneur Business School (EBS) was consistently highlighted by consultees as one of strengths of the Enterprise Fellowship programme, with survey respondents and consultees commenting on the

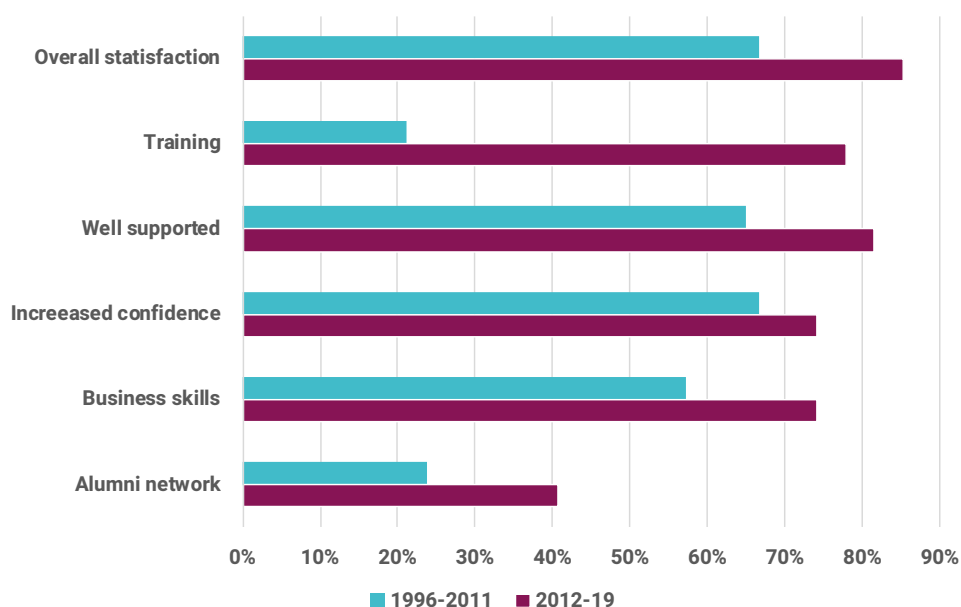
effect it has had on their development. A typical response to what was best in the programme reads “Instructors at the EBS were amazingly knowledgeable and supportive both during and after the program[me]”.

EBS began training entrepreneurs in 2012, marking a change in emphasis for RSE, moving from an academic business school approach to a service run by serial entrepreneurs who could draw from their own experiences. Because survey respondents include participants from over the course of the last 22 years, it has been possible to assess how the difference in training might have affected the perceived quality of the programme. Due to differences in timescales, economic conditions and other variables, it is difficult to compare quantitative respondent outcomes from before and after 2012 (such as business metrics). However, it is possible to compare whether Enterprise Fellows agreed or disagreed about how well elements of the programme worked for them.

There were 21 responses from 1996-2011 and 27 responses from 2012-19 in this section of the survey. As can be seen in the figure below, there was an increase in the proportion of respondents strongly agreeing in every category. In particular, those strongly agreeing the training was good quality increased from 21% to 78%, and those strongly agreeing that they were overall satisfied with the programme increased from 67% to 85%.

Although this cannot be solely attributed to EBS, the scale of change in perception strongly suggests this new approach to provision has strengthened the programme.

Figure 10.5: Proportion of respondents strongly agreeing



Source: RSE Survey 2019. 1996-2011 n=21, 2012-2019 n=27

10.4 Strengths

Survey respondents were asked about the top three strengths of the programme. Responses can be grouped into a set of broad themes. Networking was cited by almost 30 people as a strength. Almost 50 people included the quality of the training and the trainers among their top three strengths. Around 25 people rated among the top three the space and support provided by a salary, funding and a full year out of academia to develop a business. And the credibility of the RSE as the provider of the programme helped to open doors and attract investment. A detailed list of anonymised responses is provided in Appendix 2.

These themes were supported by the interview evidence. Unlike other programmes, the absolute focus on commercialisation of research together with company formation appears to many Fellows to be an important driver of success, together with the space created by a year of funding to focus on the development.

“It holds you to task, month by month, to ensure that your project or company moves forward in the right direction to a recognised goal that can take it to the next level”

Christopher Leburn, Chromacity

10.5 Conclusions on Performance

The Enterprise Fellowship programme is a strong performer, held in high regard by participants, funders and universities alike. Overall satisfaction with the programme is very high and views about the quality of training provision, support provided, confidence and business skills are all extremely positive. Indeed, since the new approach to training was introduced in 2012, this is even more the case.

The strengths of the programme are numerous. Key strengths include having the space, time and support of a salaried year in order to build the business. The strength of training provision and quality of support is another strength, with many commenting on the bespoke nature of provision which pushes each individual to develop and responds very specifically to the needs of individual people and businesses. The credibility of the programme because of its association with RSE is also a recognised strength, helping to attract board members, investors and others around each individual Enterprise Fellow.

Caroline Barelle – Elasmogen

Elasmogen is progressing sight-saving therapies for inflammatory eye disease.

<https://www.elasmogen.com/>

Caroline undertook an Enterprise Fellowship in 2015, funded by Scottish Enterprise and BBSRC and hosted by the University of Aberdeen. She established Elasmogen Ltd. in 2016. Elasmogen is backed by Deepbridge Capital LLP, the Scottish Investment Bank, Innovate UK and through access partnerships to its ground-breaking soloMER platform.

Caroline is a doctoral biochemist, who held scientific leadership positions at an earlier spin-out of Aberdeen University, Haptogen Ltd. which was bought by Wyeth Inc and subsequently Pfizer Inc. where Caroline continued to work as a team leader. After changes within the company, the Haptogen team remained as researchers within the University and Caroline pursued opportunities to spin-out a new technology. She successfully secured an RSE Enterprise Fellowship and founded Elasmogen.

The economic impacts of the company include a multimillion pound investment, with related GVA and eight employees. Wider impacts will come from its pipeline of products that could transform the treatment of auto-immune and inflammatory conditions, as well as treatment opportunities such as oncology and the penetration of toxic war-heads deep into solid tumours. As the pipeline develops, the economic impacts of this very young company will grow.

How are these benefits related to the RSE Enterprise Fellowship?

Caroline already had significant experience in the commercial sector, but she explains that she had never started a company.

“I didn't know about legals, employing people, how you get investment, how you spin a company out, how you put a board together. The Fellowship offered that. It gave me the framework and the support system to go through the process.”

