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EXECUTIVE SUMMARY

Research Rationale

The UK Innovation Investment Fund (UKIIF), announced by the UK Government in June 2009, is a venture capital fund of funds that aims to drive economic growth and create highly skilled jobs by investing in innovative businesses where there are significant growth opportunities. The UKIIF attempts to mark a step change in the UK venture capital (VC) market by establishing a substantial fund of funds that will replicate the best US funds by making investments at all business stages, with the market scale that can build companies with global reach. The underlying funds within the UKIIF fund of funds will invest in technology based businesses in strategically important sectors to the UK including digital technologies, life sciences[1], clean technology[2] and advanced manufacturing.

This research provides an early assessment of the lessons learned in implementing and delivering the UKIIF ahead of the main evaluation and provides early indications of the extent to which it is addressing market failures in the UK VC market and contributing to business growth.

Key Research Aims:

- To contextualise the wider market conditions in which the UKIIF was set up and wider role of the scheme within the UK and European VC market.
- To characterise recipient firms' growth stage, products, innovation and exports.
- To assess financial additionality, estimate deadweight and leverage.
- To examine the 'customer journey' and satisfaction with the scheme.
- To assess emerging impacts of the funding on business performance.
- To examine the existence of any emerging innovation spill over effects.
- To consider the UKIIF's role for supporting life sciences and low carbon sectors.

Methodology

An early stage assessment of the likely economic effectiveness of the UKIIF was made through in-depth structured face to face and extended telephone interviews with 16 business recipients, two fund of fund managers, six underlying fund managers and two market stakeholders. Further evaluations will be carried out at approximately five to seven years after the Funds started investing and a final evaluation once the funds have been fully divested and closed. These findings should therefore be viewed as providing a **possible indication of impact** of the scheme, rather than a definitive assessment.

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[1] Life Sciences includes: pharma-biotech, diagnostics, medical devices and other healthcare-related technologies.

[2] Clean technology 'low carbon' activity is defined as, "Technologies, products and processes which increase or are intended to increase energy efficiency and/or reduce or limit the emission of greenhouse gases (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride) or the use of processes which emit greenhouse gases, including but not limited to sources of renewable energy"

Wider Market Conditions

There is considerable evidence (NESTA, 2008, 2009) that early stage equity finance has become more difficult for technology based businesses to obtain in the current financial crisis, post 2008, particularly for intensive longer term R&D investment ranging from £250,000 up to £10m (Ullah et al. 2011). With VC investment down considerably across Europe and the US from the peak of 2006 (NESTA, 2011; BVCA, 2010), there was and still is a need for a large–scale pan European source of funding for high growth potential businesses, stimulated by public investment, as well as a reduction in tax and financial trading barriers (EU, 2011). A key feature of the UKIIF is that it is managed by private sector VC fund experts, which helps optimise investment decisions (Murray, 2009). Within this context the UKIIF provides a potential model for further large scale public assisted VC funds across Europe (e.g. with specific sectoral specialisms, or targeting particular groups of countries).

UKIIF Fund Structure

The UK Government has invested £150 million to corner stone the creation of the UKIIF, with the objective of matching private sector sources of funding. This has been exceeded with £180 million raised from private investors, providing the UKIIF with £330 million to invest at final closing.

UKIIF operates as two funds of funds investing UK government funds pari passu with other private investors into selected underlying specialist VC funds in the UK and Europe.

The Hermes Environmental Innovation Fund has a closure value of £130m, consisting of £50m UK government and £80m of private investment and focuses on efficient use of resources and clean technologies for a low carbon economy.

The European Investment Fund's UK Future Technologies Fund has a closure value of £200m, consisting of £100m UK government investment and £100m of European Investment Bank investment, and focuses on life sciences, digital technology and advanced manufacturing sectors.

Key Findings

The role of UKIIF

UKIIF is seen as strongly addressing the gap in the supply of equity finance in 2009 and is still required today, as few private sector UK institutions focus on VC market investment.

Consultees expressed the view that Government funding of technology businesses should continue. This will help encourage further financial institution investment in these new businesses, rather than financing asset rich businesses.

A key area for business funding is at the £2-5m level, above the existing EU state aid limit and therefore above the funding level of the UK government's Enterprise Capital Funds (ECFs) which target the equity gap.

The UKIIF has had a positive influence on encouraging greater private investment, particularly in specialist technology funds. This has helped to overcome historic tainting from poor financial returns in the UK early investment market, denominator effects (where institutions reduce their investment in VC in line with the falling value of their investments in quoted equities, so that they maintain the proportion of VC investment in their portfolio), concerns in the Euro zone which increase uncertainty and discourage investment in high risk asset classes like VC and shortage of investment in high risk technology innovation.

However, some stakeholders expressed concerns over the speed at which UKIIF was set-up, which may not have allowed as much private investment as might have been possible if a longer time period had been allowed. The fund was set up relatively quickly to address the large decline in the availability of venture capital during the credit crunch.

Successful recipient businesses accessed the UKIIF largely depending on the credibility and strength of their business plan and management team, previous experience with VCs, sector and stage of development. They indicated that there is current interest in investing within the energy and social communications/IT sectors and later stage R&D finance when the technology platform is tradable.

Overall, recipient businesses suggested that it is harder since the onset of the economic downturn (since 2007) to get start-up and early stage R&D finance, with lower valuations and lengthening timescales to finding and negotiating for finance, with some suggesting this process has doubled from 6 to 12 months, with much more comprehensive due diligence required.

The UKIIF model

Through a fund of funds model, UKIIF has successfully encouraged additional private investment leverage and investment diversification.

Private funding leverage has been achieved through the use of professional fund of funds managers with access to funding and strategic performance oversight. This has attracted a wide range of investors, including financial institutions, corporate investors, banks, other government funds, HNW individuals and family offices. This assessment estimates that current overall leverage at fund level of the UKIIF public to private investment is around 20 times, which is significant in the current fund raising climate. Four of the six interviewed fund managers received UKIIF investments after first close, so the fund would have existed without the UKIIF investment. However three of these fund managers considered that their funds would not have been as large at final close without the endorsement of and introductions provided by the fund of funds manager. It is also notable that all of the investments after first close were made in 2010, often with funds known to the fund of funds managers before UKIIF was established. The first close investments are all in the second half of 2011. It is therefore considered too early to accurately assess the full leverage impact of UKIIF investments.

A key challenge of the fund of funds model including the UKIIF is the double layer of fee costs (underlying fund and fund of funds manager fees) and also less direct investor influence at the underlying fund level.

The UKIIF investment covers a range of underlying funds from seed/start-up (e.g. Advent) to established growth companies (e.g. Zouk).

Underlying fund managers report that the UKIIF is not affecting underlying fund investment strategy, except for targets on the amount of UK funding (e.g. £150m total investment, £25m clean tech, £25m life sciences which reflect the investment contribution of the UK Government and specific Department contributions), but funds expect to surpass these anyway.

Recipient firm characteristics

UKIIF appears to be focusing on early stage businesses requiring finance for R&D in key sectors

As part of this research 16 UKIIF recipient businesses were surveyed: 10 from Hermes Environmental Innovation Fund and 7 from EIF UKFTF (one business received funding from both), across 5 underlying funds: WHEB, SEP, Zouk (HERMES funds); Advent and DFJ (EIF funds). They include 13 UK owned/based businesses.

All the surveyed UKIIF recipient businesses are in the target sectors (but there is some multiple sector overlap): 9 clean technology (including 7 Energy and 4 recycling), 6 Communications/IT, 3 Life sciences, and 3 Advanced Manufacturing. Fund of funds investments into specialist underlying private VC funds in the UK and Europe appears to be working well, with recipient businesses recognising these underlying funds as being market leaders and actively wanting investment from these funds.

UKIIF appears to be focusing on early stage R&D investment. The surveyed businesses included 5 start-up businesses, 4 early R&D stage, 4 later R&D stage, and 3 established venture projects. Established venture investments were into early stage R&D in companies seeking step change development through R&D commercialisation into new markets[3].

Customer journey and satisfaction

Recipient businesses typically found the UKIIF underlying fund through managers experienced in working with VCs, or by using professional VC finders and describe the underlying fund as their 'first' and 'natural choice' of investor.

Although the UKIIF operates as two funds of funds which invest in underlying VC funds and is slightly removed from investee companies, it is helpful to understand how SMEs have accessed investment from the underlying funds.

[3] These definitions accord with BVCA (2010) investment stage definitions: 'seed' refers to developing the business concept; 'start-up' refers to product development and initial marketing; 'early stage' refers to moving to initial commercialisation; 'later stage' refers to developing commercialisation into profitability; 'expansion' refers to established ventures developing new products.

Underlying funds are promoted through specialist networks, fund reputation, conferences, events and websites, with reliance on fund reputation and referrals from advisors. Underlying funds each receive between 500-600 proposals per annum of which between 0.5 and 2 per cent received funding.

Recipients found underlying funds through their own experienced managers, specialist VC finders and referrals.

Recipient businesses primarily selected the underlying fund for its fund manager expertise (7), sectoral specialism (6) and in many cases described it as the 'first' and 'natural choice' for investment. There was no perception of additional 'red tape' associated with government schemes under the UKIIF model.

The average time to prepare, search and obtain UKIIF funding was 9 months: 4 months to prepare and find; 5 months for due diligence and negotiations. This is in-line with private sector VC funding in general in the UK.

The underlying fund managers not only provided benefits from the financial investment but also added considerable value through Non Executive Director (NED) input, recruiting key managers, sourcing consultants, finding and negotiating with customers, improving business management control systems, and generally 'driving' business growth.

Recipient businesses reported very high satisfaction rates with 88 per cent rating the underlying fund as very good and 94 per cent definitely recommending it to other businesses in their situation.

Assessment of financial additionality, deadweight and leverage

UKIIF appears to be providing additional finance to businesses, and offers advantages over alternative funding sources

The 16 surveyed businesses received £46.7m of UKIIF funding through an equity stake in their business, and this funding represented just under half (47 per cent) of overall project cost and leveraged £25.2m of attributable additional finance from other finance providers e.g. banks and other VC funds (55 per cent of UKIIF funding)[4].

In the absence of the UKIIF, less than one fifth (3) would have found finance and proceeded with projects at the same time and scale (Deadweight). The remainder (13) would have been smaller scale (9), taken longer (7), or not gone ahead (1). Alternative finance in all cases would have compromised growth, either through delays, or lack of suitability of alternative finance. This shows that the fund has (partial) additionality, which is also enabling additional economic benefits to occur sooner than might be the case in the absence of the fund. This might assist first mover advantage in rapidly developing new technologies, but is also contributing to higher quality innovation and improved solutions to the market.

[4] The UKIIF underlying fund was typically the lead investor and only in one case was it levered in by another VC. This case has not been included as attributable leveraged additional finance.

Supply-side respondents noted that the UKIIF is not seen as duplicating any existing UK government policies.

Emerging impacts of UKIIF on business performance

Although it is too soon to make a robust assessment of actual business performance, initial evidence suggests that the UKIIF's likely overall impact on business development appears greater than its investment level.

Two thirds (11) of recipients attribute over three quarters of improved performance to the UKIIF (for two-thirds UKIIF was under half of project cost).

Employment in UKIIF recipient businesses is forecast to increase over three fold within three years of receiving funding (from 35 to 132 employees per average firm). Turnover in UKIIF recipient businesses is expected to increase three fold within three years of receiving funding (from £13m to around £40m per average firm).

At least four fifths of UK owned recipient businesses will export within the next three years, with exports representing over half of sales turnover for half of these businesses.

Emerging innovation spill over effects

All surveyed UKIIF recipient businesses are currently developing highly innovative products/services.

All surveyed recipient businesses are currently developing highly innovative products/services which are likely to benefit the UK economy and half have products that are potential global leaders, whilst others expect them to become so.

UKIIF benefits the UK university and R&D base and entrepreneurial culture, with innovation closely linked to external collaborations and spin outs from R&D specialists, acquisitions and universities, through KTPs[5] and FP7[6].

Since there are few competitors, the UKIIF businesses trading in the UK appear to be offering complementary products and services that should not directly displace existing activity.

UKIIF's support for life sciences and a low carbon economy

UKIIF is supporting life science and clean technology businesses in the UK

In line with the objectives of the fund of targeting life science and clean technology businesses, around two thirds of surveyed UKIIF recipient businesses (11) will reduce carbon use and costs through the products or services developed, with half (7) saving

[5] UK government funded Knowledge Transfer Partnerships (KTPs) between universities and industry.
[6] European Union Seventh Framework (FP7) grant funding for research and innovation to create jobs and growth.

energy, one quarter improving recycling and one quarter improving health. Seven businesses currently trading in the UK are all offering totally new, innovative services and products, providing efficiencies in time and energy.

UKIIF Fund Performance

It is too soon to assess fund financial performance

It is currently too early to assess fund financial performance, although in line with the objectives of the fund, fund managers are aiming for high financial returns. However, full realisation is not likely to occur until well beyond 2020 (up to 12 years on from fund closure). The 16 UKIIF recipient businesses' fund exit timescale ranged from 1-7 years, averaging 4 years.

There are some concerns from recipient business managers relating to keeping their businesses within the UK, since trade and corporate/institutional VC investors at future funding rounds are likely to come from abroad.

Concerns were also expressed by underlying fund managers about changes in Government policy on environmental subsidies and tax reliefs and the uncertainty this has caused for investors active in clean technologies.

1. INTRODUCTION

1.1 Research Rationale

The UK Innovation Investment Fund (UKIIF) was announced by the UK government in June 2009, to provide long term support to the venture capital (VC) market to finance innovative high growth potential businesses. This research is an early in-depth assessment of business recipients, fund of fund managers, fund managers and key market stakeholders. It provides an early assessment of the lessons learned in implementing and delivering the UKIIF and early indications of the extent to which it is meeting UK market demand and contributing to business productivity and growth, in advance of a comprehensive evaluation to be undertaken at a later stage.

1.2 Key Research Aims:

- To contextualise the wider market conditions in which the UKIIF was set up and wider role of the scheme within the UK and European VC market.
- To characterise recipient firms' growth stage, products, innovation and exports.
- To assess financial additionality, estimate deadweight and leverage.
- To examine the 'customer journey' and satisfaction with the scheme.
- To assess emerging impacts of the funding on business performance.
- To examine the existence of any emerging innovation spill over effects.
- To consider the UKIIF's role for supporting life sciences and low carbon sectors.

1.3 The Economic and Policy Context

Whilst various large scale surveys demonstrate that few (under two per cent) SMEs seek equity finance compared with those seeking debt finance (Fraser 2005; CBR, 2008; ASBS, 2010), obtaining equity finance is an important source of funding to many new and existing technology and knowledge based enterprises who are growth orientated (Ullah et al., 2011). These businesses face information asymmetries (Schmid, 2001) due to the complexities of their business propositions, as well as barriers due to perceived high risk, long payback period and relatively high transaction costs (especially in relation to the lack of availability of smaller scale equity venture capital funding).

Prior to the 2008 credit crunch, there was already evidence of equity funding gaps, particularly in seed finance (Mason and Harrison, 2004) and early stage development finance at beyond the scale of angel investors and syndicates but below the level at which private sector VCs can cost effectively operate; i.e. £250,000 to £2 million (NESTA, 2008).

SQW (2009) found that that the parameters of the equity gap stretch from £250,000 to at least £2 million for the vast majority of businesses, with some stakeholders believing that the upper boundary had expanded to at least £5 million in recent years. However, for sectors requiring complex R&D or large capital expenditure (for instance, clean tech or bio science), it could be as high as £15 million.

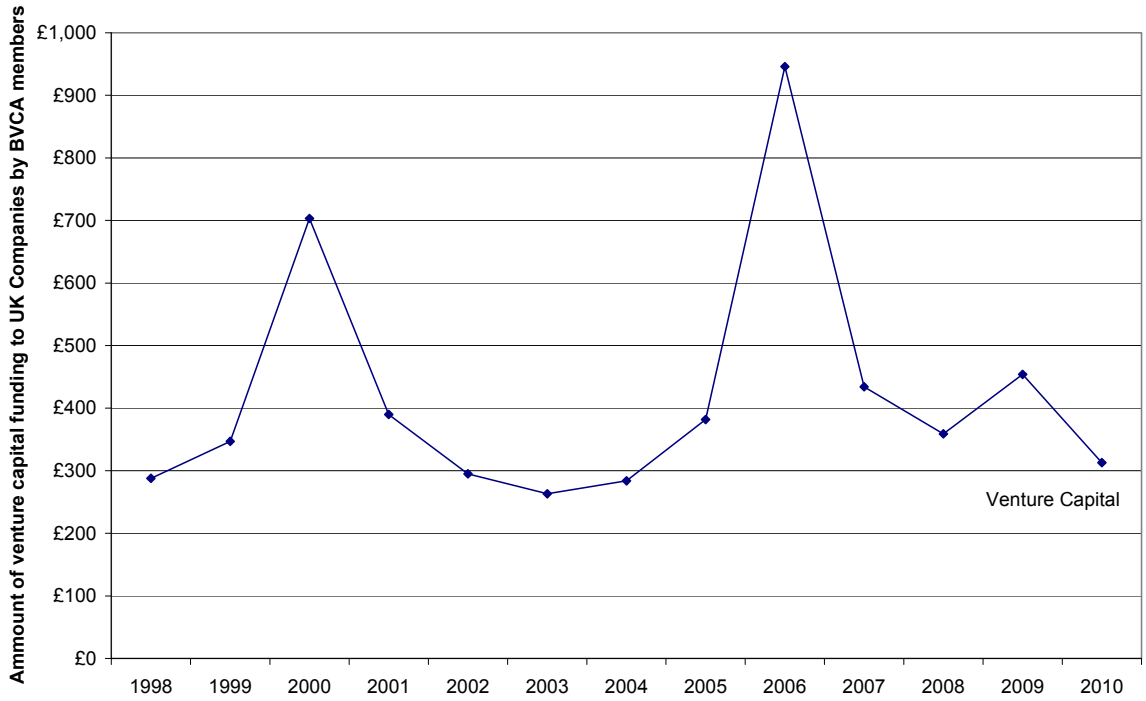
The UK government has addressed these perceived market failures creating an equity gap by offering Enterprise Investment Scheme (EIS) tax incentives to private investors and introducing public sector initiatives concerned with creating joint public/private financed venture capital funds (Murray, 2007), including Enterprise Capital Funds (ECFs) to provide public funded equity up to the EU state aid limit of £2 million (BIS, 2010).