The Enterprise Fellowship provided support to develop the “core and heart of the company” and helped Caroline see the bigger picture. The training was from people that had “been on the coal face” and could provide hands on guidance for real life situations. It continues to have an impact on Caroline’s approach – for example, shaping her thinking about how Elasmogen’s technology can solve challenges for partners and customers.

“It helped make a conversion. From talking science to *pitching science*”.

11.

Economic Impact

The annual economic impact of the programme through companies formed by Enterprise Fellows is measured in GVA and jobs.

11.1 Approach

11.1.1 Study Areas

Given the geographic spread of some of the companies, which may have staff located outside of Scotland or the UK, the study areas are:

- Scotland;
- the UK (including Scotland); and
- global (including Scotland and the UK).

11.1.2 Metrics for Quantitative Analysis

The economic impacts measured in this report were quantified using widely accepted measures of economic impact:

- Gross Value Added (GVA) – this measures the monetary contribution that an organisation adds to the economy through its operations. The largest components of GVA are employment costs and profit; and
- employment – this was measured in terms of total head-count jobs.

These impacts measure the economic impact of the organisations in the most recent financial year.

11.1.3 Net impact

Scottish Enterprise has issued guidance on appraisal, monitoring and evaluation⁹, which highlights important elements that should be considered when assessing the economic impact of a project:

- deadweight – the extent to which the impacts would have been attained without the intervention. Additionality is represented as (1 – deadweight);

⁹ Scottish Enterprise (2014), Economic Impact Assessment for Appraisal, Monitoring and Evaluation: A Guidance Overview

- displacement – the impact of a company growing at the expense of another company in the study area, e.g. other Scottish companies;
- leakage – the proportion of the impact of the intervention that occurs outside the study area, e.g. Scotland;
- substitution – when a company deliberately stops doing an activity to take advantage of public sector financial support. Unless there is strong evidence to the contrary this is usually not considered as part of the analysis and has not been considered here;
- multipliers – these are the indirect effects (spending in the supply chain) and induced effects (spending of employees). These are estimated using multipliers supplied by the Scottish and UK governments^{10 11}.

11.1.4 RSE Fellows Survey

As part of the survey undertaken to inform the study, each respondent was asked to provide details about businesses they had set up for the most recent financial year (if applicable), such as:

- turnover;
- profit;
- employment costs; and
- employment.

These responses formed the basis for estimating the gross economic impacts associated with the programme. It should be noted that not all respondents that reported a company/companies provided information on each of the questions, e.g. they included employment, but not employment costs. It should also be noted that in some cases early stage companies reported a loss. In line with guidance from Scottish Enterprise¹², this negative impact was not included as part of the GVA calculations.

Fellows were also asked questions designed to assess the net benefit of the programme, taking account of the concepts discussed in Section 11.1.3. This included questions, such as:

- where staff are based;

¹⁰ Scottish Government (2018), Input-Output Tables, 2015

¹¹ ONS (2018), United Kingdom Input-Output Analytical Tables, 2013

¹² Scottish Enterprise Economic Impact Guidance, Pre-Revenue Impacts, http://purl.org/evaluationsonline/guidance/pre_revenue_impact

- whether they would have set up the company if they hadn't done the Enterprise Fellowship programme; and
- market conditions and where their competitors are based.

These issues are discussed in more detail in the relevant sections.

11.1.5 Grossing Up

It is then necessary to account for the economic impact of those that did not take part in the survey but did take part in the programme. This is achieved by multiplying the employment and GVA impacts by a grossing up factor, which is usually equal to the inverse of the response rate i.e. 100% response rate adjusted to be representative.

11.2 Gross impact

There was a total of 57 unique, detailed responses to the survey, of which 4 had not set up a business, 39 had set up one business and 14 had set up more than one business. Combined, these Fellows have set up 76 businesses. In order to reduce the time taken to undertake the survey, and prevent its abandonment, the Fellows who had set up more than one business were asked to provide the most detailed information on their most successful companies. This may mean that some successful businesses have been excluded.

As a result, information was provided on 55 companies. Of these companies:

- 42 are operational (76%) – the impact of these companies was their employment, employment costs and profit;
- 7 have been sold (13%) – the impact of sold companies was their contribution at time of sale. This is likely to be conservative as the economic activity associated with a company is likely to increase once purchased¹³;
- 6 have been dissolved (11%) – although the dissolved companies will have an impact while they are operational, their impact has not been included.

11.2.1 Turnover and Investment

Turnover of the companies set up by Enterprise Fellows was £35.8 million. Many of the companies, for example in the life sciences, are pre-revenue and therefore did not report turnover.

¹³ The impact following purchase by another company is not known, as financial information for parts of a company are generally not reported and where they are this data is often confidential

Table 11.1: Annual Turnover in Companies of Surveyed Fellows (£m)

	Turnover
Operational	30.5
Sold	5.3
Total	35.8

Source: RSE Fellows Survey 2019.

The Enterprise Fellows also reported significant investment of £86.9 million since the Programme was founded in 1997. Of this, £64.2 million was sourced from private investors (73.9%) and a further £22.7 million was sourced from public funds (26.1%).

Enterprise Fellows were asked about source of other support, which is presented in Figure 9.16, and shows that common sources of support, which will include public investment, includes Scottish Enterprise, such as SMART awards, universities, Converge and InnovateUK.

Table 11.2: Investment in Companies of Surveyed Fellows (£m) since 1997

	Private	Public	Total
Operational	47.2	14.5	61.8
Sold	17.0	8.2	25.2
Total	64.2	22.7	86.9

Source: RSE Fellows Survey 2019.

11.2.2 Employment Costs and Profit

Those surveyed also provided details of employment costs, one of the major components of GVA. A small number of respondents provided data on employment, but not on employment costs, and in these cases the employment costs/employee for the relevant sectors were used to estimate employment costs¹⁴.

On this basis, employment costs in companies surveyed by the Fellows was equal to £21.0 million, of which £15.3 million was for operational companies and £5.6 million was for sold companies. Data provided about the location of employees was used as the basis for attributing employment costs by geography.