In addition to the long standing market failure in the provision of risk capital there was clear evidence that SMEs were being impacted by the slowdown in the economy. Although the availability of both bank and risk capital finance was becoming more difficult for all SMEs, there was particularly concern for innovative businesses that are perceived to be both higher risk and less able to weather current turbulence in global markets. There was growing evidence suggesting a failure in the UK 'finance escalator' (Mason 2010; Gill 2010), particular relating to access to equity finance. Reduction in the levels of private investment finance in the UK market (BVCA, 2010), linked with blockages in private angel and VC sales (Mason, 2010; NESTA, 2011) locking angels into follow-on investments (CEEDR/Sanders Thomas Ltd, 2009) at the same time as a shift of VC finance into follow-on and less risky later stage investments, have led to three distinctive equity finance gaps: (i) initial seed finance; (ii) early stage development (Glancey Johnson, 2009); and (iii) the growing equity gap at beyond the £2 million level, rising to as high as £10 million (SQW, 2009; BIS, 2010) for more risky intensive R&D longer term investments (5-10 years) for bio/life sciences, clean technologies, digital technologies and advanced manufacturing activities.

The fall in the supply of equity finance during the recession is shown by BVCA data. Between 2007 and 2010, there was a 21% decline by value of investment.[7]

[7] It is important to note that in 2010 BVCA revised the methodology for estimating the venture capital activity of its members, which also changed the previous 2009 and 2008 figures as well. The graph shows the estimates using the current methodology. Under previous methodology, there was a 29% point decrease in number (47% point decrease by value) between 2007 and 2009, which provided strong justification for intervention in the venture capital market.

Figure 1.1: Value of UK VC (£m) funded per year by BVCA members



Source: BVCA

The National Audit Office (2009) review of venture capital support to small businesses revealed a number of key difficulties facing public assisted VC programmes, notably with regard to Regional VC funds. These included:

- The need for a flow of good quality deals
- The timing of investments
- The need for broad geographic coverage
- The need for larger fund sizes, with the ability to make follow-on investments
- That the Government (tax payers) investment should be on an equal footing to that of the private investor (e.g. equal protection and return)
- Ability to exit investments at an appropriate time
- Fund management is expensive, but can add value to the businesses via management assistance
- The cycle of return on investment, estimated initially at 10-12 years, is likely to be greater due to the economic downturn.

Included in the NAO (2009) review was the UK High Technology Fund (UKHTF) that was established in 2000 as a fund of funds with £20m government commitment and no limit on

investment. The fund was specifically designed to demonstrate to investors that commercial returns can be made from early stage, high technology investments. The UKHTF's diversification of investment through a fund of funds model proved attractive and leveraged a five to one ratio of private to public investment. However, NAO reported the financial returns on the fund were below those of comparable high technology European investment funds, which collectively operate on a much larger scale.

1.4 The Role of UKIIF

With the long established weakness in the supply of venture capital to innovative SMEs, and emerging evidence of deterioration in the supply of venture capital, the Government announced the establishment of the UKIIF in 2009, with £150 million of government investment.

UKIIF aims to provide an additional boost for high-growth, high-tech businesses struggling to raise equity finance during current economic conditions. The fund focuses on key life science, clean technologies and low carbon, digital technologies and advanced manufacturing sectors. UKIIF addresses the supply of equity in the UK VC market, specifically targeting equity finance at the potential growth sectors where intensive R&D is required and longer term investment cycles apply. Being pari passu, the fund is not bound by EU state aid limits, and the fund is able to make individual investments exceeding £2m. Previous studies (Ullah et al. 2011) suggest that these are likely to be in sectors which will experience most difficulties in obtaining sufficient equity finance for growth, particularly in the aftermath of the global credit crunch.

UKIIF aims to apply the lessons from the past (NAO, 2009) and the relative success of the UKHTF, by providing an approach which has sufficient scale with £150m public funds invested pari passu on an equal footing with matched £180m private funds, UK-wide coverage and ability to invest overseas, potentially spreading fund risk and increasing returns. Since UKIIF is investing in leading private VC funds across Europe which specialise in its target sectors, there is an understanding that these VC funds are able to invest in overseas companies based in Europe (or with European ties), as well as UK owned and based companies. The only UK government guideline in this respect is that the overall UKIIF business investments in the UK amount to at least the £150m, the equivalent of the UK Government's investment (45 per cent of the total UKIIF fund value of £330m), with targets of £25m each for Cleantech and Life Sciences investments.[8]

It is important to note that UKIIF is two fund of funds and **does not directly invest** in businesses. It is managed by expert private sector fund of funds managers through the Hermes GPE Environmental Innovation Fund (£130m) and the European Investment Fund

[8] Reflecting the financial contributions from DEACC and DOH.

(EIF) UK Future Technology Fund (£200m). These fund of funds invest specifically into innovation and technology funds targeting the key sectors: Hermes Environmental Innovation Fund invests into funds which target clean technologies and low carbon, whilst EIF UKFTF invests into funds targeting life sciences, digital and advanced manufacturing. Equity investments into businesses are made by the underlying funds purely on a commercial basis (with Hermes also co-investing directly alongside fund managers' deals if the deals are in the UK), with no government influence. Importantly this market led approach is not bound by EU state aid regulations and can invest at above the £2 million level, providing follow-on investments where appropriate.

1.5 UKIIF Structure

The fund of funds managers are tasked with investing UK government funds pari passu with other public/private funding into specialist VC funds in the UK and Europe who invest in innovative high growth potential businesses. Table 1.1 details the fund of funds investments made by the end of 2011.

The Hermes Environmental Innovation Fund (closed with a value of £130m; consisting of £50m UK government and £80m private funds) is focused on increasing the efficient use of resources and the development of clean technologies and is a major boost in the transition to a low carbon economy. To date it has made investments into five private VC funds (see Table 1.1), with further ones expected in the future.

The European Investment Fund's UK Future Technologies Fund (closed with a value of £200m; consisting of £100m UK government funds and £100m European Investment Bank funds) is focused on a number of specialist technology funds relating to life sciences, digital technology and advanced manufacturing. To date, it has also made investments into five private VC funds (see Table 1.1) with further fund investments expected in the future.

Table 1.1: UKIIF Funds (End of 2011)

Hermes GPE Environmental Innovation Fund
WHEB Ventures II
Zouk Cleantech Europe II
Hg Renewable Power Partners II
Scottish Equity Partners IV
Scottish Equity Partners Environmental Energy Fund
European Innovation Fund UK Future Technologies Fund
DFJ Esprit III
Action Heureka
Advent Life Sciences
Gilde Healthcare III
Scottish Equity Partners IV

1.6 European Context

It is widely acknowledged that the European venture capital market lacks the scale and co-ordination of the longer established US market (Murray, 2007; NESTA 2009, 2011). NESTA (2011) data drawn from Thomson One in the US and EVCA in Europe demonstrates that in 2010 the US based VC market invested $20 billion across all stages (seed, early, expansion and late), whilst European based VC market invested $5 billion and the UK based market invested $1 billion. In comparative terms US VC investments represented 0.14% of GDP whilst UK VC investments represented just 0.05% of GDP[9].

The European Commission (2011, p.5) has noted: "Today, raising funds for venture capital finance remains at sub-optimal levels…The relatively small sizes of European venture capital funds prevents the emergence of economies of scale … prerequisites for the specialisation necessary to operate successful venture capital funds." The argument presented is that structural issues undermine the European venture capital market, even in the UK and France where it is most established, which is needed to fund specialist innovation intensive R&D firms that can provide the growth and jobs for the future. The existence of transaction costs (Robb and Seamans, 2011) prevent investors gathering information and it is through the operations of larger scale financial intermediaries such as venture capitalists with specialist sectoral knowledge that an optimal level of funding for these firms can be achieved. Herriot (2011) also argues that venture capital success is founded on volume of trading, since few investments (typically less than 20 per cent, according to pareto law) yield significant financial returns.

In an era of tight financial constraint (post 2008 credit crunch) when VC investment has been considerably down across Europe and the US from the peak of 2006 (NESTA, 2011; BVCA, 2010), there is support from policymakers (European Union Commission, 2011) and practitioners (Herriot, 2011) for a pan European approach, stimulated by public investment from the European Investment Bank (EIB), with corresponding reduction in tax and financial trading barriers and managed by private sector VC fund experts (Murray, 2009). Within this context UKIIF provides one potential model for further large scale publicly assisted venture capital funds across Europe (e.g. with specific sectoral specialisms, or targeting particular groups of countries).

[9] 2010 US GDP $14,658 trillion, UK GDP $2,247 trillion (nominal IMF data). Note it is difficult to make direct comparison as VC and private equity are separated in the US, not in the UK.

2. METHODOLOGY

2.1 Introduction

This early assessment of UKIIF is predominately qualitative, with the aim of assessing the lessons learned from establishing the fund, the views of fund managers invested in through the UKIIF and the experiences of recipient investee businesses. The assessment consisted of four types of interview, undertaken either face to face or via extended telephone calls, involving:

(i) Interviews with the 2 fund of funds managers at Hermes Environmental Innovation Fund and EIF's UK Future Technologies Fund

(ii) Interviews with 6 fund managers, three from Hermes investments and three from EIF investments

(iii) Interviews by telephone with two trade associations; British Venture Capital Association (BVCA) and European Venture Capital Association (EVCA)

(iv) Interviews with 16 recipient investee businesses with five presented as more detailed case studies to provide specific examples.

2.2 Selection of Surveyed Funds

Selection of the funds for interview was agreed with BIS, based mainly on the criteria of those funds that had closed the earliest and had the longest period to invest at the time of interview, whilst also trying to achieve a range of funds specialising in different key sectors (e.g. clean technology/low carbon, life sciences, digital technologies and advanced manufacturing). Since there are also European based funds, it was also important to ensure that some of these were also represented. The majority of the fund manager interviews were undertaken face to face (Table 2.1). Additionally, surveyed fund managers were asked to provide supporting fund management data and the project team are grateful for assistance received from Capital for Enterprise Limited (CfEL), the arms length UK government organisation which oversees the operation of UKIIF (and other public funded equity/finance schemes).

Table 2.1: Selected Surveyed Funds and Interview Method

Fund	Interview Method
Hermes GPE Environmental Innovation Fund	Face to face
WHEB Ventures II	Face to face
Zouk Cleantech Europe II	Face to face
Scottish Equity Partners Environmental Energy Fund	Face to face
European Investment Fund UK Future Technologies Fund	Telephone
DFJ Esprit III	Face to face
Advent Life Sciences	Face to face
Gilde Healthcare III	Telephone

Note: Scottish Equity Partners (SEP) IV fund was also covered with the SEP EEF manager.

2.3 Selection of Stakeholders

Two stakeholder interviews were conducted with organisations representing UK and European private venture capitalists. The Chairman of the British Venture Capital Association (BVCA) was interviewed face to face, whilst the Head of External Relations at the European Venture Capital Association (EVCA) was interviewed by telephone.

2.4 Selection of Surveyed Businesses

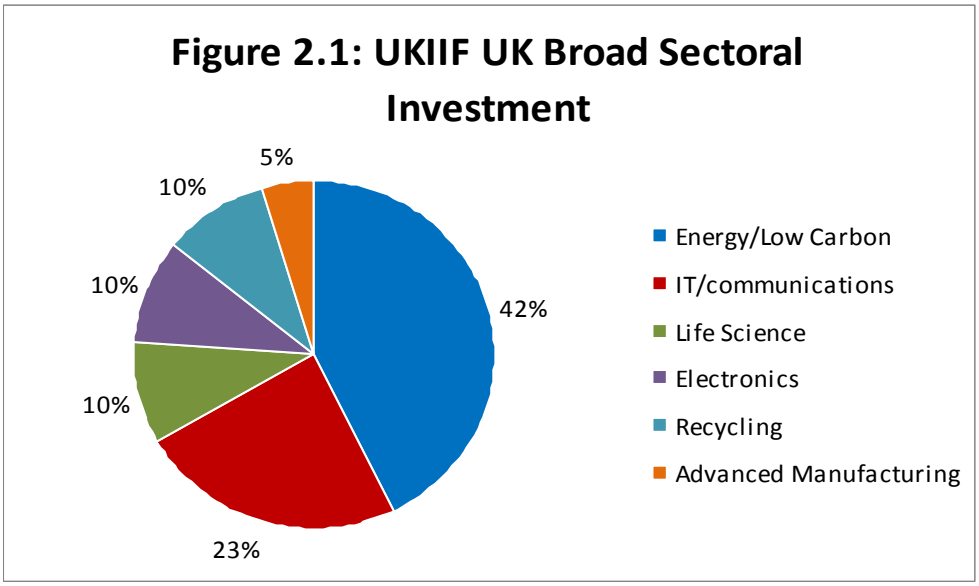
Selection of the recipient investee businesses was influenced by the level of investment activity in the selected interviewed funds at the time of the assessment. The aim was to obtain a wide range of recipients from the different sectors and stages of business/innovation development represented in the assisted group. These focus on new investments, but also include some follow-on investments within the fund portfolio after the injection of UKIIF investment. It was also suggested that since the UKIIF investment funds could invest in overseas businesses, that at least one example of an overseas investee firm be included. Eight of the sixteen interviews were undertaken face to face, with the remainder undertaken by extended telephone interview. The surveyed businesses were also asked to provide additional supporting evidence such as business plans and financial projections used for their investment pitch and subsequent business development plans to help corroborate the evidence. Five of the face to face interviews have been presented in the report as detailed case study examples within a range of sectors and different investment/innovation stages.

By the end of 2011, six funds had closed, which is relatively early within the investment process, with 44 investments in 43 businesses recorded by September 2011. Just under half (48 per cent) of the investments have been made into UK based businesses. To some extent this balance of overseas investment might reflect the earlier closure dates of the European based funds UKIIF has invested in (e.g. Acton GmbH, based in Munich, Germany), although it may be in-line with UKIIF's minimum 45 per cent UK business

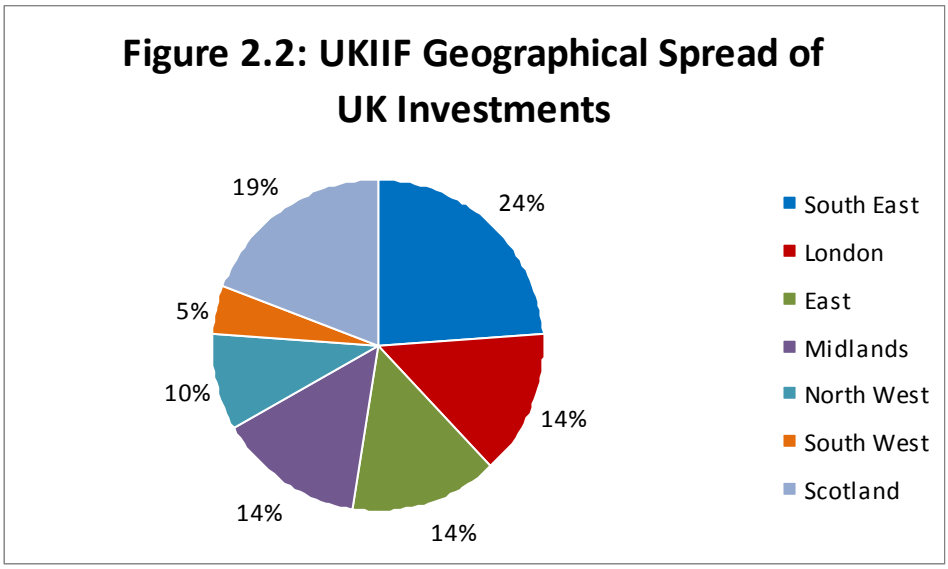
investment requirement. Overseas business investments at this stage have mainly been within Europe (19, with 11 businesses being based in Germany).

More detailed examination of the UK based business investments, which provide the sampling frame for the recipient business research, indicates that two funds dominate current investments; SEP Environmental Energies with nine investments which were acquired from a corporate VC fund and EIF DFJ Esprit Capital II, which has been very active in making six new investments. Broad sectoral analysis (Figure 2.1) indicates that investments are being made within the key target sectors the UKIIF aims to support, with a high proportion (52 per cent) of low carbon business investments into energy (including hydro, solar, wave and heat pump energy technologies) and recycling. This sectoral bias is reflective of the dominant levels of investment, at the time of this assessment, within the SEP Environmental Energies Fund. An examination of the geographical spread of investments into UK based businesses demonstrates widespread coverage (Figure 2.2). It is worth noting that the UKIIF funds are not geographically restricted and are market driven, seeking the best investment options for the funds. Whilst almost half (48 per cent) of UK business investments are located in London the East and South East regions, Scotland and the North West also account for more than one quarter (29 per cent) and the Midlands account for 14 per cent.

Figure 2.1: UKIIF UK Broad Sectoral Investment



Note: base n=21
Source: UKIIF Management Information



Note: base n=21
Source: UKIIF Management Information

3. SURVEY OF UKIIF FUND MANAGERS AND STAKEHOLDERS

3.1 Introduction

Ten interviews were conducted face to face and by telephone during February and March 2012 with the two UKIIF fund of funds managers, six underlying fund managers and the British and European Venture Capital Associations to provide wider market views as stakeholders.

Table 3.1: Fund Manager and Stakeholder interviews conducted

Date	Fund/Stakeholder	Method
07/02/12	Zouk Cleantech II	Face to Face
08/02/12	Scottish Equity Partners Environmental Energies Fund/SEP IV	Face to Face
08/02/12	Hermes GPE Environmental Innovation Fund	Face to Face
14/02/12	EIF UK Future Technologies Fund	Telephone
20/02/12	Gilde Healthcare III	Telephone
24/02/12	Advent Life Sciences	Face to Face
01/03/12	British Venture Capital Association	Face to Face
01/03/12	DFJ Esprit III	Face to Face
02/03/12	WHEB Partners Cleantech 2	Face to Face
08/03/12	European Venture Capital Association	Telephone

The interviews took between 1 hour and 1.5 hours, with underlying fund manager interviews taking longer and in some cases being supplemented by additional follow-up telephone conversations. Three underlying fund managers were interviewed from each of the two fund of funds in which UKIIF money has been invested. While the Scottish Equity Partners (SEP) interview was selected on the basis of Hermes GPE's investment in SEP's Environmental Energies Fund, the interview discussion also covered SEP's experience in raising and investing their SEP IV fund, which has received investment from both Hermes and the EIF UK Future Technologies Fund. The Stakeholder interviews were conducted with the Chairman of the BVCA and the EVCA Head of External Relations.

The six fund managers' interviews were conducted under 10 main headings to provide comparison with the recipient business experience:

- Details of the Fund
- Relationship to fund of funds and UKIIF
- Investment Strategy
- Characteristics of Applicant Businesses
- The Application Process

- Portfolio Management
- Fund Performance
- Impact on Supply of Finance and Financial Markets
- Impact on Innovation
- Impact of/Approaches to Government Intervention

A similar structure was used for the fund of funds manager interviews, with a focus on the merits of the fund of funds model replacing the discussion on the fund of funds relationship and 'Identification and selection of funds for investment' replacing the investment strategy and application process sections. Stakeholder interviews replaced the sections on strategy and process with a wider discussion on the stakeholders' views on the technology venture capital market.

3.2 Details of the Funds

The underlying funds interviewed covered a range of technologies including cleantech, energy efficiency, life sciences, medical technologies, IT and advanced manufacturing. All of the funds except one had reached their final close.

The combined overall private sector leverage of the funds examined is currently around 21 times[10] the initial UKIIF investment by the UK government. While this leverage figure may change significantly as further investments in underlying funds are completed, if maintained it would imply that some £3bn of venture capital investment will be made available for investment in high technology companies through the funds supported by the UKIIF's original £150m investment. Whilst some of this is additional funding, in some cases, funding received was already earmarked by the investors for deployment in the VC market so can not be considered additional. Four of the six fund managers interviewed received their UKIIF-backed investment as part of a second or subsequent close of their fund, with only two receiving it as part of a first close. As reaching first close is the most critical step in the existence of a fund this may indicate that the leverage effect of UKIIF is questionable as the majority of the funds would have existed even without the UKIIF investment. However, such a conclusion needs to be qualified in two ways:

(i) Some of the fund investments were made immediately after the launch of UKIIF into funds that had already approached the fund of funds manager concerned before UKIIF was established. It was more likely that the investment would be after first close in such circumstances. If so, first close fund investments might be expected to be at later dates. This is confirmed within the sample of funds interviewed. The first close funds represent investments made in the second half of 2011. The second or subsequent close investments were all made in 2010. It is therefore probably too early to assess the full impact of UKIIF on helping funds to reach first close.

[10] This leverage rate is at the upper end of the expected parameters of between 15-22 times, given that the UKIIF was established with 2.2 times leverage (£330m total from initial £150m UK government investment) and that the fund of fund managers typically invest at between 10 and 15 per cent of the underlying funds.

(ii) The fund managers of three of the funds that received investments on second or subsequent closes stated that the funds would not have been as large without the UKIIF investment. Apart from the direct benefit of the investment the managers also indicated that the credibility of the fund of funds managers' brand name and the introductions given to other potential investors helped them to achieve a larger fund by final close. Given this, it is reasonable to conclude that there were significant leverage effects even where the fund investment was made after first close.

Some of the underlying fund managers were unwilling to disclose specific details of other investors so a comprehensive picture of the sources of total commitments is not available, but types of investors identified can be summarised as in Table 3.2:

Table 3.2: Other Sources of Matched Funding

% of n=9 funds	Fund of funds	Bank	Financial Instit.	Corporate Investor	Other government funding	VC Fund Mgt	HNW indiv's	Family Office
% by fund no.	56%	33%	89%	56%	33%	22%	22%	56%
No. of funds	5	3	8	5	3	2	2	5

Source: Fund of Fund and underlying Fund Managers

3.3 The Fund of Funds model

The fund of funds model was generally viewed favourably as an approach for the public sector to support venture capital investment by both the fund of funds managers and the underlying fund managers. Advantages were seen as including:

- The leverage effect on public sector funds invested.
- The ability of the investor to diversify their investment over a wider range of fund managers and business investments, so increasing the chance of obtaining a good return on the investment and supporting more businesses.
- Access to professional fund of funds managers who will have greater competence at assessing funds, focus on the industrial subsectors of interest and in assessment of fund managers' strategies.
- Access through fund of funds managers to other private investors who may invest alongside the public funding. The credibility of the fund of funds managers will make it easier to attract such investors to co-invest.
- Bringing a commercial market perspective that is less vulnerable to political lobbying.

However, challenges include:

- A double layer of fees (fund of funds and underlying fund managers fees).
- Less investor influence over investment decisions.

The design of the UKIIF was not seen as impacting significantly on its financial or economic performance except that the requirement for any direct co-investments by fund of fund managers to be alongside underlying fund investments may slow the rate of investment of the fund of funds concerned.

3.4 Relationship of Fund Managers to the Fund of Funds and UKIIF

Fund of funds managers saw their relationship with Capital for Enterprise (CfEL), the arms length body responsible for managing the funds on behalf of BIS as good, with regular contact and discussion of the investment pipeline and other matters. The relationship with BIS was also good but much more limited, with a focus more on press releases, political and policy matters.

The underlying fund managers generally already had an investment relationship with Hermes and/or EIF before their present funds and had received UKIIF funds through that relationship. They were aware that the Hermes/EIF funds of funds included Government-sourced funding but this did not change their perception of the funds. The relationship with Hermes or EIF was far more important to them because of:

- The reputational effect on other private sector investors of having a credible investor in the first close of the fund. This was particularly stressed for Hermes, where the Hermes-Gartmore brand is seen as having a very strong reputation internationally.
- The importance of having existing investors in previous funds renew their commitment with a new fund in order to attract other investors. This was particularly stressed by some fund managers who had EIF investment in previous funds.
- The value of having support from UKIIF to ensure the fund reaches first close, as many private sector financial institutions will not even begin to consider investing unless they are certain the fund will go ahead.

Respondents comments included:

"Hermes was very helpful in reaching final close. Hermes reputation as an investor helps on size – and a fund size of less than £100m is sub-optimal"

"Hermes commitment was very helpful. The brand of Hermes-Gartmore helped internationally more than the UK Government commitment."

"It would have been materially harder to raise funds without Hermes. They came into the first close of [the current fund] after being in [the previous fund]. Hermes is highly regarded in the market and was critical to the whole thing."

"It would have been quite difficult but not impossible. It is important with a new fund to make sure that current cornerstone investors invest in the new fund so EIF involvement was important."

3.5 Identification and Selection of Funds for Investment

The fund of funds managers rely mainly on their networks to identify suitable funds for investment. Active marketing is low as the managers are well known in the fund management market although managers may write articles and speak at conferences. The quality of fund applications is considered good and sufficient to achieve investment targets.

The selection process generally begins with an enquiry, followed up by further detail if the fund manager is not already known. Initial meetings are held, followed by screening, benchmarking and early due diligence. There is then usually an early stage investment committee preview of the proposal. If the fund passes this stage then there will be further due diligence followed by a final investment proposal to the investment committee for a Yes/No decision on investment.

Fund of funds managers were reluctant to commit to specific examples where provision of investment had enabled funds to attract other sources of investment but were generally aware of the influence of their commitment on the funds fundraising activities, claiming there was a 'drag-along' impact on other investors that helped funds to reach their target size.

Government requirements were not seen as having an impact on the choice of funds to invest in by either fund manager.

3.6 Fund Investment Strategies

The funds receiving UKIIF investment cover a wide range of stages from seed/start-up investments (e.g. Advent) to a focus on growth companies with potential for international market development (e.g. Zouk). Investment sizes can range from £0.5m up to £20m depending on the fund strategy and company receiving the investment but a typical average investment seems to be in the £10-12m range.

When asked about distinctiveness of their approach, the factors emphasised by managers included:

- The experience of the investment management team
- An active, intense hands-on approach to involvement in companies

- Providing added-value through a strong interaction with management
- A strong track record
- A focus on start-ups
- Ability to make the investee company global from the start of the investment
- Time to exit

It is notable that in a question focused on 'distinctiveness' the first 3 reasons above were cited by several managers.

The key positive qualities looked for in new investments were fairly consistent across all fund managers and included:

- Good management/quality of entrepreneur
- Large underlying market giving growth potential
- Compelling product with Intellectual Property Rights and barriers to entry
- Relevance to the technologies the particular fund specialises in

Negative qualities were usually seen as the mirror image of the positive qualities (i.e. poor management, limited market, weak IPR).

UKIIF funding was not seen as affecting the fund's investment strategy except for requirement to achieve specified targets for UK investment (although the common view was that these targets would have been met anyway through normal investment activity).

All funds syndicated their investments at least in some cases. Views on difficulty of syndication varied, with some seeing it as difficult while others indicated they had regular partners with whom they syndicated. These partners were often overseas funds from e.g. the USA with the fund manager acting as lead investor to bring them in to the investment. This can be seen as an additional leverage benefit to the UK where the investment is in a UK company.

Fund promotion with all fund managers relies heavily on specialist networks and the reputation of funds in the market in order to seek out and attract investee companies. Managers also speak at and attend conferences and other public events. All funds have websites but do not seem to see them as a significant promotional component for the fund. Advisors play some role in bringing deals to the funds, but this is more likely to refer to other entrepreneurs, co-investors, non-exec directors, academics or industry contacts rather than accountants, bankers and lawyers.

3.7 Applicant Businesses and the Application Process

Most fund managers do not think in terms of a formal application process, making it difficult to assess demand in terms of 'quality enquiries' and formal applications. However with most of the interviewed funds the number of proposals resulting in meetings or significant evaluation work is at least 500-600 per annum and in two cases considerably higher. Actual investments of between 0.5 to 2 per cent[11] of the level of proposals are made per annum.

Overall quality of proposals were regarded as 'varied', 'reasonable' or 'high' by different fund managers. One manager observed that:

"Overall quality is much better than 10 years ago, the internet has enabled people to move on, express projects and identify key drivers. The key is to spend time with the entrepreneur and his vision."

However one manager objected that:

"It doesn't really work like that. We build on relationships over at least 4 months, then there is a formal application".

This fits with the observation that four of the six fund managers claimed to offer significant pre-investment support to potential applicants:

"We provide feedback, introductions, access to networks and shared due diligence on research, the market and interest from acquirers".

"We spend time with potential high quality opportunities to pull their case together"

"We will spend time advising businesses and introducing people."

Most of the fund managers have seen demand for equity investment rising over time. They attribute this to lack of availability of debt or mezzanine funding, both in the UK and elsewhere in Europe, as well as an increase in good early-stage investment opportunities coming into the market.

3.8 Portfolio Management

All fund managers see themselves as pro-active, hands-on investors who take seats on the company's Board and are in regular contact with the CEO. Management information such as management and audited accounts and Board packs are received. One partner is typically limited to caring for five portfolio companies, with between two and four days per month spent on each company.

[11] This is similar to the finding from the BIS (2010) Early Assessment of the Impact of BIS Equity fund Initiatives and is representative of the practical requirements for funds in terms of the numbers, size and quality of investments to deliver efficiency and good returns.

When dealing with underperformance fund managers place emphasis on engagement with management and Board agreement rather than formal rights and actions, although management may be replaced as a final measure. Management teams were seen as varied on application, with most fund managers expecting to have to strengthen them as part of the investment. Financial control was the other area commonly cited by fund managers as requiring strengthening.

Fund managers see themselves as providing significant added value through:

- Partner expertise
- Networks of contacts, particularly for product marketing
- Advice on general and IP strategy
- Strengthening management and the Board
- Identifying co-investors
- Managing exits

Fund managers believe that many of the companies concerned would have not got funded, performed less well, not got an exit or even 'gone bust' without this added value.

Innovation and commercialisation benefits are seen as coming from companies invested. This can include attracting overseas high-tech companies to the UK, to work with or even take-over investee companies.

3.9 Fund Performance

All fund managers felt that it was too early to assess actual company performance as funds are only a few months to two years old. The fund of funds managers do not expect the UKIIF fund to be fully realised until well after 2020, with full realisation taking over 12 years from first close. Underlying fund managers expect the performance of their funds to be in the top quartile within the market, a view supported by the fund of fund managers.

The current economic climate was seen as favourable to investment with less competition in the market and more realistic valuations, although there is a need to avoid companies with success linked to GDP growth in Europe.

When asked if now was a good time to make investments in high growth potential businesses, responses included:

"Definitely, the subdued economy means that only the most experienced and robust CEOs will try to create opportunities. There is not much heat in the market."

"Yes, absolutely! Valuations are more realistic although exits are later, further up the cycle."

"Yes – companies can get expensive unemployed people cheaply. Downturns reduce big company advantage."

The wider benefits of company investment were considered too early to fully assess although examples were cited already of:

- Company growth
- Job creation
- Access to export markets
- Technological innovation
- Strengthening of management

Given that many of the companies are small and at an early stage of their development the impact of the recession was seen as limited and sometimes positive (e.g. by lowering recruitment costs). The key issue is whether the recession will be over before the fund wishes to exit its investments.

3.10 Impact on Supply of Finance and Financial Markets

The UKIIF fund is strongly seen as addressing a gap in the market in 2009, particularly by the fund managers. The presence of UKIIF investment is seen as a positive influence in getting other private investors to come in, particularly to specialist funds. The need for government support is seen as still continuing today. Fund manager comments include:

"Very strongly – it is helpful to have home market investors deploying capital. UK based institutions focused on the venture capital market are very few"

"It was very important in 2009. Because of the financial crisis fundraising was very difficult"

"It met a market gap at the time because of institutional reluctance to invest in venture capital"

This need is seen as continuing because:

- Historic returns from early-stage investment have not been good which has tainted institutions views.
- The denominator effect took hold whereby institutions are committed to having a certain percentage of their investments in venture capital. If the value of other investments such as quoted equities falls faster than the value of VC investments then the VC investment percentage rises causing the institution to reduce VC investment to maintain the VC investment at the required ratio.

- The current Euro crisis is discouraging high-risk investment (VC is a high risk asset class).

- Innovation creates economic activity and wealth, but the process is imperfect and involves high-risk capital investment which is in short supply.

- It enables the UK to fully exploit the benefits of its universities, research base and entrepreneurial culture.

Despite these difficulties all fund managers claimed that they had been able to attract new investors to their new funds. UKIIF is not seen as directly crowding out private investors.

However concern was expressed by some stakeholders at the fast speed with which fund of funds managers were appointed. It was believed that the requirement to rapidly raise matched funds had resulted in less opportunity to attract a wider range of private investors. Some fund managers believed UKIIF could lead to displacement of EIF funds into the UKIIF funded EIF UKFTF that otherwise might have been directly invested into other UK VC funds. It must be remembered that the funds were established in 2009-10 when the supply of Venture Capital was declining and there was pressure for the fund to be established to support struggling businesses unable to raise equity finance. The UKIIF funding was seen as helpful in encouraging more fund managers and investment into the market although it was also emphasised that ultimately only good returns will do this.

3.11 Impact on Innovation

Although all managers stated that it is very early in their fund's life to assess this question, several innovation benefits were cited including:

- Development of an approach to rubber reprocessing with 1-10% of the CO^2 effect of virgin rubber production

- A new communications protocol that enables Wi-Fi over long distances and so can help rural communities

- Development of a new lighter, more effective insulation product

- A portable oxygen concentrator that improves patient mobility

Several funds have investments with links to UK universities – particularly those funds focusing on seed/early stage investments.

When asked to cite wider benefits from invested businesses most managers focused on economic rather than technical benefits (e.g. employment, tax generation, attracting other entrepreneurs) although university R&D sponsorship and building up the patent base were also cited.