¹⁴ ONS (2018), Annual Business Survey 2017 Provisional Results

Table 11.3: Annual Employment Costs in Companies of Surveyed Fellows (£m)

	Scotland	Rest of UK	Rest of World	Total
Operational	11.2	3.0	1.2	15.3
Sold	5.0	0.6	-	5.6
Total	16.1	3.6	1.2	21.0

Source: RSE Fellows Survey 2019. BiGGAR Economics Analysis. Note numbers may not sum due to rounding

Profits were also based survey responses, although many respondents chose not provide data on the level of profit. Many of the companies in the survey are early stage or pre-revenue companies, typical particularly for the life sciences sector, and therefore not expected to generate significant profits, and some companies reported a loss which, in line with the guidance issued by Scottish Enterprise¹⁵, was not included in the profit figures.

Reported profits of the companies was £4.3 million. A significant proportion of this is attributable to one company (70%) and the average profit of 20 operational companies reporting on profits was £176,500.

Table 11.4: Annual Profits in Companies of Surveyed Fellows (£m)

	Scotland	Rest of UK	Rest of World	Total
Operational	2.9	0.4	0.2	3.5
Sold	0.8	-	-	0.8
Total	3.6	0.4	0.2	4.3

Source: RSE Fellows Survey 2019. Note numbers may not sum due to rounding

When the figures for employment costs and profits are added this represents £25.3 million GVA, of which £19.7 million GVA (78%) is generated in Scotland, £4.0 million GVA is generated in the rest of the UK (16%) and £1.5 million GVA is generated outside the UK (6%).

¹⁵ Scottish Enterprise (2014), Economic Impact Assessment for Appraisal, Monitoring and Evaluation: A Guidance Overview

Table 11.5: Annual GVA in Companies of Surveyed Fellows (£m)

	Scotland	Rest of UK	Rest of World	Total
Operational	14.0	3.4	1.5	18.9
Sold	5.7	0.6	-	6.4
Total	19.8	4.0	1.5	25.3

Source: RSE Fellows Survey 2019. Note numbers may not sum due to rounding

11.2.3 Employment

According to figures provided by the respondents, the number of jobs directly created in companies set up by Fellows was equal to 493, of which 373 (76%) are from operational companies and 120 (24%) are from companies that have been sold. Of the direct jobs, 348 (71%) are located in Scotland and a further 111 (23%) are located elsewhere in the UK.

Table 11.6: Annual Employment in Companies of Surveyed Fellows

	Scotland	Rest of UK	Rest of World	Total
Operational	249	90	34	373
Sold	99	21	-	120
Total	348	111	34	493

Source: RSE Fellows Survey 2019.

11.2.4 Multipliers

Type II multipliers, which include the impact of spending in the supply chain and spending by staff, were applied. This was based on Scottish¹⁶ and UK input output tables¹⁷ for the sectors provided by the respondents. Global multipliers will be greater than UK multipliers because they include spending in the supply chain based outside the UK and staff spending outside of the UK. To reflect this, it has been assumed that global multipliers would be 20% higher than UK multipliers¹⁸.

Multipliers have been applied in Table 11.7, which shows that total economic impact in Scotland was estimated to be £30.9 million GVA and 570 jobs. This is based on

¹⁶ Scottish Government (2018), Input-Output Tables, 2015

¹⁷ ONS (2018), United Kingdom Input-Output Analytical Tables, 2013

¹⁸ UK Input-Output Analytical Tables demonstrate that imports of goods and services are equal to 31% of spending in the UK supply chain, while spending of UK workers overseas is equal to 16% of their domestic spending.

multipliers applied to the 348 jobs based in Scotland and £19.8 million GVA retained in Scotland, and the supplier and income effects occurring in Scotland.

The direct UK impact of £23.8 million GVA and 459 jobs includes direct GVA and jobs based in Scotland as well as the direct GVA and jobs based elsewhere in the UK. The multiplier impact at the UK level was estimated by applying UK multipliers to the direct activity located throughout the UK, including in Scotland. The total impact at the UK level was estimated to be £53.7 million GVA and 1,043 jobs.

Direct impacts in Scotland and elsewhere in and UK are also be included in the direct global impact of £25.3 million GVA and 493 jobs. Global multipliers were applied to estimate the supplier and income effects. On this basis, it was estimated that the total global impact would be £68.5 million GVA and 1,344 jobs.

Table 11.7: Annual impact of Companies of Surveyed Fellows, including Multipliers

	Scotland	UK	Global
GVA (£m)			
Direct GVA	19.8	23.8	25.3
Multiplier GVA	11.2	29.9	43.2
Total	30.9	53.7	68.5
Jobs			
Direct Jobs	348	459	493
Multiplier Jobs	222	584	850
Total	570	1,043	1,344

Source: BiGGAR Economics Analysis

11.3 Net impact

The gross impact and survey responses were then used as the basis for estimating the net impact of the programme.

11.3.1 Additionality

As discussed in Section 11.1.3, additionality is the effect that the programme compared to what would have happened if the programme did not exist.

Attributing impact to the programme is a key issue when assessing economic impact. Experience of similar evaluations suggests that self-reporting is the most practical way to establish a counterfactual when it is not possible to establish a control group. The approach used was to ask participants to think about the role played by the Enterprise Fellowship programme in changing their performance, and

to follow up with consultations and group discussions in order to establish additionality assumptions. This indicated that there was a high degree of additionality associated with the programme (see section 10.2).

Participants were asked what would have happened if they had not taken part in the programme, and 100% additionality was assumed for those who responded they wouldn't have started a business. For those that said they would have started a business but not been as successful it was assumed that there would be 80% additionality, and for those that would have started but grown more slowly, it was assumed that there would 50% additionality, as shown in Table 11.8.

Discussions with the small number of Enterprise Fellows that had initially stated that their business would have been just as successful without the programme suggested that there would be a level of additionality which may not have been obvious, from improved networks, assistance with building a team and finding board members, confidence, business processes designed and implemented, and customers developed. This assumption is supported by the qualitative interview analysis (See section 9.2 above).

The assumptions used to assess the economic impact of Enterprise Fellows were tested in the group discussions and consultations. The interview evidence strongly supports these assumptions, with Enterprise Fellows reporting a high level of additionality associated with the programme.

Participants were also challenged on the issue of "policy decay", that is, that the impact of support received might decrease over time. Enterprise Fellows that were supported some time ago emphasised the programme had long-lasting impacts, providing a founding framework for how to run a business. One Enterprise Fellow, who participated in the programme over a decade ago, likened this to a concert pianist who can only progress because of the foundations provided by learning to read music. Various similar analogies were provided by the longer-term Fellows, all with a similar theme.