3.12 Impact of/Approaches to Government Intervention

UKIIF is generally not seen as duplicating other UK Government sponsored VC schemes/funds. The only query raised was about how the UKIIF will relate to the 'Green Investment Bank' initiative and the IFC Climate Catalyst Fund.

The fund of funds model was seen as the best approach for this type of government initiative with preference for a UK approach to be maintained. Surprise was expressed at the extent to which UKIIF allowed European investment, with its position perceived as more liberal than some other EU states (e.g. Germany). There was a strong view that Government needed to continue to make equity funding available to technology companies due to current difficulties in the market. Apart from the direct benefits to the investee businesses, Government support was seen as important to maintaining the infrastructure of venture capital technology investment in the UK at a time when many private sector fund managers were turning elsewhere. Examples given include private sector fund managers focusing on purchase of existing portfolios cheaply due to the financial crisis and making money through selling it on rather than doing primary investment. The attitude was "Why do the difficult stuff if you can buy assets cheap?" The main investment need was seen as being above £1m, particularly in the £2-5m range. The recent changes to EIS legislation were seen positively as helping lower down the investment range.

4. SURVEY OF UKIIF RECIPIENT BUSINESSES

4.1 Introduction

This section presents findings from the survey of 16 UKIIF recipient businesses. The surveyed businesses are representative of the types of businesses being financed by underlying UKIIF funds, given that they represent almost two-fifths of the overall sample of businesses financed by the scheme at the end of the third quarter of 2011 and two-thirds of the UK owned and based businesses financed at that time (14/21). The businesses were surveyed either face to face, or by telephone interviews with the CEOs, or key Directors with overall knowledge of the financing and development of the business. The business interviews were completed in February 2012, with the average length of each interview being one hour.

The businesses have been drawn almost equally between the two fund of funds; Hermes Environmental Innovation Fund (10 cases) and the European Investment Fund's UK Future Technologies Fund (7 cases), with one business receiving investment from two underlying funds. The businesses have been drawn from five funds, three from Hermes EIF and two from the European Investment Fund's UKFTF. The focus on the five funds is due to these having closed earliest and therefore being more advanced in their business investments and also the requirement to focus mainly on UK owned and based businesses (14 cases, from 13 businesses).

The interviews aim to provide an overview of recipient businesses, outlining their key characteristics, reasons for seeking equity finance, customer journey and satisfaction, the range of alternative finance available and used, extent of deadweight and additionality and emerging impacts and spill over effects.

4.2 Characteristics

4.2.1 Sectoral distribution

The surveyed recipient firms operate in four broad sectors; low carbon including energy and recycling, communications and IT, advanced manufacturing, and life science (Table 4.1). This is reflective of the target markets of the VC funds sampled. For example the high proportion of energy sector activities relates to the SEP Environmental Energies and Zouk Cleantech Europe II funds, whilst the high proportion of communications and IT activities relates to the DFJ Capital Esprit III fund.

Within the Energy sector there are a range of activities being undertaken, including energy savings services and devices for the domestic and commercial sectors and smart tech solutions for integrating renewable energies into the National Grid. The communications/IT activities include: innovative use of white space wireless technology (e.g. for road toll systems), harnessing social media for enhanced customer service provision in the services sector; and real time solutions for monitoring stock market trading. Advanced manufacturing includes new plastic production using recycled materials to produce lighter, more durable products for the bottling industry, and new machinery for manufacturing recycled rubber. Life science activities include new therapeutic drug discoveries and advanced cancer treatment testing methods.

Seven firms exhibit multiple sector classification, demonstrating how their highly innovative activities crossover traditional sectoral definitions. This includes all four of the recycling firms, including: energy recycling, re-using grey water from domestic baths in toilet and heating systems; advanced manufacturing, recycling and energy, in the case of biomass substitute coal energy for power stations; recycling and communications, in the case of monitoring control devices for recycling. There are also cases of communications and energy, involving advanced aerial inspection equipment for the oil and gas industry and the use of holographic 3D radar to allow wind farms to locate closer to airports.

Table 4.1: Sectoral distribution of surveyed recipient firms

Sector	Number	% (n=16)
Low Carbon (including) - Energy - Recycling	9 7 4	56% 44% 25%
Communications/IT	6	37%
Advanced Manufacturing	3	19%
Life Science	3	19%

Note: *one firm received from two UKIIF VC funds
Seven firms have multiple sector classification

4.2.2 Location

Three of the surveyed recipient businesses are located overseas, in Germany, Eire and Canada (Table 4.2). One of these businesses has no linkages to the UK, whilst one was spun out from UK founders and is unlikely to return to the UK and a the third has acquired a UK business and is considering relocating to the UK.

The thirteen UK owned and based businesses surveyed are predominately based in the London, South East and Eastern regions (9 cases), with two from Scotland and one each from the North West and South West of England.

Table 4.2: Location of surveyed recipient firms

Region/Location	Number	% (n=16)
Overseas	3	19%
UK (total)	13	81%
London	3	19%
South East	3	19%
East	3	19%
South West	1	6%
North West	1	6%
Scotland	2	12%

4.2.3 Business Stage

The surveyed recipient businesses are predominately young early stage businesses, with 11 established between 2009 and 2011 and only two businesses established for more than ten years. There was one case of a business buy-in in 2009 which effectively transformed an ailing established manufacturing business into a new globally innovative firm. Whilst the vast majority of surveyed businesses are currently trading (13/16), the time taken to reach trading status varied with five 'soft start' companies that were immediately able to trade (e.g. they had a consultancy service function, or tradable product which may have undergone further development) and six cases that had taken between one and two years to start trading. The three businesses that are not currently trading have considerably longer lead times, ranging from three years for a communications company up to eight years for a recycling/energy company.

Nearly half (7/16) of the surveyed recipient businesses were spin outs, either from university research (4 cases), or from other companies in the sector (3 cases).

In terms of their status at the time of receiving UKIIF VC funding, the surveyed recipient businesses are evenly spread from start-ups through early R&D and later stage R&D and commercialisation, to existing larger company growth investment. Examples of these stages include:

- A start-up, one-stop, energy consultancy company seeking rapid growth in a niche market.
- An early stage R&D spin out in the communications sector seeking to develop innovative IT software in-house for global stock exchange markets.
- A later stage R&D/commercialisation company in the rubber manufacturing recycling sector, seeking final R&D for machinery leading to full commercialisation on a global scale.

- An established recycling company with 50 employees making a step change in growth by seeking US contracts and the acquisition of a software company for innovative R&D.

Table 4.3: Business stage of recipient at time of funding

Business Stage	Number	% (n=16)
Start-up	5	31%
Early stage R&D	4	25%
Later R&D and commercialisation	4	25%
Existing company growth	3	19%

Note: Stages accord with BVCA (2010) definitions[12]

4.2.4 Level of Innovation

A crucial aspect of UKIIF is that it funds innovative businesses that have the potential to make a difference in terms of their potential business growth and development. In order to gauge the level of innovation in each business, the surveyed managers were asked if they thought that their business is currently innovative, whether they have patents or copyrights protecting their intellectual property, how their innovation was developed and how "cutting edge" their current technology is compared to the wider market.

The surveyed businesses all appear to be highly innovative. Half of the managers stated that they are global leaders within their sector and the remaining interviewed managers stated that their business is the leader in the UK sector. In some of the latter cases, such as two life science businesses focusing initially on meeting UK regulatory requirements, the innovations are also likely to be global leaders.

One surveyed manager from an energy sector company developing advanced control systems exemplified the global leading status of their company by stating:

"*We are beyond cutting edge. This is a world first in providing a customer led rather than utility company led approach to energy saving and promoting more efficient use of alternative energy sources*."

The extent of innovation is highlighted by all of the surveyed businesses having either product patents or software copyrights to protect their intellectual property. One highly

[12]These definitions accord with BVCA (2010) investment stage definitions: 'seed' refers to developing the business concept; 'start-up' refers to product development and initial marketing; 'early stage' refers to moving to initial commercialisation; 'later stage' refers to developing commercialisation into profitability; 'expansion' refers to established ventures developing new products.

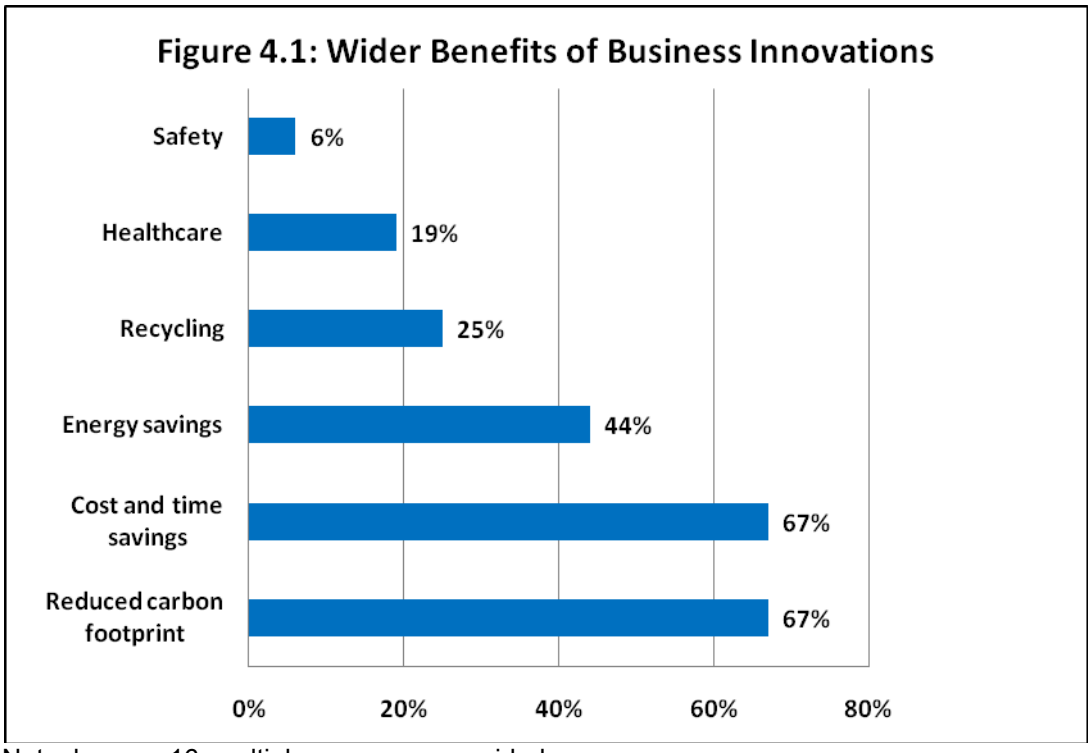
innovative cancer treatment testing company has 15 patents registered, so far. Even in cases where existing IT software has been innovatively adapted for new uses, such as in the cases of using social media to improve service sector customer services and real time monitoring and reporting on stock exchange trading activities, software copyrights have been taken out.

Innovations were achieved through a variety of means, but largely demonstrate the need for harnessing external expertise. The most frequently mentioned approach, in seven cases, involved either university spin-outs or collaborations through Knowledge Transfer Partnerships (KTPs) or European FP7 projects. Four businesses innovated through industry spin-outs, notably in three cases where software had been innovatively adapted. Two businesses innovated through strategic acquisitions of companies with sector specific and IT software writing experience, whilst the remaining three businesses are developing innovations through the founders, in-house. However, in one of the cases currently being developed in-house for the UK market, the original product came from China.

When asked whether their technology was “cutting edge” compared to the market, the vast majority indicated that this was the case. This was particularly the case for the advanced manufacturing companies that had developed revolutionary approaches to rubber recycling, biomass fuel and lightweight recycled plastics production. There were also completely ‘game changing’ technologies being used by companies in the energy, communications and life sciences sectors. For example, the use of 3D holographic radar to enable wind farms to be located closer to airports and ‘whitespace’ radio technology for improved wireless technology applications. In three cases where existing software technology had been adapted for novel uses, the approaches were still perceived as cutting edge. Only in the case of a grey water energy saving company was the technology deemed as less than cutting edge, however, the approach was nonetheless viewed as highly innovative.

4.2.5 Wider Benefits of Innovations

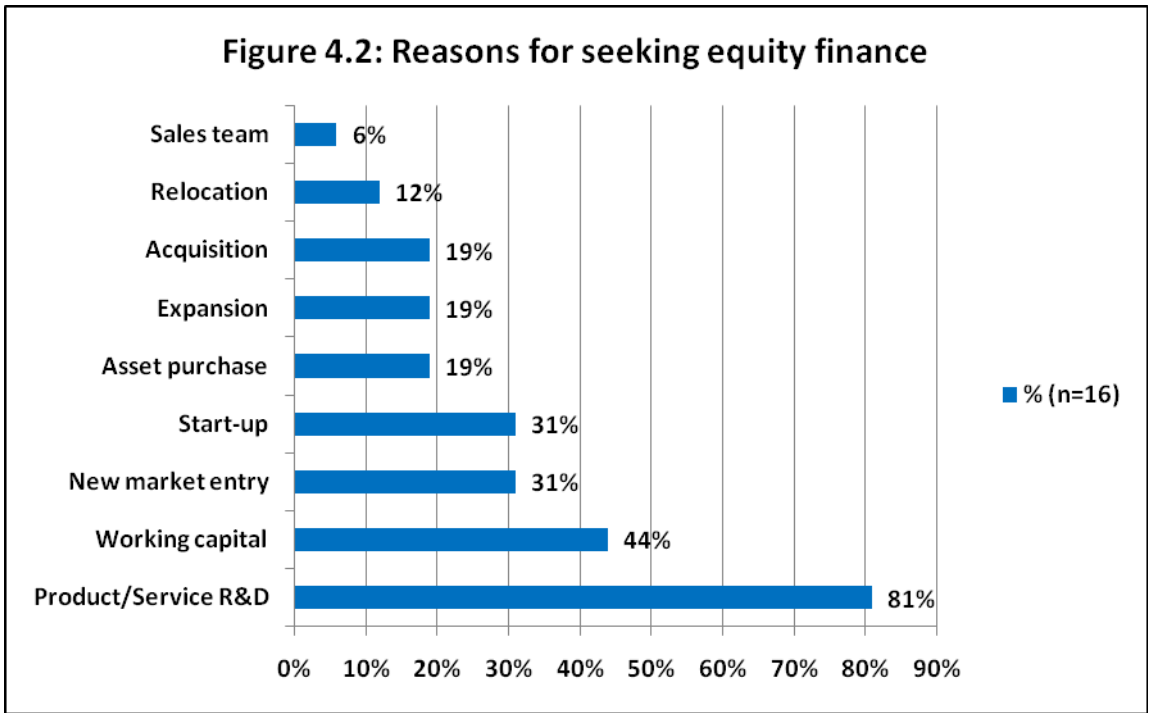
The wider benefits of the innovative activities being undertaken were considerable (Figure 4.1), with the majority impacting on reducing carbon footprint through energy savings and recycling activities and the majority also enabling savings in operational cost and time. One example was the innovative use of aerial drone surveillance of oil and gas rigs, enabling safety checks to be made whilst operating systems are still active, saving time and costs and minimising risk to human life.



Note: base n=16, multiple responses provided

4.3 Reason for Seeking Equity Investment

The main reason (13 cases) for seeking equity finance was to fund research and development to develop new products and services (Figure 4.2). Other more frequently mentioned reasons included working capital (7 cases) for business development, new market entry for a start-up seeking immediate market entry in the UK and four overseas exporters. Five businesses were seeking start-up finance, three businesses were seeking asset equipment purchases (e.g. manufacturing equipment and vehicles), three existing businesses were seeking major step change expansion finance and three businesses were seeking strategic acquisitions (including one start-up).



Note: respondents could provide multiple responses

The vast majority of the recipient surveyed businesses (13 cases; 81 per cent) were seeking first round investment finance for start-up, early stage R&D or existing business growth. Three cases were seeking second round finance (including two receiving follow-on UKIIF/private VC finance), which was for further R&D and business growth and two cases seeking third round finance for later stage R&D, product manufacturing and commercialisation.

All surveyed recipient businesses were seeking equity finance in order to develop or commercialise innovative products and services. All 13 of the UK owned and based recipient businesses were seeking equity finance to develop and commercialise products and services that are innovative to the UK market and in the majority of cases they are innovative to the global market.

4.4 Amount of Finance Sought and Received

The sixteen surveyed UKIIF recipient businesses were undertaking projects with a total aggregate cost of £96.3m at the time of funding, of which £45.7m (47 per cent) has been provided through UKIIF equity finance (Table 4.4). The average amount of UKIIF funding received by recipient businesses was almost £2.9m (median £2.4m), with a further £3 million being received from other sources, mainly from other VCs and business angels, but also including bank debt finance. More than four fifths (83 per cent) of the UKIIF funding received by the surveyed businesses has been allocated to first round investment, with

around 10 per cent going to second round and just seven per cent going to third round investment.