Table 11.8: Additionality Assumptions

	Additionality
I would not have started the business	100%
I would have started the business and it would not have been as successful	80%
I would have started the business and it would have grown more slowly	50%
I would have started the business and it would have been just as successful	20%

Source: BiGGAR Economics Assumptions

When the level of additionality was applied to each respondent, it was estimated that additional impact was £23.9 million GVA and 432 jobs in Scotland, £41.5 million GVA and 788 jobs in the UK, and £52.5 million GVA and 1,005 jobs globally.

Table 11.9: Annual Additional Impact in Companies of Surveyed Fellows

	Scotland	UK	Global
GVA (£m)	23.9	41.5	52.5
Jobs	432	788	1,005

Source: BiGGAR Economics Analysis

This suggests that the rate of additionality associated with the programme at the Scottish level would be around 77%, which is supported by interview evidence.

11.3.2 Displacement

Displacement is the extent to which companies in a study area take demand from other companies in the study area. Considering that the companies involved in the study are frequently based on technology at the cutting edge of academia and that many of them are growing markets such as life sciences, it was not expected that displacement would be a significant issue.

Therefore, if a respondent said that they had competitors in Scotland it was assumed there would be a displacement level of 10%, and if they had competitors elsewhere in the UK it was also assumed that the displacement level of 10%. This issue was reviewed in consultations and group discussions, and the Enterprise Fellows suggested that based on the nature of their markets and the locations of their competitors this level of displacement would be appropriate.

Table 11.10: Displacement Assumptions

	Displacement
Scotland	10%
UK	10%
Global	0%

Source: BiGGAR Economics Assumptions

On this basis it was estimated that the net economic impact of the surveyed respondents is £23.8 million GVA and 430 jobs in Scotland, £40.8 million GVA and 767 jobs in the UK, and £51.6 million GVA and 979 jobs globally.

Table 11.11: Annual Net Economic Impact in Companies of Surveyed Fellows

	Scotland	UK	Global
GVA (£m)	23.8	40.8	51.6
Jobs	430	767	979

Source: BiGGAR Economics Analysis

11.4 Total Impact – All Enterprise Fellows

The next step in estimating the economic impact is to account for participants in the programme that did not take part in the survey.

11.4.1 The Sample

In total, there were 57 respondents to the survey undertaken as part of this study and there were 198 Enterprise Fellows that were asked to respond, a response rate of 28.8%. There were 244 participants in the programme between its inception in 1997 and June 2018. This implies that 23.4% of all participants were reached and therefore that a grossing up factor of 4.3 would be appropriate.

However, only 4 out of the 57 respondents (7.0%) said they had *not* set up a business, and information provided by the RSE suggests that 29.7% of all Enterprise Fellows have not set up a business, equal to 72 Fellows (implying 172 Enterprise Fellows have started a business). Therefore, it is likely that the sample may be weighted towards those who have set up businesses and may be a biased sample.

Therefore, adjusting for those who did not set up a business to reflect a more conservative approach, the grossing up factor would be 172 divided by 53, which is equal to 3.25. Adjusting in this way means that Fellows that have not set up

businesses, and companies that have been dissolved would not be included in the grossed up impact.

There is no reason to suggest that the sample is more or less successful than the overall population of Enterprise Fellows, and further investigation indicated that some successful companies have not been included in the sample. Without additional evidence there was no basis for further adjusting the grossing up factor, and therefore the grossing up factor of 3.25 has been used.

11.4.2 Impact

Applying the grossing up factor of 3.25 to the net economic impact of survey respondents suggests that the economic impact of Enterprise Fellows would be £77.3 million GVA and 1,395 jobs in Scotland, £132.3 million GVA and 2,490 jobs in the UK and £167.4 million GVA and 3,176 jobs globally.

Table 11.12: Annual Grossed Up Net Economic Impact of Enterprise Fellows

	Scotland	UK	Global
GVA (£m)	77.3	132.3	167.4
Jobs	1,395	2,490	3,176

Source: BiGGAR Economics Analysis

Although these figures represent the economic impact for the most recent year of operation, they are expected persist over time and should therefore be treated as a permanent increase in economic impact. In reality, the economic impact would be expected to grow as more Enterprise Fellowships are completed and existing Enterprise Fellows continue to expand their businesses.

11.4.3 Impact of Scottish Enterprise Investment

Scottish Enterprise (SE) is the most significant funder of the Enterprise Fellowship programme in terms of financial value and corresponds to 68.0% of the funder up to June 2018. Applying this percentage to the grossed up economic impact in Table 11.12 indicates that the impact of these Enterprise Fellows would be £52.6 million GVA and 949 jobs in Scotland each year.

Table 11.13: Annual Economic Impact of SE Funded Enterprise Fellows

	Scotland	UK	Global
GVA (£m)	52.6	90.0	113.9
Jobs	949	1,694	2,161

Source: BiGGAR Economics Analysis

11.5 Value for Money

The total value of resources devoted to supporting the RSE Enterprise Fellowship Programme since 1997 is £13.6 million. It is estimated that the programme has supported £77.3 million annual GVA and 1,395 jobs in Scotland, implying that:

- each £1 invested in the programme returns £5.69 annual GVA for the Scottish economy; and
- the average cost/job supported by the programme in Scotland is £9,743.

It is also estimated that the programme has supported £132.3 million annual GVA and 2,490 jobs in the UK, implying that:

- each £1 invested in the programme returns £9.74 annual GVA for the UK economy; and
- the average cost/job supported by the programme in the UK is £5,459.