Table 4.4: UKIIF equity finance received by funding round

Finance (£m)/Funding Round	First	Second	Third	Total
Total Project Cost	83.3	6.5	6.6	96.3
UKIIF received	**38**	**4.3**	**3.3**	**45.7**
Average UKIIF	2.9	1.4	1.7	2.9
Median UKIIF	2.6	0.8	1.7	2.4
Other VC finance	14.4	2.1	0.8	17.3
Other external equity (angels/bonds)	16.9	0	1	17.9
Internal equity (founders/employees)	3.8	0	0	3.8
Mezzanine and loan finance	8.3	0	0	8.3
Total other finance raised	43.5	2.1	1.8	47.4
% of UKIIF to project cost	46%	67%	50%	47%
% of UKIIF to total finance raised	47%	67%	65%	49%
Number of business cases	13	3	2	16

Note: two businesses received follow on second round funding from UKIIF
Euro finance has been converted (average rate of €1.15=£1)

It is notable that UKIIF represents a considerably lower proportion of total project finance raised at the first round, at just under half, compared to rounds two and three which are around two thirds. This is perhaps due to the need for greater spread of risk at the earlier stages of investment, as well as the enhanced financial leverage that is possible once UKIIF is in place (see section 4.6). Certainly, there is a greater variety of types of finance exhibited in the first round cases, which includes other VC finance, business angel syndicates and individual high net worth investors. In one case £15.6m was raised from bond investments, one case received a £0.5m loan from a wind farm association, one case received a mezzanine loan of £7.8m, whilst in another case £1.3m came from business angels along with £1.8m from the founders and employees. At the second and third rounds finance has come either from VCs or business angels.

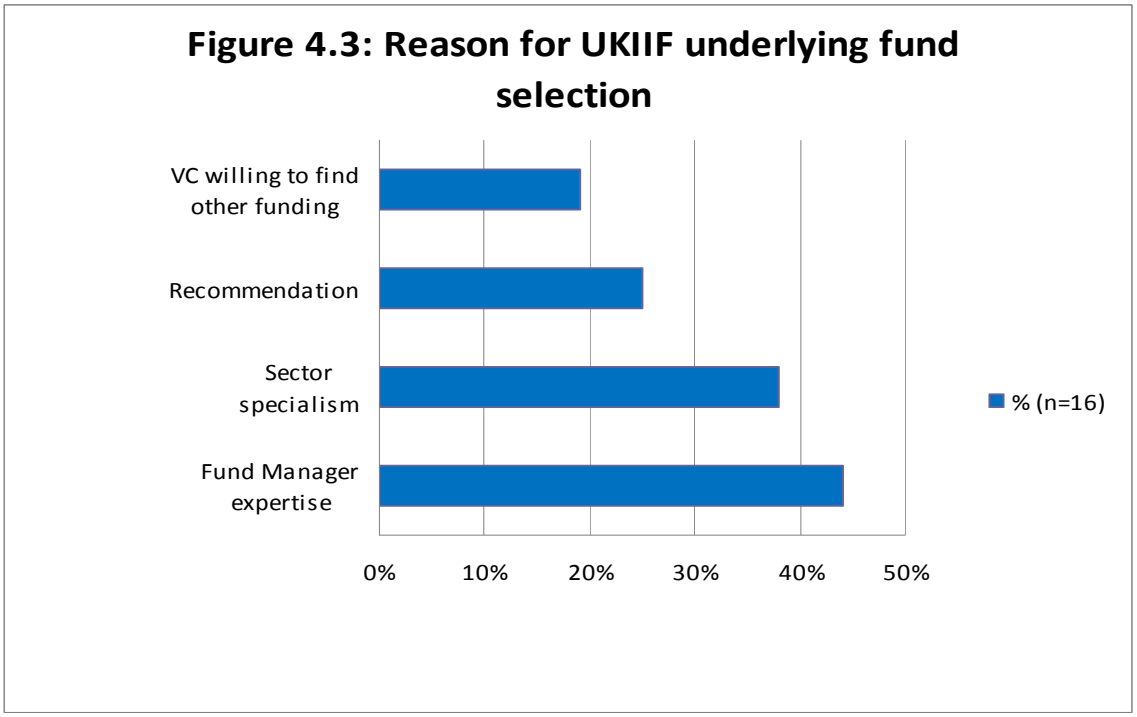
UKIIF investments range from £75,000 start-up finance, with matched funding and second round follow-on finance to a company developing new surveillance techniques for the oil and gas industry, up to a £10.4m first round investment in an established recycling company diversifying into biomass energy R&D and production. The average and median amounts of UKIIF investments were higher in the first round than in the succeeding rounds. However, there were only five cases recorded across rounds two and three.

4.5 Customer Journey

Although the UKIIF operates on a Fund of Funds model through Hermes GPE and the European Investment Fund, it is helpful to understand how innovative companies access equity investment. The surveyed recipient businesses were asked how they had found the underlying UKIIF fund. It should be noted that since the underlying fund was not promoted or identified under the UKIIF brand, this section explores how the recipient business found the underlying VC fund. In most cases this related to the respondent manager's previous knowledge and experience of using VC finance and the types of funds that operate at their funding stage within their sector. Several of the interviewed managers were serial entrepreneurs who had previously used funds and five referred to knowing specific fund managers. Three managers specifically mentioned using VC finder services offered through an accountancy company, a larger spin-out company and a science park.

Only two of the surveyed recipients had no choice of other finance, whilst in three further cases the UKIIF underlying fund was the only funding approached because the underlying fund was known and trusted. For the remaining businesses seven had between two and five private VC options, one had a corporate finance option, one had angel finance options and one had a bank finance option.

In all cases the UKIIF underlying fund selected was described as the 'first' and 'natural' choice fund for recipients. Although a wide array of reasons were provided for fund selection (figure 4.3), this was largely due to sectoral specialism and fund manager expertise. It is worth noting that this finding is corroborated by the underlying fund manager interviews where they claimed that it is their reputation in the relevant sectors and networks that enabled them to find businesses to invest in. A recommendation from a VC finder or business contact also played a key role in a quarter of cases. In three cases, the VC's willingness to assist with finding other funding was important.



Note: respondents could provide multiple responses

In more specific detail, surveyed managers' statements included:

"I know the fund manager, having worked with him previously on another early stage communications company and knew that they would provide excellent early stage sector support, understand what we are trying to achieve and offer the best valuation." CEO of a communications company seeking first round funding (from DFJ)

"The VC was a great fit for our businesses as they have a US office with excellent working knowledge of the social media communications sector." CEO of a communications company seeking later stage R&D and commercialisation finance (from DFJ)

"The fund has the best track record in cleantech finance in Europe." Director of a recycling company seeking first round finance for a biomass energy production project (from Zouk)

"The fund was really helpful in negotiating licensing arrangements prior to our start-up and really knows the early stage life science market." CEO of a life science start-up, seeking first round finance (from Advent)

"This is a specialist energy fund with access to other matched funds." CEO of an energy company seeking second round follow-on finance for later stage R&D (from SEP)

"The fund is a cleantech specialist, with a fund manager who really knows their stuff and who can help us in US and European export expansion plans." CEO of a recycling company seeking second round finance for acquisition and expansion (from WHEB)

4.5.1 Knowledge of UK government funding

Interviewed managers were asked if they knew about UK government investment through UKIIF in their selected VC fund. Only in one case was this known at the time of funding. Indeed, the vast majority were not aware of UK government investment until the time of this survey, but those with knowledge were keen to stress that it was a 'good idea' and 'much needed'. All of the surveyed managers indicated that they had not noticed anything different about the UKIIF funding process to that experienced from other private VCs.

When asked whether knowing about the UK government funding had changed their perception of the VC fund the vast majority were ambivalent stating that 'it makes no difference'. Several surveyed managers were very supportive, suggesting that it was particularly good as early stage funding is very hard to find, whilst a couple were pleasantly surprised that they had not encountered the usual "bureaucracy and red tape associated with government schemes."

4.5.2 Funding process time

The average time taken for the surveyed recipient businesses to find and obtain funding was nine months. This ranged from as little as one month in the case of a business established by a former VC fund manager up to three years in a case where the economic down-turn had prevented access to bank finance, which was a vital element of the deal structure.

The process of finding UKIIF funding varied considerably, depending on each business management's previous experience in finding and using equity finance and their initial choice of finance. Four businesses found the underlying UKIIF fund immediately, or within one month, because they knew they required private VC funding and knew the funds and fund managers that would be most likely to fit their requirements.

The average time to find the fund was between three to four months and this was typical where 'VC finders' were used and where an initial period of setting out a memorandum for investors was undertaken; producing business plans, cash-flows, projections, market research and references. Five businesses took between six to nine months to find the underlying UKIIF fund and this was typically because the search for finance had been focused on other types of funders, such as business angels. For example one interviewed manager complained that:

"It was taking far too long to find sufficient finance from angels because they are fragmented and it requires separate negotiations for each investor. Once we brought in a

board member to find private VC finance, this proved to be a much quicker and more productive approach." CEO of a communications company

A Director of a European recycling company stated:

"*We initially looked at funding in our own country, but these were buyout funds and we wanted to retain ownership, so eventually found a couple of private VC funds which offered more suitable options for us*."

The average time taken to undertake due diligence and negotiate contracts was five months. This ranged from one month where the businesses were well prepared for this process up to eight months for a complex life science spin-out which required licensing agreements.

In two further cases the process of seeking equity finance had been interrupted by the economic down-turn. In one case the business put the private equity financing on hold for 18 months until the market improved, whilst in another case bank finance was required as part of the deal structure. The CEO of this UK based advanced manufacturing business explained:

"Obtaining private equity finance was not our major concern. The key was getting bank finance. For three years we sought bank finance from the UK, but no one was interested. In the end we took up a mezzanine type loan with a Czech bank."

More specifically, surveyed managers were asked if they had experienced problems with the application process for the UKIIF finance. Only three managers made complaints. One CEO suggested that the due diligence process was very extensive and time consuming and that the overall legal costs and time taken up in negotiations over a seven month period was more than necessary. Another CEO noted that the UKIIF fund they selected did not assist start-ups and in order to overcome this issue they had to acquire an existing company. A third CEO complained that the UKIIF fund selected did not provide all of the finance required and was not particularly helpful in finding other equity finance:

"The fund were keen to invest, but only wanted to put in a small amount. They said we needed more investors, but didn't help much in that process, providing a bit of coaching but didn't pitch with us. I think they wanted to test me to see if I was up to it."

4.6 Funding Leverage

Funding leverage has been calculated by obtaining surveyed managers' views as to the net investment obtained during each funding round as a result of the investment made by UKIIF; defined as 'attributable leveraged finance'. In two cases no other finance was received at the time of the UKIIF investment round, whilst in another four cases it was explained that the other finance raised was already in place at the time. In one case this

included a large scale bond issue which was raised separately in parallel to the search for VC finance. Another of these managers commented:

"*UKIIF finance was welcome, but it was brought in at the second round by our existing VC*." CEO of an established overseas recycling company.

Therefore, Table 4.5 below presents net attributable leveraged finance which surveyed managers were certain could not have been raised at the time of the funding round without the UKIIF fund acting as a lead investor.

Table 4.5: UKIIF attributable leverage

Finance (£m)/Funding Round	First	Second	Third	Total
Total Project Cost	83.3	6.5	6.6	96.3
UKIIF received	38	4.3	3.3	45.7
UKIIF attributable leveraged finance	24.5	0.7	0	25.2
% of leveraged finance to UKIIF	65%	15%	0%	55%
Number of business cases	13	3	2	16

Note: two businesses received follow on second round funding from UKIIF
Euro finance has been converted (average rate of €1.15=£1)

Of the 16 recipient businesses surveyed, these businesses received a total of £45.7m UKIIF investment, which then leveraged an additional £25.2m from other funding sources, representing more than half (55 per cent) of the initial UKIIF investment. The proportion of attributable leveraged finance was greatest during the first round, when the lead investment role of the UKIIF funds was perceived as most vital in contributing to obtaining additional finance. In all of the surveyed cases, the UKIIF underlying fund was the largest VC investor in the investment round examined. Only in one case, involving second round funding of a recycling company, was the UKIIF underlying VC fund not the lead investor, as it was levered in by an existing first round VC. This case has not been included as attributable leveraged funding in Table 4.5.

In several cases, surveyed managers were keen to express their appreciation of the work done by the UKIIF underlying fund in assisting with finding, pitching and negotiating for additional VC and bank finance, whilst others noted that having VC finance was a crucial tipping factor which gave confidence to other investors such as business angels syndicates and high net worth individuals to invest.

"The [UKIIF] VC's market knowledge and willingness to work with us to find another VC were invaluable." CEO of an advanced manufacturing company seeking first round finance.

"As a result of the [UKIIF] funding we were able to get further investment from a private investor and also a bank loan supported by the Enterprise Finance Guarantee." CEO of a communications business seeking first round finance.

"It has been a very good experience and the [UKIIF] fund have been unusually supportive, helping with the process of accessing finance, including pitching. They wanted another VC partner, as it is part of the validation process, leading to greater mutual strength - if they can get several VC backers it will add value." CEO of an overseas advanced manufacturing and recycling company, seeking first and second round finance.

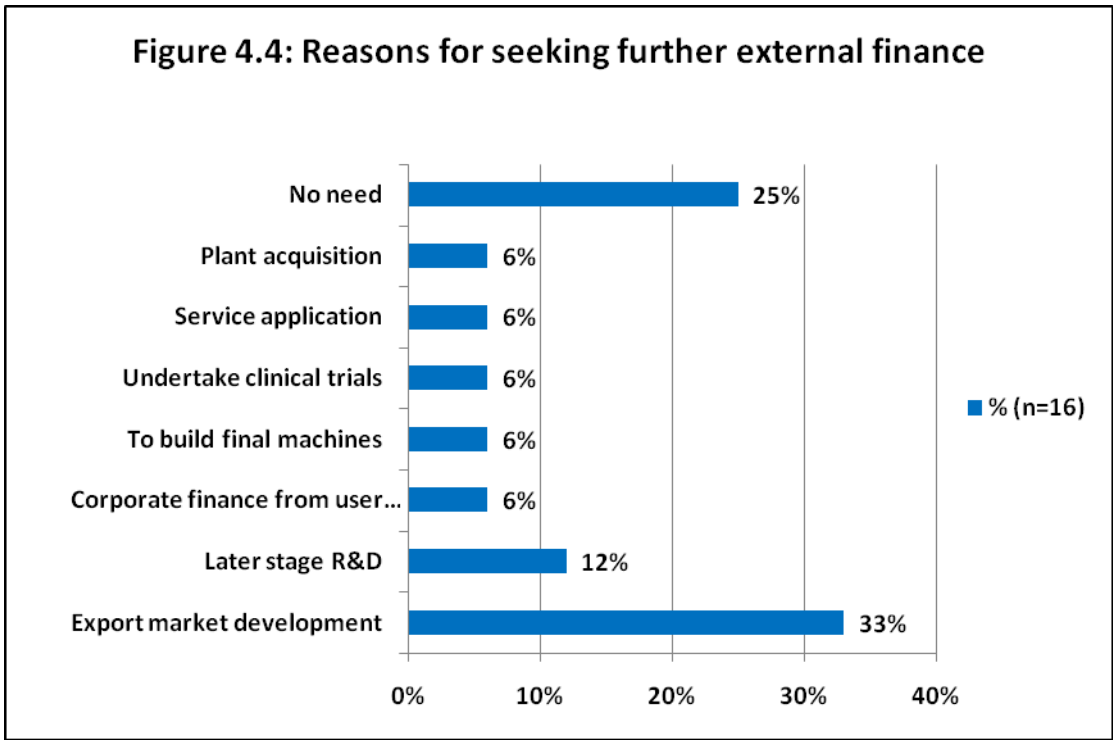
4.6.1 UKIIF shareholding

The shareholding held by the UKIIF underlying funds amongst the 16 surveyed recipient businesses varied from 17 per cent to 50 per cent. The average UKIIF shareholding in these companies, allowing for dilutions, is currently 31 per cent (median 29 per cent).

4.6.2 Further external funding

Interviewed managers were asked if they would require additional external funding for their business and, if so, whether initial UKIIF funding had led to subsequent opportunities for funding, after the round in which UKIIF finance was first received.

Three quarters (12) of the surveyed recipient businesses stated that they would require additional external finance. The most frequently mentioned reason for requiring further finance was to assist exports, particularly in the US market. Two recipient businesses referred to later stage R&D and one life science business will require additional funding for clinical trials, whilst other recipients were close to commercialisation such as an advanced manufacturer which will require additional finance to build its final machines and a communications company requiring additional finance to operate an initial service application (Figure 4.4).



Note: respondents could provide multiple responses

When asked about the time frame to the next round of investment, two surveyed businesses had recently received their next round finance, which in both cases involved follow-on investment from the UKIIF underlying fund. A further six cases were currently seeking additional external finance with a view to securing this within the next 6-12 months. In half of these cases there was an expectation that the UKIIF VC would provide at least half the funding required. In four cases, the next round of funding was likely to be between 2-3 years away and at that stage it was expected that the UKIIF VC would be bought out, for example through a larger Corporate VC, IPO or management buy-out.

The amount of external funding required at the next round of funding ranged from £1m up to £10m, with an average of £5.1m (median £4.4m).

Overall five surveyed managers felt that their underlying UKIIF VC would provide further investment, but in some cases it was acknowledged that their UKIIF VC would no longer be the lead investor during the next stage of funding, although it was believed that they would assist in finding new VC partner investors. In the cases where the UKIIF VC was not expected to invest further in the business, this typically related to later stage funding where it was felt that a different type of investor would be required. For example, several of the businesses seeking to expand into the US market will specifically seek US VCs, whilst other later stage companies will seek corporate VC finance to assist with commercialisation. Several managers remarked that their UKIIF VC was selected for their specialism with early stage financing in the sector and that other VCs would be better placed for the commercialisation stage.

Although only a third of cases (5) appear likely to receive further finance from their UKIIF VC, when asked whether their involvement gave them greater confidence in raising further finance, all interviewed managers believed this to be the case. For around half this was because the VC would either provide further funding or at least help to find other investors. Even where this was not the case, for example a business that will be pursuing a strategy of developing corporate user groups that will invest in the business and assist faster growth than the private UKIIF VC can deliver, there was a strong belief that *"having the [UKIIF] VC on board gave the business far greater credibility with other investors and financial institutions."*

4.7 Impact of UKIIF Investment

This section provides an early assessment of the likely impacts of UKIIF finance on the 16 surveyed recipient businesses. Since these businesses have only received funding within the last two years and in some cases only a month or two prior to the survey taking place, the data provided should be viewed in context and **treated with some caution**. This section focuses on sales turnover, business profitability, employment and exporting activities, examining actual and forecast changes that have taken place since initial receipt of UKIIF finance for the first year and for three years thereafter.

4.7.1 Sales turnover

Table 4.6: Sales Turnover at time of UKIIF funding and future forecasts

Sales (£m)	Time of Funding	1 Year after funding	3 Years after funding
Average	13.1	17.5	39.1
Median	1.2	4	20
Range	100k to 59.1m	870k to 91.3m	100k to 113m
n=	7	13	14

Seven businesses provided annual sales turnover data for the time of initial UKIIF funding, indicating that they were already trading at that time. At that stage these businesses had an average sales turnover of £13.1m (median £1.2m). Thirteen businesses provided sales turnover for 12 months after funding (some actual and some forecast). At this stage the average sales turnover reported was £17.5m (median £4m), ranging from £870,000 up to £91.3m. In three years after the initial UKIIF funding, 14 businesses estimate annual sales turnover aggregating £546.7m. At this stage the estimated average annual sales turnover will be £39.1m (median £20m), ranging from £100,000 to £113m and with five businesses forecasting over £50m in sales turnover. Overall, taking the average sales turnover for the 15 surveyed businesses providing data (including one that will not be trading within three years) from the time of initial UKIIF funding (£6m) to the estimate for three years after initial funding (£36m), the average sales turnover for surveyed businesses is forecast to increase by £30m (a median increase of £20m).

4.7.2 Net Profitability

Table 4.7: Net Profitability at time of UKIIF funding and future forecasts

	Time of Funding		1 Year after funding		3 Years after funding	
Profitability	Number	% (n=16)	Number	% (n=16)	Number	% (n=16)
Profit	3	19	9	55	14	88
Breakeven	0	0	5	33	1	6
Loss	4	25	1	6	0	0
Not trading	9	56	1	6	1	6

Just under half (7) of the UKIIF surveyed recipient businesses were trading at the time of receiving their first UKIIF funding, with only three cases achieving net profit.

One year after receiving funding only one business will not be trading. At this stage the majority (55 per cent) of businesses report (some actual and some forecast) that they will be achieving net profit, with average projected net profitability of £3.4m (median £1.7m; n=6), ranging from £200,000 up to £12.2m in an established advanced manufacturing company. In three years time only two businesses are not forecasting net profits; a life science company that will not yet be trading and a communications company that will be at breakeven. In three year's time the average net profitability forecast is £8.4m (median £7.4m; n=11), ranging from £500,000 up to £26.1m in an advanced manufacturing company.

4.7.3 Employment

Table 4.8: Employment at time of UKIIF funding and future forecasts

	Time of Funding	1 Year after funding	3 Years after funding
Employment	**Number**	**Number**	**Number**
Aggregate	563	1359	2123
Average	35	84	132
Median	8	34	100
Range	1 to 235	4 to 275	4 to 350

Note: n=16

All 16 UKIIF surveyed recipient businesses provided employment data. This indicated that at the time of initial UKIIF funding the aggregate employment was 563, with an average of 35 employees (median 8 employees). The largest employer was an established advanced manufacturing company with 235 employees. Employment is reported (some actual and some forecast) to increase one year after funding by 141 per cent, with the average size rising to 84 employees (median 34 employees). In three years from initial funding the overall aggregate employment is forecast to have increased by 277 per cent, with the average size being 132 employees (median 100 employees). At this stage there will be three large businesses with 250 or more employees and only two small businesses with

less than 50 employees. Overall, over the three year period from initial UKIIF funding, average employment for the 16 recipient businesses is forecast to increase by 97 staff (a median increase of 92 staff).

4.7.4 Exports

In this section reporting relates to the 12 UK owned and based businesses that are currently trading or forecasting to start trading during the next three years.

Table 4.9: Exports at time of UKIIF funding and future forecasts

Exports	Time of Funding		1 Year after funding		3 Years after funding	
% sales	**Number**	**% (n=5)**	**Number**	**%(n=11)**	**Number**	**%(n=12)**
None	1	20	3	27	2	17
1 to 24	1	20	2	18	2	17
25 to 49	1	20	0	0	2	17
50 to 74	0	0	3	27	3	25
75+	2	40	3	27	3	25
N=	5	100	11	100	12	100

Note: changes in n=base due to numbers of UK businesses trading

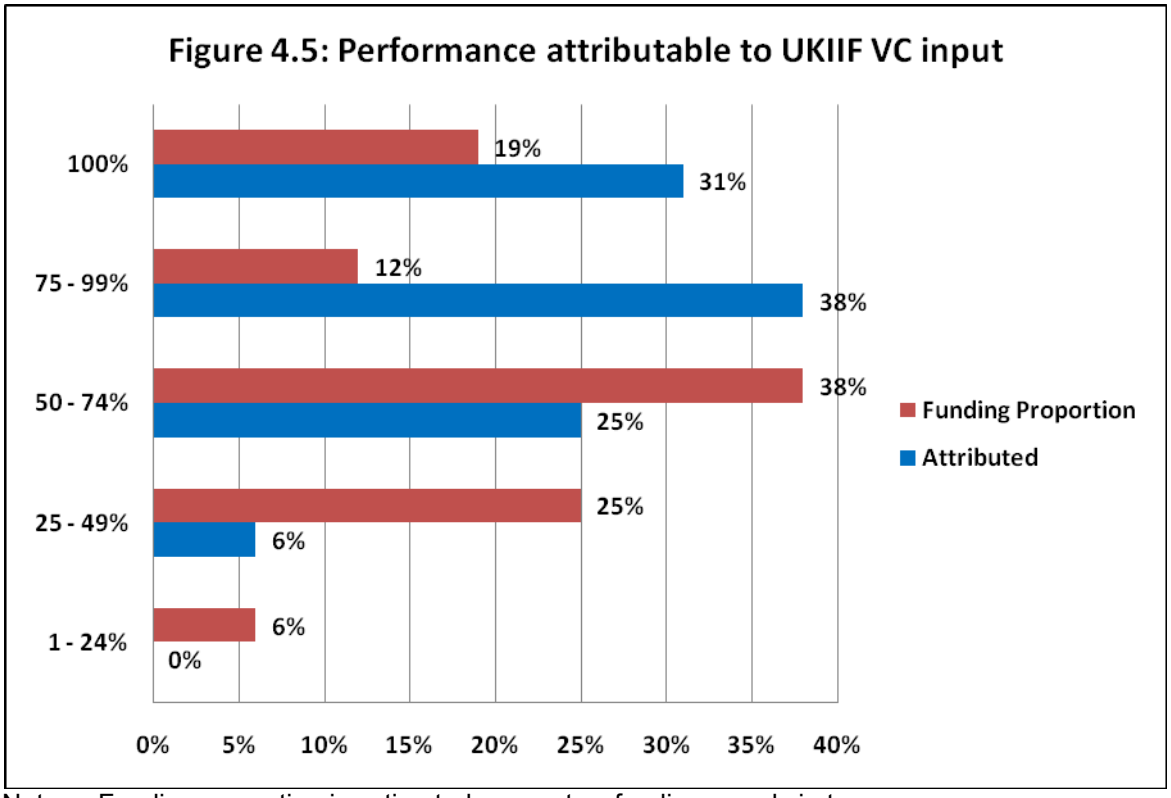
The number of UK owned and based recipient businesses exporting increases over time (Table 4.9), whilst the proportion remains very high at around four fifths. Four of the five (80 per cent) UK businesses trading at the time of UKIIF funding were exporting, whereas in three years time there are forecast to be 10 exporters (83 per cent) out of the 12 UK businesses that will be trading at that time. Furthermore, the proportion and volume of export sales activity within these businesses is typically increasing. At the time of UKIIF funding just two businesses were gaining over half of their sales turnover through exports, whilst in three years time this is likely to be the case for six UK based businesses.

One year on from initial UKIIF funding six recipient UK owned and based businesses reported (some actual and some forecast) obtaining more than half of their annual sales turnover from exports and these are fast growth businesses. They include: an advanced manufacturing company where all sales of its innovative plastics products are generated from globally expanding export markets; a life science company whose cancer testing services are in high demand in mature economies leading to a doubling of sales year on year; an energy company whose software solutions to integrating renewable energies into the grid are in demand in European and North American markets, also leading to annual doubling of sales turnover over the next three years.

However, not all high growth performance is related to exporting activities. A significantly rapid expanding UK energy company will not be seeking to export their services as they have established a niche foothold in the growing UK renewable energies market, where they can offer specialist one-stop-shop service to commercial and high net worth private customers.

4.7.5 Performance attributable to UKIIF

The surveyed UKIIF recipient business managers were asked to assess the overall extent to which the UKIIF VC funding had impacted on their overall business performance (assessing sales turnover, net profitability, employment and export sales where applicable).



Note: Funding proportion is estimated across two funding rounds in two cases.
Vertical axis represents percentage group, horizontal axis represents percentage of businesses

It is evident from Figure 4.5 that the surveyed managers rated the input of the UKIIF VC funding very highly, at well beyond the financial value of the UKIIF funding that they received in proportion to the overall project cost. For example, whilst five recipient businesses (31 per cent) received less than half of the project cost through UKIIF VC finance, only one business (6 per cent) attributed the value of this input to their overall performance at less than 50 per cent. Furthermore, over two thirds (69 per cent; 11 of 16 cases) attributed at least 75 per cent of their performance to the UKIIF input, with five cases (31 per cent) suggesting that it was totally responsible for their business performance.

The main reasons for this assessment mainly related to the ability to go ahead with the project, the additional funding that UKIIF levered from other sources and the added value that the VCs had provided in the management and development of the business. For example, in an energy business where UKIIF VC funding amounted to less than half of the overall project cost, the interviewed CEO stated:

"I would value the fund's input at about 60% of our current performance - probably more as the fund managers are really good and understand what is required for success. The insight and linkages that they provide are a huge advantage. The rest of our performance I put down to our own management capability and experience and some useful input from the other investors."

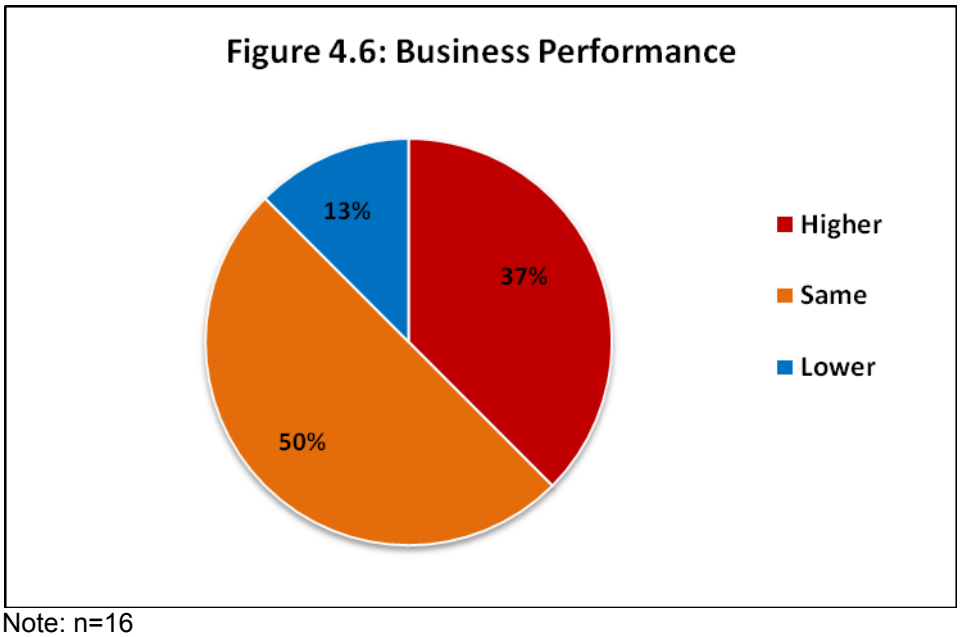
"The fund only provided two thirds of the finance for our project, but it also enabled us to find the remaining third from another VC investor. Without this finance we could not have developed our machinery, so 100 per cent of our current development is due to this." CEO of an advanced manufacturing company.

4.7.6 Current performance

Interviewed managers were asked to assess how the business was currently performing compared to the forecast at the time of receiving UKIIF funding. At this early stage, six (37 per cent) are performing better than forecast, with half on target and only two businesses slightly behind.

Those that were achieving better business growth/development results than expected were doing so mainly because the market for their products and services was stronger than expected. All of these businesses are UK owned and based and this was particularly the case in the energy sector (3 cases) and for exporters (3 cases). For example a communications company developing innovative wireless technology was experiencing considerable demand for its 'machine to machine' information technology which could be utilised by the rapidly expanding European road toll networks, whilst a life science cancer drug testing company was experiencing huge demand from developed countries for its services. The two underperforming businesses both remained very positive. One energy efficiency company was estimated to be about three months behind schedule, with the manager stating that he had "…set the bar high" and was "…confident of global business growth." The other advanced manufacturing business had experienced some market resistance and technical problems as the interviewed CEO explained:

"The main problem has been that although the market for our work is out there, we have met some customer resistance because they don't believe it is possible and also some technical problems with our processing equipment, but this will be ironed out, so it is taking longer to get established and generate cash-flow, which has led to the need for another round of VC funding."



Note: n=16

4.8 Ease of Access to Equity Finance

The surveyed UKIIF recipient business managers were asked to assess how easy it has been for their types of business to obtain equity finance in the market and how this compares to any previous experience that they may have had. The responses were very mixed, being largely dependent on the business's sector, stage of product/service development and level of experience in raising equity finance.

Just over half of the surveyed managers (9 cases) suggested that the process had been "as easy as could be expected." They acknowledged that there was a need to provide detailed and credible business plans and forecasts and that it really helped to have the right management team on board with experience in finding, pitching and negotiating with VCs. Some had struggled initially to find VC finance, but had then achieved success by using professional VC finder services, or by recruiting experienced managers with experience in using VC finance. It was also noted by energy sector businesses that there is currently 'considerable' and 'keen' interest in 'cleantech' investments and a communications company specialising in harnessing social media for corporate customer service purposes that there was considerable interest, although valuations were lower than hoped for. One life science businesses stated that the market was *"…good for later stage R&D where there is already a tradable technology platform."* A recycling businesses also observed that it was *"…better to be past the early R&D stage."*

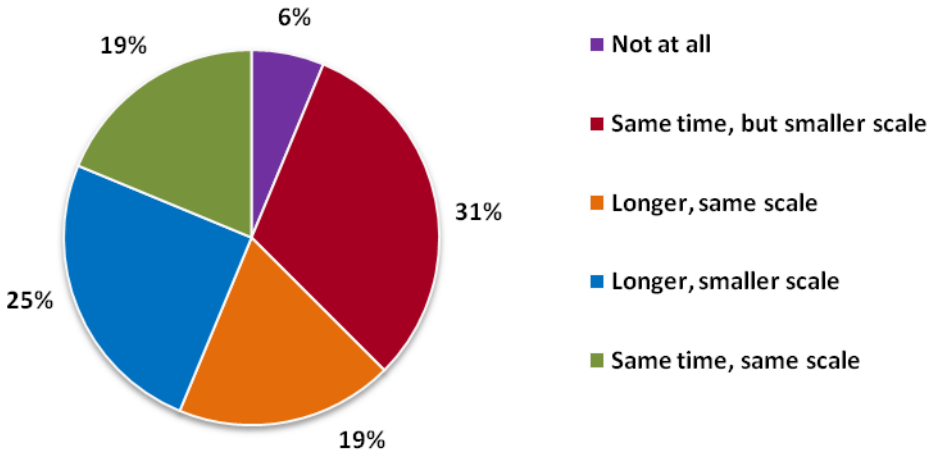
Nearly half (7 cases) of the recipient businesses had experienced difficulties in accessing finance. These tended to be start-ups and early stage R&D businesses across all sectors. The common view was that the process of finding and negotiating for early stage VC finance had become more difficult. Several managers mentioned experiencing more rigorous due diligence than previously and that the negotiations had taken longer, with valuations and offer amounts being lower than expected. Amongst these businesses the general feeling, as expressed by the CEO of a communications start-up, was that: *"It is*

very tough to raise early stage R&D equity finance and that the process of finding and negotiating this is taking up to 12 months – twice as long as before the credit crunch."