Table 11.14: Value for Money (£)

	Cost/ Annual GVA	Cost/Job
Scotland	5.69	9,743
UK	9.74	5,459

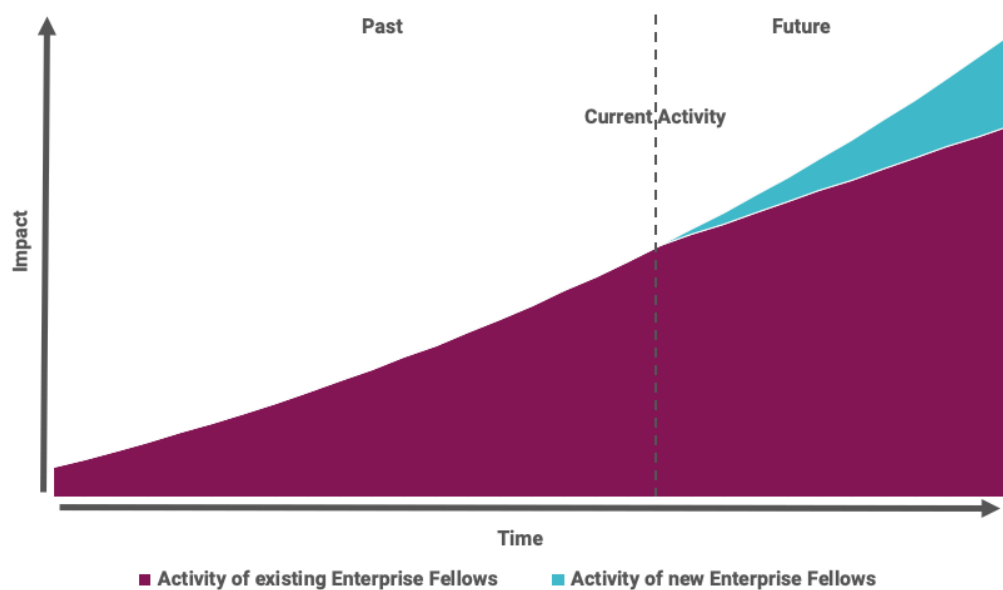
Source: BiGGAR Economics Analysis

The value for money presented in Table 11.14 considers the impact in the most recent year, which means that it will not cover historic activity or future activity associated with the programme. A number of factors are likely to affect future activity, including:

- existing and new Enterprise Fellows setting up new businesses;
- existing and new Enterprise Fellows growing the scale of their companies; and
- companies of existing Enterprise Fellows ceasing activity.

On this basis it would be expected that the impact of existing Enterprising Fellows will continue to grow, and new Enterprise Fellows will also create and grow businesses in the future. This process is demonstrated in Figure 11.1 (this figure is for illustrative purposes only).

Figure 11.1: Illustration of Historical and Future Activity



Source: BiGGAR Economics



John Nicholls – MSquared

A leading developer of photonic and quantum technologies. www.m2lasers.com

John was an Enterprise Fellow in 1999, funded by Scottish Enterprise. After completing his PhD in physics in 1994, John travelled to the US, where he worked as a researcher and became a founding member of a spin-out company. Returning to Scotland in 1998, with an aspiration to start a company in Scotland, John founded Photonic Materials Limited. Hosted at the University of Strathclyde, John applied for an Enterprise Fellowship, seeking the time and space to focus on establishing the company. The company raised £13m of investment over four investment rounds and was sold in 2005. In 2006 John was the founding CEO at TMRI, a pharma service business with an annual revenue of around £10m. Since 2011 John has been an executive director at M Squared Lasers, one of Scotland's top tech companies, employing over 110 people in high value jobs, including >40 with PhD's. Together this group of businesses has created significant economic benefits. Without the Enterprise Fellowship, John is certain he would have returned to employment in the US and the economic benefits he created would have been lost to Scotland/UK.

How are the benefits related to the RSE Enterprise Fellowship?

John already had experience within an academic spin-out, however he felt this was not enough to equip him to build his new venture, Photonic Materials Ltd. John explained, "the Enterprise Fellowship gave me a salary, which was important, but more importantly it keyed me into this family, which is the RSE, of talented people that were really keen to help me to succeed. You felt it the instant you started - there were really talented and opportunistic academics and successful business people who believed in you, could give you great advice and connect you into so many things."..... "Having the backing of the Enterprise Fellowship also gave the venture credibility, it showed that a learned institution backed the idea." John cites this for generating an early win - during his Fellowship year he secured the first £0.5m investment and began the journey to create a business that was internationally leading. "The Fellowship prepared me for managing the complexities and challenges of creating a new company."

"The early phase of starting the business during the Fellowship was my proper apprenticeship in how to build and run a fast-growing technology company. All of the things I learned are applicable today, there's no doubt about it."

John explains how the Fellowship still has influence: "how to understand your customers; how to influence your customers; how to deeply understand markets; how to manage people; how to find good people; how to realise people aren't working out; how to build a board. All of those things are applicable to my daily life now."

12.

Conclusions

The annual economic impact of the Enterprise Fellowship programme is considerable, with good value for money and strong evaluation outcomes. There is a robust case for future investment.

12.1 Economic Impact

12.1.1 Impact of the Programme

The economic impact of Enterprise Fellows is £77.3 million GVA and 1,395 jobs in Scotland, £132.3 million GVA and 2,490 jobs in the UK and £167.4 million GVA and 3,176 jobs globally.

Table 12.1: Grossed Up Annual Net Economic Impact of Enterprise Fellows

	Scotland	UK	Global
GVA (£m)	77.3	132.3	167.4
Jobs	1,395	2,490	3,176

Source: BiGGAR Economics Analysis

These figures represent the economic impact for the most recent year of operation and are expected to grow each year as more Enterprise Fellowships are completed and existing Enterprise Fellows continue to expand their businesses.

12.1.2 Impact of Scottish Enterprise Investment

Scottish Enterprise (SE) is the most significant funder of the Enterprise Fellowship programme in terms of financial value, with an objective to create economic impact. The impact of Scottish Enterprise funded Enterprise Fellows is £52.6 million GVA and 949 jobs in Scotland each year. As before, this is expected to grow year on year.

Table 12.2: Economic Impact of SE Funded Enterprise Fellows

	Scotland	UK	Global
GVA (£m)	52.6	90.0	113.9
Jobs	949	1,694	2,161

Source: BiGGAR Economics Analysis

12.1.3 Value for Money

The total value of resources devoted to supporting the RSE Enterprise Fellowship Programme since 1997 is £13.6 million:

- each £1 invested in the programme returns £5.69 annual GVA for the Scottish economy; and
- the average cost/job supported by the programme in Scotland is £9,743.

It is also estimated that the programme has supported £132.3 million annual GVA and 2,490 jobs in the UK, implying that:

- each £1 invested in the programme returns £9.74 annual GVA for the UK economy; and
- the average cost/job supported by the programme in the UK is £5,459.

Table 12.3: Value for Money

	Cost/ Annual GVA	Cost/Job
Scotland	5.69	9,743
UK	9.74	5,459

Source: BiGGAR Economics Analysis

12.2 Evaluation Conclusions

12.2.1 Strategic Position

The Enterprise Fellowship delivers on current and pressing concerns of the UK and Scottish Governments and their agencies. Innovation and commercialisation of research are important drivers of policy, and there is recognition of the important role of universities in creating economic growth from the research base. This presents an opportunity for RSE to demonstrate on a national stage how it contributes to key drivers of productivity growth and how it delivers this important government strategy area.

As a leading creator of academic start-up and spin-out companies, with a wide-ranging experience of supporting research commercialisation into new businesses, the RSE could play a role in shaping policy and practice in this area, to help provide a policy and funding context the further drives success in this area.

12.2.2 A Continuing Rationale for Investment

All of the current funders of the Enterprise Fellowship programme are experiencing a period of significant change. There is an opportunity for RSE to ensure the role of the Enterprise Fellowship programme is clearly articulated and understood throughout these changing circumstances.

In Scotland, a major review of Scottish Enterprise is underway, in the wider context of the developing strategy of the Enterprise and Skills Strategic Board. While there is uncertainty about where responsibility will lie for investment in innovation, commercialisation of academic research, business start-up and entrepreneurship, these will remain central tenets of Scottish Government policy in the pursuit of innovation outcomes. Together with clear market failure arguments, this forms the central rationale for investment from Scottish Government and its enterprise agencies in whatever form they take after the review.

The rationale for continued investment from UKRI remains, with the Enterprise Fellowship programme delivering on its strategic priorities. The rationale for investment from UKRI includes not just its research councils, but also its innovation agency, Innovate UK.

12.2.3 Governance

The governance of the programme has been effective and fit for purpose. Evidence from stakeholders, both internal and external to RSE, would suggest a case for strengthening the governance arrangements for the Enterprise Fellowship programme.

There is a changing strategic context for the programme, and rapidly changing structures and functions within its funding organisations. There is also an aspiration for the programme to grow. Both these issues mean the longer-term role of the Management Group may need to adapt and change to include additional funders and to preclude the role of funders and contractors in directing future strategy.

12.2.4 Outputs and Outcomes

The evidence shows a wide range of outputs have been created and outcomes achieved, including those listed within the Scottish Enterprise Phase V plan. The outputs and outcomes described show the variety of ways in which the Enterprise Fellowship programme supports Fellows and creates impact.

93% of Enterprise Fellows have started at least one business. 81% said it was still operational (70%) or sold (11%). This compares very well with the average survival rates for spin-outs and technology start-ups, where around 45% survive to their fifth year. The evidence demonstrates the Enterprise Fellowship programme has proved instrumental to the creation and growth of these academic start-up and spin-out businesses. There is strong attribution of impact to this programme. For an academic scientist, the opportunity offered by the Enterprise Fellowship is demonstrably unique.

Intellectual property remains a complex issue. Business skills and confidence are impacted by the Enterprise Fellowship programme. The Enterprise Fellowship has been important in helping secure follow on support from other agencies and programmes, including Scottish Enterprise, EDGE, Converge, and others.

The alumni network is important to many Fellows, and there have been a range of suggestions about ways to make it more relevant to particular parts of the alumni community, and to have greater reach across geographies and sectors.

Finally, there is evidence that the programme has an influence on research impact – an important objective of the research councils. As well as helping to attract funding to departments associated with Fellows' businesses, universities report the presence of an Enterprise Fellow creates a tangible shift in culture and attitudes, raising the profile of commercial and/or impactful research.

12.2.5 Performance

The Enterprise Fellowship programme is a strong performer, held in high regard by participants, funders and universities alike. Overall satisfaction with the programme is very high and views about the quality of training provision, support provided, confidence and business skills are all extremely positive. Indeed, since the new approach to training was introduced in 2012, this is even more the case.

12.3 Other Qualitative Findings - Summary

The analysis and evaluation conclusions are set out in line with Government guidance on evaluation and appraisal. Where the qualitative study objectives do not fit with this analysis structure, we have drawn them out in the body of the report.

The qualitative objectives were: the rationale for intervention and the contribution it makes to the Scottish and UK Governments strategies; how programme supports Fellows; where else they could have gone; what worked and what did not; barriers; further support requirements; longer term benefits; how unique is the model and how it compares to others. The first two of these are addressed above, the remainder are summarised here.

12.3.1 A Package of Support

The evaluation fieldwork and analysis made it clear the study objectives to identify “how the programme supports Fellows”, “what worked and what did not” and “barriers”, should be best addressed by focussing on the programme as a whole and not its individual elements.

This is because the analysis of ‘Outputs and Outcomes’ and ‘Performance’ show the strengths lie in the *package* of bespoke support around each developing business and individual Enterprise Fellow, rather than its separate features. While the approach to fieldwork and analysis broke down the support provided into its component parts, the Enterprise Fellows participating in the study made it clear that different parts of the programme are suited to different individuals and their different business propositions, each of which face different barriers to success. While the outputs, outcomes and performance analysis set out above covered individual items within the package, the conclusions are clear – it is the package of the Enterprise Fellowship, tailored to each individual, that works.

12.3.2 Where Else They Could Have Gone for Support - Uniqueness

Enterprise Fellows who reported they would not have started a business without the Fellowship, were unable to suggest what other provision they might have found. More than half of those participating in the survey would have started a business, but there was very low awareness of other support, beyond university technology transfer offices. This demonstrable lack of awareness of alternative support is not simply about a lack of profile of other programmes within Universities - the analysis shows that Enterprise Fellows overwhelmingly consider there was no other programme available at the time that would have met their particular needs.

The analysis here answers the study objective to identify uniqueness, the reason Enterprise Fellows felt there was no other suitable support for an employed academic science/engineering researcher. The unique aspect of the Enterprise Fellowship programme, reported by the alumni are:

- the time out and support created by one year of salary to allow an individual to focus entirely on establishing a business. This is identified time and again as a key strength; combined with
- an integrated and bespoke package of training, advice, networking, mentoring, peer support, target setting and management that is tailored specifically to each individual person and to their own individual business venture.

Other start up support may have some of these elements, but it is the combination of these into an individualised package that makes the Enterprise Fellowship different and allows it to cater specifically to employed academic researchers, who would otherwise not develop a commercial venture.

The Enterprise Fellowship package is focussed to help people to start IP and technology-based companies directly from the academic research base, as well as creating entrepreneurs. For an academic scientist, the opportunity offered by the Enterprise Fellowship is demonstrably unique.