4.9 Additionality of UKIIF

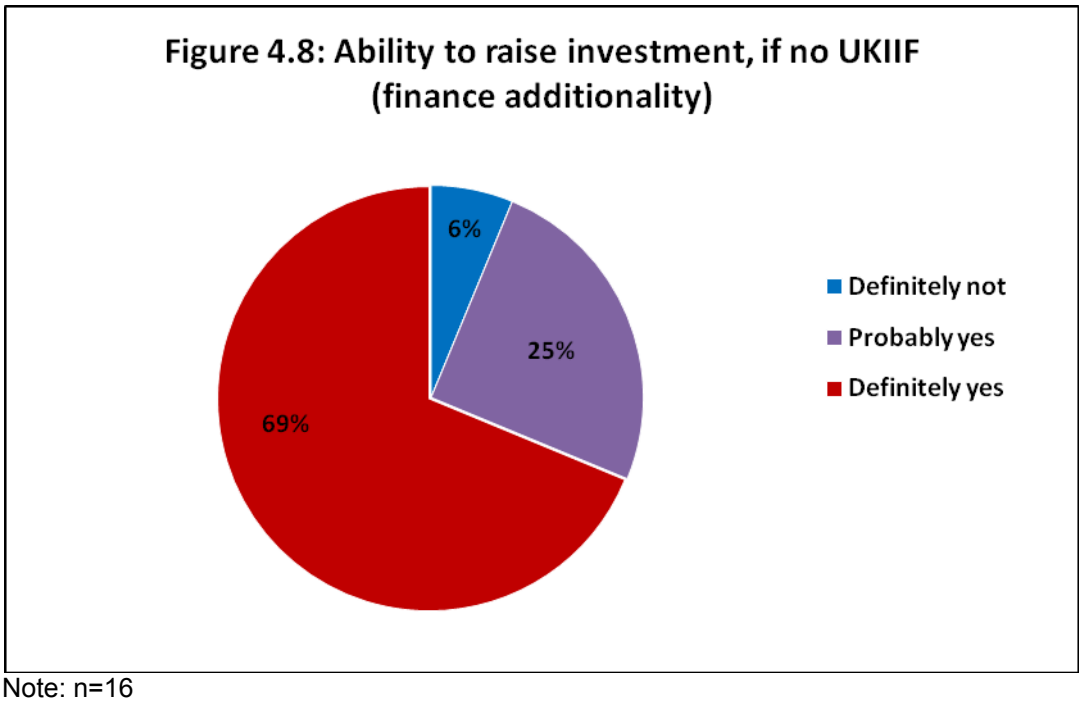
Only three surveyed UKIIF recipient business managers stated that they would definitely have proceeded at the same time and scale in their business development project, without UKIIF finance. However, even in these cases it was suggested that the UKIIF VC fund was the fund of choice, providing the best sectoral and investment stage match for the business and was most likely to enable the business to grow effectively. For example, a CEO of a communications company stated: *"We could have used corporate VC finance, but this would not have provided us with the flexibility for our business development plan that we were looking for."*

Figure 4.7: Extent to which the business's plans could have gone ahead without UKIIF (outcome additionality)



Note: n=16

Three quarters would have been able to proceed, but the growth of the business would have been inhibited, either because it would have taken longer to find and negotiate to receive (44 per cent), or because the amount of finance on offer was likely to be less and result in a smaller scale project (56 per cent). In one case of a UK based advanced manufacturer, the UKIIF VC funding was the catalyst to receiving bank finance; *"without this the project would not have gone ahead at all."*



Note: n=16

More than two-thirds (69 per cent) of managers indicated that they would definitely have raised the finance required to go ahead with their project, even without UKIIF, with a quarter indicating that this was probable. This would imply deadweight but it is important to note that entrepreneurs may be overconfident in their ability to raise alternative sources of finance and so actual finance additionality figures may be higher than reported. However, as mentioned above, for the majority of businesses, the absence of UKIIF could well have compromised their growth and development, either by slowing the process down by taking longer to find finance, or through being less suitable forms of finance. This latter point was expressed in two specific ways: first, in terms of the added value of the UKIIF VC fund managers, their hands on approach and understanding of the business (both stage of development and sector), which could spur and accelerate growth; second, in terms of the flexibility of approach that VC finance provided which was not as constrained as working with banks, fragmented groups of business angels, or corporate investors which might lack drive, knowledge of the sector, or seek to impose specific business development models (i.e. through the corporate VC route). This may be especially important for innovative high growth potential businesses where flexibility in funding and speed to market are important factors.

4.9.1 Barriers and problems associated with alternative sources of finance

In most cases alternative sources of finance, such as other private VCs, corporate VCs, banks and mezzanine finance and business angels, were not perceived as perfect substitutes. Several interviewed managers complained about the length of time taken to find and negotiate with groups of business angels and that collectively this could be considerably more expensive (both in terms of cost of negotiations and share of equity given away) than using a single private VC, whilst bank and mezzanine finance could be just as expensive as private VC equity finance, involve rigidly restrictive terms and

conditions and lack specialist management expertise which VC fund managers are able to provide. As the CEO of a recycling business stated:

"We could have received the same amount of funding elsewhere, but it is more about suitability and getting the right chemistry and understanding of the business goals and sector."

Whilst most businesses would have found alternative sources of finance, surveyed managers suggested a variety of reasons why this was problematic:

"The main difficulty would be in speed of business development and adopting our innovative business model, which may not have been right for corporate investors." CEO of a communications company.

"The main issue with the alternative mezzanine finance on offer was that it did not have as much expertise in early stage R&D and life science contacts." Life science company CEO.

"There were several other private VC offers, but they were less good valuations and would have offered at best, half a million less in funding." Communications business CEO.

"The alternative was angel finance which was taking time and would have required more equity and may not have been as sustainable in terms of expanding finance to enable rapid business growth – it would have held back the business." Chairman of an energy sector business.

"Actually bank finance would have been less expensive, but not as flexible for our rapid growth needs." Life science business CEO.

"Without the [UKIIF] finance we would have been £5m short of our project target. There would have been time delays, more pitching, due diligence, negotiations and legal fees, with angels or private VCs." Communications business CEO.

"Other angel funding or private equity would most likely have taken longer to find and would have meant outsourcing our IT R&D abroad to India, which would have taken longer and been more difficult to manage." Communications business CEO.

"It would have taken longer to get the same amount of finance and it would be unlikely to find a lead investor to drive the process as well. Our [UKIIF] VC has undertaken a great deal of preparatory work for us in negotiating licensing and enabling the spin-out to take place at all." Life science business CEO.

4.9.2 Introduction of innovation to the UK market

Seven of the surveyed UKIIF recipient businesses are currently trading in the UK market. All of them are offering totally new and innovative services to the UK market. These include energy control and efficiency devices, developing greater and more effective use of renewable energies, labour and time saving aerial surveillance for the oil and gas industry, IT to adapt social media for more effective customer service usage, real time

solutions to monitoring stock market trading activities and cancer drug testing services. These are all market leading activities in the UK and are mainly complementary and additional to existing services, or will replace outmoded time consuming and more labour intensive approaches. The remaining six UK owned and based recipient businesses are all likely to introduce similarly highly innovative products and services to the UK market within the next three years. Of the remaining three overseas companies, only one currently trades in the UK, whilst the other two are unlikely to do so. The overseas recycling waste management company that is currently trading in the UK provides globally leading edge tracking and control devices for the industry and has recently acquired a UK based IT software writing company to assist with further R&D.

Overall, there would appear to be a considerable net gain from the innovative outputs of these companies and whilst they may result in some loss of labour due to automation, they appear to offer efficiencies to existing technologies and are complementary to the UK market, rather than duplicating existing activity.

4.9.3 Non financial benefits of underlying UKIIF VC fund managers

Virtually all of the surveyed managers of the UKIIF recipient businesses were very positive about the additional input received from their UKIIF fund managers. As already indicated, the UKIIF VCs were invariably the 'fund of choice' because they were perceived as ideal for the sector and stage of business development. Although for some of the interviewed managers it was still very early to tell whether the relationship with their fund managers would develop as they hoped, there was very positive feedback.

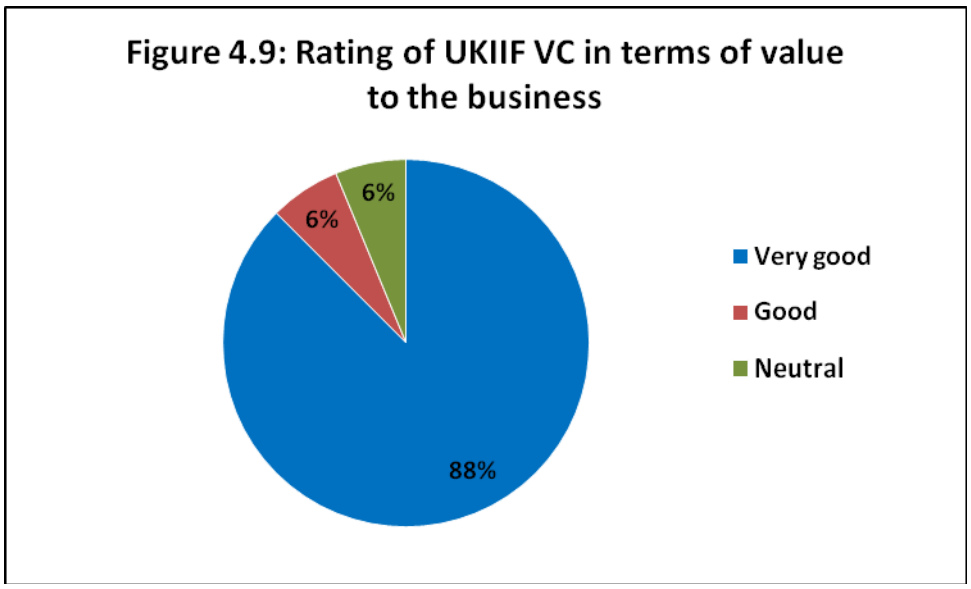
In all cases the UKIIF VC fund has representation on the board and in several cases this includes Non Executive Director status and assistance with key appointments to strengthen the board and management team, such as finance directors and NED Chairmen. There was a general consensus that the commercially driven private VC approach helps to install rigorous business monitoring and financial management. As one recycling business CEO mentioned, "…*we thought we knew how to run our business, but now we understand it a lot better!"* This approach, which "…*tests and challenges the management team"*, helps to drive the business to greater success. A couple of managers were critical of this, suggesting that private VCs could be short-sighted, with relatively short-term objectives, and do not always act in the best interests of the business as a whole, but on balance the vast majority were enthusiastic and wanted to be challenged. It should be recognised that the VCs appear to work hard alongside these businesses, offering regular contact (e.g. once or twice a week) in terms of providing a 'sounding board' for ideas and at monthly or bi-monthly board meetings when the VCs attend and time is taken to really get to know the managers.

The UKIIF underlying VC fund managers were highly commended by the recipient businesses in the majority of cases for their additional inputs into the business. Key aspects of this included: helping to find and negotiate with prospective customers, often in overseas markets with very large companies involving complex and daunting negotiations and legal issues; assistance with tackling regulatory and licensing issues, particularly in the life science sector; using networking contacts to bring in specialist consultants to assist with business development e.g. sales and marketing; assistance with business strategy and acquisition and assistance with finding additional external finance.

Sectoral knowledge and understanding of the business development stage were described as 'huge' and 'massive' advantages and as one CEO summarily stated:

"The [UKIIF] VC had the right chemistry, understood the technical issues and the market, coming from a cleantech background. The fund manager could add real value to the business, understanding the company and its goals."

4.10 Overall rating of UKIIF VC



Note: n=16

The satisfaction rating from the surveyed managers of the recipient UKIIF businesses was very high, with virtually all rating the value of the VC investment received as 'very good'. Similarly 15 out of the 16 cases would definitely recommend UKIIF VCs to other businesses in similar circumstances to themselves.

However, five recipient business managers made suggestions for improving the underlying UKIIF VCs. These included: ensuring that start-ups are able to obtain funding, as the UKIIF VC fund that this company used was not technically supposed to fund start-ups within its investment strategy; that the level of due diligence required for first round R&D investment had been unnecessarily detailed; complaint from a communications business that their VC was not sufficiently knowledgeable about their sector; complaints from two businesses that their VCs were not strategic enough with regard to the medium to longer term development of the business and needed to take on board the wider interests of the other shareholders.

Additionally there were several criticisms of the UK banking sector which was felt to be totally inadequate in assisting innovative UK owned and based companies, even after UKIIF VC finance had been secured and the prospects for business growth are excellent. For example, a start-up energy sector business with sales turnover doubling year on year

and operating at a £3m profit within one year of starting trading, is still experiencing problems raising a few thousand pounds in bank finance to purchase equipment.

Overall, the positive comments reported far outweighed the negative comments and for each case where there has been a criticism there are several cases where there have been glowing endorsements. For example a major strength of the UKIIF VCs is undoubtedly that they are perceived as leading private VCs in the sectors that they operate and do offer highly specialised sectoral expertise and strategic management insight into operating in these sectors.

4.11 Timescale to exit

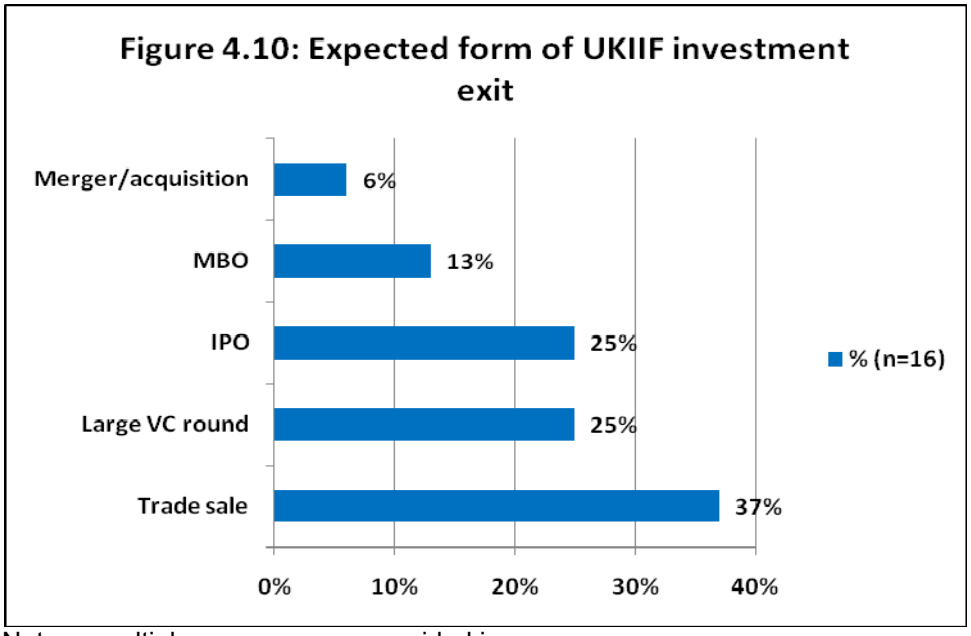
Although it is too early to observe any actual fund exits, the managers of the UKIIF recipient businesses were asked how long they expected to take from the time of initial funding through to exiting the fund and what process this was likely to take.

The average length of time from receiving the initial UKIIF finance to exiting the investment is forecast at four years (median 4 years), with a range of between one and seven years.

Table 4.10: Forecast UKIIF investment period

	Years
Average	4
Median	4
Range	1 to 7 years

The most frequently mentioned fund exit strategy is via a trade sale for over one third of businesses (6 cases), with one quarter mentioning IPOs, and large VC funding rounds which would involve pharmaceutical companies, corporate and institutional VCs for later stage commercialisation and major step business growth (Figure 4.10). Two surveyed managers specifically mentioned that they were keen to retain ownership and would seek MBOs. It is important to recognise that these are the views of the businesses themselves, which may differ from those of the underlying fund managers.



Note: multiple answers were provided in some cases

There were some concerns, particularly amongst the surveyed managers seeking MBOs, that they wanted to keep the business in the UK and where possible to remain in charge. One energy sector CEO gave the following statement in terms of how this might be achieved:

"I'm not keen to sell out the business and will seek ways to merge, acquire and license growth in order to buyout investors and retain this as a UK business, where possible. Unfortunately, in my view, the most likely next stage investors will be overseas, Middle East or Far East based, but I wish to avoid selling out to an overseas company. The UK government should do more to help us to grow and remain a UK company."

5. CONCLUDING LESSONS

5.1 Introduction

In this concluding section the key findings from the supply-side interviews with fund of funds managers, the underlying fund managers and key market stakeholders are integrated with the findings from the 16 surveyed UKIIF recipient businesses in order to address the key research questions and provide key lessons and possible challenges for the scheme.

5.2 UKIIF is seen as addressing a funding gap in the UK and European VC market affecting innovative technology businesses, particularly at the £2-5 million level of investment. There may be some displacement from using the EIF's matched funds.

5.2.1 Positive Lessons

- UKIIF was established quickly to address a shortfall in early stage equity finance for high technology R&D in the UK and Europe in 2009. It has been effective in providing finance to these companies, and is still required in current market conditions.
- UKIIF has been particularly effective in raising private equity in early stage technology funds in a period of severely adverse conditions for private investment.
- Investment into early stage R&D, above the current EU state aid limit, of between £2-5 million has been particularly beneficial to companies that may otherwise be constrained.

5.2.2 Challenges

- The rapid establishment of UKIIF may not have enabled as widespread private investment as could have been the case if a longer establishment period was allowed.
- There may be displacement effect from using EIF as a fund of funds manager, given that these matched funds would have existed in the UK anyway.
- There is a high percentage (up to 55 per cent) of overseas businesses within the underlying UKIIF portfolio.

5.3 The fund of funds model has attracted significant private sector funding and has wide market scope, but the double layer of fees and less control over underlying fund investment is a key challenge for a fund of funds model.

5.3.1 Positive Lessons

- UKIIF has been well received in the UK and Europe, encouraging private investment leverage and investment diversification through effective fund of funds management.
- There is a substantial amount of private sector leverage, although some of it may not be additional.

5.3.2 Challenges

- The double layer of fund fee charges and lesser control over underlying fund investment activity are potential concerns from using a fund of funds model compared to investing directly into VC funds.

5.4 The UKIIF appears to be funding high growth potential businesses using globally leading technology within its target sectors, with the vast majority likely to become exporters. Funded businesses are across the UK, but there is some concentration in Scotland, London and the South/East of England.

5.4.1 Positive Lessons

- The UKIIF seems to be meeting its targets for providing early stage R&D finance to UK businesses in the clean technology and life science sectors.
- The UKIIF is funding highly innovative global leading edge product/service development.
- At least four fifths of UK recipient businesses will export.

5.4.2 Challenges

- Although there are no geographic restrictions, there is a concentration of investment going to UK businesses in the London and the South/East of England in line with the wider VC market. This may reflect where innovative businesses and key university research institutions are located in the UK.

5.5 The vast majority of recipient businesses are satisfied with using underlying UKIIF funds and value the assistance given by fund managers, although it remains difficult for firms with less experience of VC finance to find the underlying funds.

5.5.1 Positive Lessons

- Selected underlying VC funds specialising in target technology sectors are highly rated by recipient businesses as market leading 'funds of choice'.
- Overall, recipient businesses report very high satisfaction rates for their underlying fund managers.

5.5.2 Challenges

- The limited promotion of the UKIIF underlying fund managers makes it difficult for businesses with inexperienced managers to find these funds, without NED or VC finder assistance.
- Recipient businesses indicated that the time to find and negotiate early stage R&D equity finance had increased, approximately doubling from six to twelve months, since the onset of the current financial crisis.

5.6 Although many recipient businesses perceive that they would have been able to raise finance in the absence of the fund, it would have taken a lot longer and impacted on business performance, considerably slowing their development.

5.6.1 Positive Lessons

- The UKIIF supported underlying funds had invested a substantial amount of funding into innovative technology businesses, which has leveraged additional funding.
- The UKIIF VCs offer considerable added value through their 'hands on' approach to management.

5.6.2 Challenges

- The UKIIF's additionality is partial, since at least two thirds of recipients claim that they would definitely have raised the finance required. However, in all but three cases (81 per cent), business performance would have been compromised without the UKIIF funding.

5.7 Recipient businesses have shown growth and appear to have a strong potential for future growth, with underlying funds contributing highly and disproportionately to this.

5.7.1 Positive Lessons

- The UKIIF's overall impact on recipient businesses' development appears greater than its investment level.
- More than one third (6) are currently performing better than expected, and only two cases are underperforming.

5.8 UKIIF is also facilitating innovation spill over effects in the UK's university and R&D base, generating net new jobs to the economy, with little sign of duplication or displacement.

5.8.1 Positive Lessons

- UKIIF is harnessing and developing the UK's university and R&D base. For the recipient businesses innovation is closely linked to external collaborations and spin outs from sector R&D specialists, acquisitions and universities and through KTPs and FP7 projects.
- UKIIF is generating net new jobs to the UK economy, improving business efficiencies and reducing carbon footprints.
- Since there are few competitors, the UKIIF recipient businesses trading in the UK appear to be offering complementary products and services, rather than duplicating and displacing existing activities.

5.8.2 Challenges

- Some UKIIF efficiencies may lead to automation and job losses, but more efficient redeployment of existing labour in many cases is more likely.

5.9 UKIIF is providing support for life sciences and a low carbon economy, developing global leading edge health improvements and technology that offers the potential to lower carbon footprints. Concerns were raised over the UK's strict drugs development regulations and changes in green subsidies.

5.9.1 Positive Lessons

- The majority of recipient businesses will introduce efficiencies and offer technology or ways to considerably lower the UK's carbon footprint. Two thirds (11) of recipient business will reduce carbon use and costs, almost half (7) save energy, one quarter (4) improve recycling, and almost one fifth (3) improve health.

- Global leading edge life science businesses are being assisted, which should improve health and reduce medical costs in the longer term.

5.9.2 Challenges

- The lower finance leverage rates shown in the underlying life science funds, when compared to cleantech, would appear to follow recent trends where life sciences have experienced a dip in UK investment (Crocker, 2011; OBN, 2011), whilst clean technology, energy and IT investments have been more buoyant, particularly due to government 'Green Deal' type policies (McIvor, 2011; PEW Trust, 2010).

- Some concerns have been raised as to whether some portfolio businesses will survive when government cleantech subsidies are reduced. Recent changes to the Green Energy Tariff were viewed as disruptive to the sector's overall development at the current time. Questions were also raised as to how UKIIF will relate to the Green Investment Bank and IFC Climate Catalyst Fund.

- The current very strict UK drug development regulations were perceived as a negative factor within the UK life sciences sector.

5.10 Although too early to assess actual performance, the UKIIF has the potential for good economic and financial performance, particularly if exiting in an economic up-turn. Concerns were raised about keeping businesses in the UK after UKIIF exit.

5.10.1 Positive Lessons

- Full realisation is not likely until well beyond 2020 (up to 12 years on from fund closure).
- It is perceived that currently is a good time in the economic cycle to make investments in tech companies due to more realistic valuations, lower costs and less competition.
- UKIIF recipient businesses fund exit timescale ranged from 1-7 years, averaging 4 years.

5.10.2 Future Challenges

- There are some concerns regarding keeping businesses within the UK after trade sales and next stage VC investments.
- There are concerns that exits might be problematic if the economy remains depressed or slips back into recession.

CASE STUDIES

Introduction

This section presents five case studies which have been selected in order to illustrate a range of examples of businesses receiving equity funding from the UKIIF. UKIIF's two fund of funds; Hermes GPE's Environmental Innovation Fund and European Investment Fund's UK Future Technologies Fund and two underlying funds for each of the fund of funds are represented by the case studies.

The cases include examples from UKIIF's different target sectors and four specialist underlying funds: two life sciences (representing two different underlying funds), one advanced manufacturing, one clean technology, and one digital technology. They also include examples of start-up and early stage R&D, as well as later stage development and commercialisation. All of the cases exhibit exceptional levels of innovation, whereby they are providing leading edge technologies and services in the UK market and in some cases globally. Whilst all of the cases selected have tremendous potential for growth in the future, there are already several of these cases where exceptional growth has been experienced, even within the two years of receiving UKIIF funding.

Hermes GPE's Environmental Innovation Fund cases:

Case Study 1: Petainer - Advanced Manufacturing Case

Business Profile

An advanced plastics manufacturing company, trading for two years, located in the East of England, currently employing 250 people, developing innovative lightweight plastics for the liquid container industry.

Innovation

The CEO described their activity as "…*state of the art, cutting edge, from the R&D to the manufacturing processes and services offered*." **"***Game changing technology*" in manufacturing processes has improved recycling, producing stronger, lightweight plastic containers, reducing plastics input by up to 85 per cent and transport costs by 30 per cent. One of their global market leading products is a plastic beer keg, which is more environmentally friendly, cheaper and lighter than conventional steel kegs and is opening up opportunities for beer exports to the Eastern European markets, using non returnable, recyclable kegs.

Innovation has been stimulated by three years of competition funding offered by the company which has led to successful collaborations with both Birmingham and De Montfort Universities; the former has been a participant in

the Petainer international design awards and the latter design engineering team is working closely with the company on a number of significant projects, as well as the development of a strong in-house R&D team.

Reason for Seeking Finance

The company was seeking a package of equity and bank finance in order to fund a management buy-in to an existing UK-based business and undertake internal R&D to commercialise technology. Total project cost was around £13m, of which the UKIIF underlying fund provided just under £3m.

The business searched for funding for nearly three years, and was hampered by the lack of bank finance available in the UK and Europe. Equity finance was found using an accountancy group, and was not problematic, taking nine months to find and negotiate. Getting a UKIIF underlying VC on board as lead investor was a catalyst to getting further VC investment from private sector funds and obtaining European bank finance.

Early Impacts of Investment

UKIIF equity, received almost two years ago, is described as "…*critical to business development, transforming the business into a global market leader in new market segments*." Sales turnover has nearly doubled since funding to almost £100m and is forecast to increase over the next two years to at least £120m. Employment has increased by 18 full-time staff and is set to increase by a further 100 staff by 2014. UK manufacturing growth will be part of this growth, with over 90 per cent of trade in exports.

Additionality

Without UKIIF the owners would not have been able to undertake the Management Buy-In which started the current company. The UKIIF underlying VC is described as "...*massively helpful, providing a strong steer on corporate finance and governance and constructive input at all times. They have been particularly helpful in finding new overseas customers."*

Case Study 2: Anesco – Clean Technology, Rapid Growth Start-Up Case

Business Profile

An energy efficiency company, which started trading in December 2010, providing a one-stop solution service for commercial customers and HNW individuals, for using all forms of renewable energy, focusing solely on the UK

market. The company currently has 75 full-time employees and 120 on short term contracts and is based in the South of England.

Innovation

The first company in the UK offering total energy solutions, following leading North American and German company models, mainly serving the larger commercial business market as well as large social housing providers, provide consultancy and advice on a full range of renewable solutions. The company offers initial concept, R&D, monitoring, financing and all technical solutions and have patented their own energy monitoring devices, developed in-house through strategic company acquisition and key staff recruitment. The products and services offered by the company will help contribute to reducing UK carbon emissions.

Reason for Seeking Finance

UKIIF equity finance was required in order to start-up the business, acquire through a Management Buy-In of an existing UK business with technical expertise, fund R&D for energy monitoring toolkit development and provide working capital. There was considerable interest from other investors, but the UKIIF underlying fund was selected as the lead investor because the CEO had developed a professional relationship with the fund's Managing Partner and knew "…*the fund's excellent track record in developing cleantechs."*

The UKIIF lead funding of £3m was secured within one month, along with matching funding of £3m from a corporate FTSE 50 company.

Early Impacts of Investment

In just over a year the company has started trading, growing from 12 to 193 staff, with sales turnover of £21.5m and is already generating a net profit of nearly £1m. Within three years, the business is expected to generate sales in excess of £100m and have at least 250 full time staff. At that stage they expect to exit UKIIF via other VC funds in the short term and ultimately a trade buyer in the next 5 years, which could range from a utility to a large construction company looking to enter the green sector.

Additionality

Whilst the CEO acknowledges that other equity funding was available, the UKIIF underlying fund was their first choice: "*I trust them as a leading growth investor in the cleantech field. The fund manager knows and understands the sector and provides an excellent sounding board for day to day management decisions."*

European Investment Fund's UK Future Technologies Fund cases:

Case Study 3: Horizon Discovery - Life Sciences, Later Stage Case

Business Profile

Horizon Discovery Limited is a life science company that began trading in July 2007, providing leading edge research tools for decoding the human genome and accelerating discovery of personalised cancer medicines. The company is experiencing rapid export growth into developed countries. It currently has 70 full-time staff and is based in Cambridge, UK.

Innovation Proposition

The company was founded to commercialise pioneering gene-editing technology invented by Professor David Russell at the University of Washington and developed by Horizon Discovery's scientific co-founders at the Johns Hopkins University and the University of Torino Medical School. Seed funding was provided by Cambridge University and Cambridge University Alumni. Horizon Discovery gained exclusive control of the patent estate underpinning the technology and has since use the gene editing technique to develop 400 X-MAN™ cell lines, the world's first source of genetically-defined and patient-relevant human cell lines, accurately modelling the disease-causing mutations found in cancer patients. These 'patients-in-a-test-tube' are being used by academic and industry leaders to identify the effect of individual or compound genetic mutations on drug activity, patient responsiveness, and resistance, leading to reduced drug development costs, time-lines and failure rates for drug developers. This will lead to better clinical outcomes for patients, and increased value for money for tax payers.

In addition, Horizon provides derived products and services with industrial applications in bio-pharmaceutical process optimisation, clinical diagnostic development, drug discovery and development, and the provision of reference standards for genomic-based clinical research platforms.

Reason for Seeking Finance

In 2010, the company was seeking third-round equity or bank finance to fund a rapid expansion of the business to meet a growing demand for its commercial offering, and support the management team's goal to build a long-term sustainable business rather than seek an early-exit. Two further rounds of financing, totalling £11.25m, were secured from an investment consortium led by DFJ Esprit LLP, MVM Life Sciences LLP, and existing investors, within a 12 month period. The UKIIF, an underlying funder of DFJ Esprit LLP, provided an ideal source of investment as the CEO of Horizon was familiar with the fund, enabling them to be secured as lead investor after a more rapid

than usual period of four months negotiations and due diligence.

Early Impacts of Investment

The business has expanded rapidly since UKIIF funding, adding 46 full-time staff in less than two years. Moreover, sales have doubled to over £4.2m and forecast to increase by 100% over the next twelve months, leading to profitability. This outstanding performance has led to the company in 2012 being named Business Weekly's Business of the Year, and receiving a Queen's Award for Enterprise in International Trade. Within the next three years the business is expected to employ 130 and achieve sales in excess of £20m, with exports representing over 90 per cent of trade. At this stage a UK market IPO would be the preferred exit for UKIIF.

What the company says

"Through its investment in DFJ Esprit LLP, the UKIIF VC has played an invaluable role in the development of our company. Having succeeded in the implementation of Phase I of our business plan it was important to find an investor with a 10 year outlook on its funding strategy. DFJ Esprit has provided experience, diligence and management support to the senior executives and board of directors and, most importantly, has backed its aspiration to build a world-leading UK Life Science company." Dr Darrin M Disley, CEO.

Case Study 4: Aveillant - Digital Technology, Start-Up Case

Business Profile

An advanced digital technology business, established in 2011 and due to start commercial sales in 2013. They are currently developing a commercial 3-D holographic radar product which will enable wind farms to locate closer to airports. The company currently has eight full-time employees and is located in the East of England.

Innovation

This is a novel use of 3-D holographic radar technology spun out from Cambridge Consultants Ltd, where it was originally developed for a military application. The concept is to provide advanced radar technology coverage to enable wind farms to locate safely within the current airport radar exclusion zones. This would currently allow 6GW of prospective UK wind farms to get through planning, doubling current UK capacity and reducing the UK's carbon

emissions.

Reason for Seeking Finance

The company was seeking first round start-up equity funding for an initial project cost of £2.1m. The UKIIF underlying VC was the first choice fund, as it was known to the company as "…*a leading digital technology start-up fund, with a first class track record."* Equity funding of £0.8m was secured from the UKIIF underlying VC together with £0.8m from Cambridge Consultants after a lengthy period of over six months of due diligence and contract negotiations. A £0.5m loan was also obtained from an industry organisation in 2011. A second round of £4m equity finance will be raised in late 2012 to enable commercial roll-out and manufacturing. The UKIIF underlying fund is expected to provide a proportion of this funding and assist with introducing additional VC investors.

Early Impacts of Investment

The business is on-track to generate revenues in 2013, with employment set to rise to around 20 staff in that year and in three years time to around 50 full-time staff, when the business is expected to move into profitability. The company's CEO stated: "*The business model will lead to servicing of on-site radar stations for wind farms and the company will seek to provide an exit for the UKIIF underlying fund through an IPO or trade sale within the next five years."*

Additionality

"*The expertise and flexibility of using a VC investor with early stage business development experience is invaluable, suits our business development model, and considerably increases our chances of obtaining further finance.*" CEO of Aveillant.

Case Study 5: CN Creative - Life Sciences, Early Stage Case

Business Profile

A healthcare business originally established in 2008 to create and develop products and services for the millions of concerned smokers who have not been able to stop smoking, aimed at smoking cessation and harm reduction. The initial success of the product through on-line sales in 26 countries led to an aim to develop a specific product, 'Intellicig' – an electronic cigarette, in-house to meet strict UK medical regulations. This business located in the

North West currently employs 45 full-time staff.

Innovation

The substitute smoking product is unique to the UK market and the R&D adjustments being incorporated to meet UK medical regulations will make this a leading edge smoking cessation/harm reduction treatment, both in the UK and overseas. This will have wider health benefits to society by enabling more people to reduce/give up smoking.

Reason for Seeking Finance

Equity finance was required in order to undertake R&D to achieve UK medical regulatory approval. This was first round finance for a project cost of £4m, with UKIIF providing £2m equity in two annual tranches with the remainder funded out of business profits. The UKIIF underlying fund was sourced through a VC finder and was selected over a mezzanine option because "…*the VC had superior early stage UK medical market knowledge."* Preparation for VC applications took three months followed by another three months of due diligence and contract negotiations.

Early Impacts of Investment

The business is not currently in profit, as it is investing heavily into R&D, but expects to be in profit within the next year (two years after initial funding) and to have more than doubled sales turnover to £2.5m at this stage, with employment increasing from 30 full-time staff at the time of funding to 80 full-time staff. Within three years the business is forecasting net annual profit of over £20m and to employ 150 full-time staff. At this stage the business will be seeking further equity investment from US VCs who can assist with commercialisation and exports into the US market.

Additionality

The CEO currently attributes almost all of the company's development to the underlying UKIIF VC. "*Their management guidance is vital to our business growth and development and also, very importantly, they have been able to source key consultant contacts to help steer us through the UK clinical regulations work, providing absolutely invaluable assistance*." However, they will require a different VC, with later stage expertise, to guide them through the next growth stage in commercialisation and export to the US.

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