12.3.3 Further Support Requirements

While Enterprise Fellows had very low awareness of available support before they participated in the programme, they were aware of support afterwards. Almost 90% of Fellows felt the programme was important in securing additional support, including offerings from Scottish Enterprise, universities, Converge, Edge and others. Raising awareness of business support is part of the programme, which also supports people to apply for follow on awards, for example Scottish Enterprise SMART awards.

Those leaving the Enterprise Fellowship are equipped with the specific knowledge and skills required to deliver investible business propositions. Further support requirements are specific to individuals and reflect the varied nature of the cohort of businesses and alumni. The training providers, peers and alumni offer ongoing support and advice, as well as signposting to specific opportunities relevant to each individual.

12.3.4 Longer Term Benefits

The longer-term benefits of the Enterprise Fellowship programme evidenced throughout this report include:

- ongoing quantitative economic impacts (GVA and jobs) resulting from existing and new companies formed by Enterprise Fellows;
- continued delivery of research impact, translating advances in science and engineering into the wider economy, allowing these to develop commercially as time goes on, with investment that takes innovations in a different direction to that of academic research interests;
- positive influences on entrepreneurial activity within university departments, reported by alumni and universities alike, with shared experiences helping to shape an enterprise culture;
- an association with RSE allowing business development/enterprise to have cache within the academic environment, arising from the high regard in which RSE is held by academic researchers. This provides validation for those pursuing an enterprise focussed career; and
- supporting the development of high profile entrepreneurs who go on to establish further companies, influence business and academic colleagues, and influence policy makers (enterprise and academic research).

12.4 Recommendations

12.4.1 A Strategic Plan

RSE should develop a strategic plan that articulates the current and changing national context and positions the programme appropriately. This will allow the RSE to position its 'offer' to funders and investors appropriately and avoid allowing funders' objectives to drive programme strategy, which may become a risk as the new national organisations and structures bed in and new funders come on board.

There is no doubt that the programme is delivering RSE's vision, "making knowledge useful". A clear strategy at the centre, articulated by RSE, will ensure that the programme delivers on RSE's objectives and is funded and supported accordingly.

12.4.2 A Business Plan or Operational Plan

The strategic plan should frame the establishment of a business plan with clear and measurable actions for the future, and at least a three year, preferably a five year, horizon. This should include detailed financial projections, other resource allocations and set targets for outputs and outcomes.

It should include an evaluation strategy, detailing the information to be collected to evidence impact in the future. A sustainability strategy should also be included, providing details of medium- and long-term investment for the programme.

The plan should set out how RSE will continue to ensure there is alignment with other programmes, seeking opportunities for partnership, achieving economies of scale, signposting, and sharing information.

12.4.3 A Succession Strategy

There is an inherent risk in a significant amount of knowledge being held by a small number of individuals in an organisation. To mitigate this risk, RSE should consider a succession plan so there are clear arrangements in place to ensure a smooth transition should there be changes in the small and expert team that run the Enterprise Fellowship programme.

12.4.4 A Governance Review

The role of the Management Group could be considered within the remit of the Economy and Enterprise Committee, whose focus is on the outcomes targeted by the Enterprise Fellowship programme.

It is good practice to ensure that governance is refreshed and kept up to date, and committee membership should reflect this. Many members of the Management

Committee are long-standing participants, with several years of experience on this committee. While having committee members with a depth of knowledge is a real strength, this needs to be balanced with considerations about how to ensure fresh membership. The terms of reference for the Management Group could be revisited with RSE's representation in mind. For example, including membership of the group from Enterprise Fellows themselves.

12.4.5 A Review of Resources

By 2018, the investment in the programme amounted to around £13.6 million per year. The administration and management of this programme is complex and there is no doubt it is being very well managed. It is remarkable that a programme of this value, scope and scale has been delivered with fewer than three full time equivalent employees dedicated to the programme, along with support from RSE's finance team.

RSE should consider opportunities to develop the executive team to include a resource to develop and maintain the strategic position of the programme, co-ordinate the production of a business plan, liaise with funders, develop new funding opportunities and work with policy makers to help shape the innovation policy environment.

Some of these roles could be delivered by an external contractor, for example by using an agency to help position the RSE in the busy innovation landscape and engaging a business planning consultant. However, it would add value to include someone within the executive team to focus on shaping the external environment, raising the profile of the programme and its impacts and helping position RSE as the go-to provider of academic start-up/spin-out and commercialisation support. This work cannot be done by an already fully committed operational executive team.

Within a review of resources, there should be a fresh consideration of the resources allocated to Enterprise Fellows themselves, including the value of funding support for business development. This should consider whether there are likely to be benefits and impacts from increasing this as suggested by some, but by no means all, Fellows involved in the study.

12.4.6 Leadership in Spin-Out/Start-Up Practice in the UK

RSE is a leader in commercialisation practice. This evaluation demonstrates that the Enterprise Fellowship programme works. It delivers high numbers of sustainable academic start-ups and spin-outs, companies with longevity and impact. Therefore, it is in a good position to demonstrate leadership and good practice.

The Management Committee is already considering the benefits of creating a good practice guide. However, providing leadership in this field could go beyond that. For example, in promoting the benefits of creating spin-outs/start-ups to university

colleagues, providing training and support to those in institutions with a role to play, and helping to shape a more unified approach to intellectual property. The latter is inherently challenging; however, the benefits could be great.

12.4.7 Pursuing Sustainable Income

As part of the business planning process, there should be a sustainability plan for the programme, exploring several options to create sustainable income and reduce the risks involved in reliance on one dominant funder. The options to be considered could include expanding the number of funders, based on a careful strategic approach that reflects RSE's objectives and funders rationale for investment. With almost 250 alumni, RSE could consider options for established alumni businesses to contribute resources (financial or otherwise) to support the programme in some way. Other more radical options should also be considered in the mix, including whether there would be a demand for creating hot desking or other business space.

12.4.8 Making More of the Alumni Network

This review reflected on several suggestions from Enterprise Fellows about actions that would strengthen the benefits and opportunities created by an alumni group with such a wealth of talent and experience. A review of the Royal Academy of Engineering's use of and support for alumni might be a good starting point.

13.

Appendix 1 – Consultees

Those who took part in consultations and group discussions are listed below.

Consultee	Designation	Organisation
Universities		
Andrew Wilson	Snr Research Commercialisation Manager	Bristol University
Ann Lewenden	Research and Innovation	Aberdeen University
Jonathan Watkins	Head of Intellectual Property Services	Birmingham University
Melville Anderson	Head of Commercialisation	Glasgow University
Olga Kozlova	Director of Industry Engagement	Strathclyde University
Project Managers		
Anne Fraser	Enterprise Manager	RSE
Edward Cunningham FRSE	Chair of EF Board	RSE
Hannah Chater	Enterprise Officer	RSE
Hannah Robertson	Marketing Officer	RSE
Jane Bower FRSE	Chair of BBSRC Selection Committee	RSE
Kate Ellis	Director of Finance	RSE
Shonaig Macpherson FRSE	Chair of SE Selection Committee	RSE
Funders		
Marjory Sweeney	Project Manager, Entrepreneurial Development	Scottish Enterprise
Ana Gallardo	Entrepreneurial Development Team Lead	Scottish Enterprise
Alex Chaix	Joint Head of Knowledge Exchange and Commercialisation	BBSRC
Dr David Hendry	Innovation Manager, UKRI BBSRC	BBSRC
Jason Green	Division Head External Innovation & 21st Century Challenges, UKRI	STFC
Tessa Edgecombe,	Senior Programme Manager: Research Centres & Commercialisation Innovation Team	NERC

Training Provider		
Alister Minty	Director	Entrepreneur Business School Ltd
Enterprise Fellows Group Discussions		
Alex Ward	Razorbill Instruments	
Andy Porter FRSE	Formerly Haptogen, Elasmogen	
Christopher Leburn	Chromacity	
Daniel Rafferty	Glasgow Caledonian University	
Eirini Komninou	University of Strathclyde	
Leon Baruah	Viridian Logic	
Michael Gilroy	Afimilk	
Peter Childs	University of Glasgow	
Peter Long	University of Oxford	
Enterprise Fellows		
Caroline Barelle	Elasmogen	
David Heath	Cutitronics	
David Hunter	Shot Scope Technologies	
James McIlroy	Enterbiotix	
Jochen Leidner	Thomson Reuters/Polygon Analytics	
John Ferguson	The East Africa Sisal Company	
John Harrison	SAS Environmental	
John Nichols	M Squared Lasers	
Liisa van Vliet	Drop-Tech Ltd	
Lisa Mohamet	Stratastem	
Lissa Herron	Roslin Technologies	
Manuel Peleteiro	Inbest	
Margot McBride	University of Dundee	
Marie Claire Parker	Stratified Medicine Scotland Innovation Centre	
Michael Tougher	Soundbops	
Oliver Hardick	Puridifiy (acquired by GE)	
Rotimi Alabi	RAB Microfluidics	
Suzanne Dilly	Valirx	

14.

Appendix 2 – Programme Strengths

This appendix presents anonymous quotes from web respondents to the Fellows' survey, providing their views on the top three strengths of the programme. There are four emergent themes.

- Networking – reported by 27 people
- Training and the trainers – 37 people
- Time space and funding to develop the business – around 30 people
- Credibility by association with the RSE – 4 people

The individual comments are presented in the table below.

Networking
Networking
The peer recognition from the RSE
Meeting likeminded entrepreneurs
Peer Group learning
The Network, Opportunities available, Enterprise experience
It turned an engineer to an entrepreneur, Access to a specialised network, Quality of training
Networking and support from broad RSE Network
Small group of people to work with over the year (and after), The focus on Tech / Biotech to learn together and from each other.
The network is the real capital (pure asset, with zero liability attached)
The network of fellows
The 'cohort' -a strong network of other people founding business at the same time
Peer learning
The relaxed and open format for honest discussion and networking,
Inspiration from those who have gone before me
Network
Got to know other entrepreneurs (fellows),
Being part of a cohort Meeting fellow entrepreneurs
Networking with other Enterprise Fellows

Meeting others in a similar situation to discuss ideas and learn from
 Advice and support from mentors and past fellows
 Amazing network
 Networking and learning from the experiences of the other EFs,
 Network Networking (with other Enterprise Fellows and beyond),
 The sharing of experiences with other Fellows
 peer and alumni network very strong
 Cohort building Network

Training and the trainers

The training and the mentors,
 Effective training to provide business acumen and know how
 Building awareness and confidence in generic business skills
 Entrepreneurship content / course materials
 We learn as we do
 Commercial learning
 Business acumen learned
 Training Formal training in business
 Lessons from the Entrepreneur-business-school
 MBA programme
 Forcing you to think about what will be a profitable solution rather than the technically best solution
 Getting a business perspective on scientific idea
 Having business skills explained
 Excellent training Business Training
 mentorship
 training
 Learning how business works
 Support from Entrepreneurs Business School
 The training
 Dedication and Support of the Programme Tutors
 business training provided being with other people in the cohort going through the same process
 Instructors of the EBS were amazingly knowledgeable and supportive
 The breadth and depth of knowledge provided was superb
 holistic business education tailored to enterprise creation
 Training, Mentoring from experienced business leaders
 Awareness of how business works Business training Financial
 EBS training e.g. on marketing, finance
 The training,
 Dedication and Support of the Programme Tutors,
 The contacts given through the teaching staff



A new and different way of thinking
Awareness of how business works
Support from mentors and cohort
Business training
Initial training and business case development and time to do so
Business training
Mentoring and advice from the EBS team
Time, space and funding to develop the business
Funding & university office for one year
Provision of secure salary so that you can concentrate on getting the business set up and running
Freedom from academia to concentrate on the company educational resource
The wage being paid really helps to keep your head above water as you are trying to get things going.
Financial support
Opportunity to take a year out and start a business,
The fixed salary
The expenses
1Y salary support
Taking time out of university
Funding which gives time to build business
Time (out from University duties)
Funding for a year
Time to build network (12 months)
Additional funds to help with immediate tasks
year's salary to focus on setting up the business,
The opportunity to step out of academia for 12 months and dip my toes in industry to see if it was for me really worked, and I haven't looked back.
The removal from the academic environment,
Financial support
Funding to develop business and foothold to begin develop
Salary support and funding for travel etc to develop commercial potential of a technology
Credibility
Credibility to leverage additional investment in my business
Being associated with the RSE - it opened doors for me.
RSE as a door opener
Credibility with investors and grant providers

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RSE *The Royal Society
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