Low Carbon Innovation Fund: Final Evaluation

Report to the University of East Anglia: Summary

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Low Carbon Innovation Fund

ERDF
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1. About the Low Carbon Innovation Fund

The Low Carbon Innovation Fund (LCIF) was launched as an early stage venture capital fund for the East of England in September 2010. The University of East Anglia (UEA) secured £20.5m for LCIF from the European Regional Development Fund (ERDF) to be invested by December 2015. LCIF constitutes over 20% of the budget for the regional ERDF programme, which is uniquely focused on low carbon economic development.

Small and medium enterprises (SMEs) are eligible where they are developing new and innovative products, services or processes in a low carbon, environmentally sensitive manner.

LCIF takes the form of a co-investment fund, drawing in private sector investors, company by company, with all investors in the funding round participating on an equal footing. UEA, through its Adapt Low Carbon Group, act as Fund Operators and Turquoise International as Fund Managers.

2. What has LCIF achieved? a) Investments

2.1 Fund overview

LCIF has performed well in creating a substantial investment portfolio which promotes low carbon innovation meeting a variety of business and consumer needs. It has:

- established its reputation as a serious investor, respected by investee companies and co-investors
- performed well in plugging early stage funding gaps experienced by investee companies and offering follow-on funding to bridge the so-called 'valley of death' before full commercial returns to investment can be realised
- added value, in making funding rounds happen and creating further benefits for investee companies and wider economic development.

The Fund has proved adaptable, accommodating in 2011 an extension of its remit to cover creative industries and negotiating increases to its budget, notably in 2012 to introduce a Smaller Investments Scheme (SIS) and provide for further follow-on investments.

2.2 Investment performance

LCIF has been well-managed, reflected in positive feedback from investees and stakeholders and in its investment track record. By the end of June 2015, LCIF had made 59 investments in 36 SMEs. Some £60.9m had been invested, with LCIF contributing £17.1m (28%). The bulk of investment has been made through the main Fund (94%). The Smaller Investments Scheme has made a significant contribution with 16 investees since its launch in late 2013.

LCIF is making its mark in the context of wider deal activity on venture capital in the region. Since its launch in 2010, it has been involved in 20% of all recorded equity deals between £25,000 and £2m in the East of England in energy, clean tech, software and other knowledge-intensive businesses.

There have been two exits so far, generating a return for reinvestment of £2m for the LCIF Legacy Fund. Two businesses have failed, perhaps lower than might be expected by this stage in the life of a risk capital fund.

Private sector leverage is strong: at £42.4m, this already exceeds the target for private sector match funding by over 40%. The leverage of LCIF is £2.48 of private co-investment to every £1 invested by LCIF. On this indicator, LCIF has been out-performing other ERDF funds.

LCIF has made a significant contribution towards the entire regional ERDF target for such leverage, nearly 60% by June 2015. This has been achieved during a period marked by economic crisis, upheaval in financial markets and the more recent recovery.

Forecast performance and legacy funds

LCIF is confident in its ability to invest its remaining capital by the end of December 2015, progressing current applications in the deal flow and negotiating follow-on deals. On the basis of experience, a further £3.4m investment from LCIF should attract between £3.4m and £5.1m in co-investment, and bring the total investment to around £68m.

In aggregate, investments are expected to return all the monies outlaid, and potentially more, for recycling through the Legacy Fund. Exits are profiled to 2019, with just under half of the expected financial returns expected before the end of 2017, primarily through trade sales or capital repayments.

Sectoral and geographical spread

Two thirds of investee companies fall within definitions of 'low carbon and environmental good and services' sectors, most notably energy management and alternative fuels. The remainder come from other industries where they have been able to demonstrate their low carbon impact, eg, through adoption of emission-reducing processes or changes in behaviour on the part of their customers. In all, a quarter sit within definitions of 'creative industries', and several more have significant digital aspects.

By location, **a third of LCIF investment has been in or around Cambridge, accounting for almost half of the monies invested**. This mirrors wider deal activity and levels of innovation within the region. LCIF has been relatively successful in finding investee companies in the New Anglia LEP area, and has made larger investments on average in the South East LEP area.

Satisfaction amongst investee companies

Most investees have been very satisfied with their experiences in dealing with LCIF. Two thirds were very satisfied up to the point of first investment, and almost all, at least satisfied. The few criticisms tended to relate to the input of solicitors and to the level of legal costs for one or two SIS investees.

Satisfaction ratings are higher still post-investment. Many stressed the value of ongoing strategic advice from LCIF representatives. Two thirds of investees valued the LCIF input to their subsequent performance as a business as 'very significant' and further fifth as 'significant'.

2.3 Plugging funding gaps – the Fund's rationale in practice

The experience of implementing LCIF has supported the original rationale for setting up the Fund, in circumstances where many businesses continue to report challenges in raising finance. **Three fifths of investees considered that they would not have been able to raise their original funding round without LCIF**, and all but one of the remainder felt that this would have taken longer or not been on a scale that met their needs. Even more, nearly three quarters, stressed the value of LCIF in leading their initial funding round, whether on its own or with others. Several referred to LCIF as their "*cornerstone investor*", and others stressed the timeliness of the offer of LCIF investment without which their plans would have been nipped in the bud. A further fifth valued the role of LCIF in *closing* their round, helping to ensure that these plans could be realised and market opportunities not missed.

Nearly two thirds placed great importance on the ability of LCIF to offer follow-on investment, recognising that successful commercialisation can require further injections of capital. This echoes the 'valley of death' thesis where innovative SMEs struggle to raise finance to scale up from R&D to sufficient sales for sustained profits.

2.4 Investing in creative industries

LCIF has had some success in responding to its remit for creative industries added in 2011. A quarter of investee businesses are in these sectors, similar to the proportion of applications. While no target for take-up was set, this has met informal expectations, both internally and on the part of DCLG.

The share of LCIF monies invested in creative industries is much lower, under 5%, largely through the Smaller Investments Scheme. The sector accounts for 49% of SIS funds allocated and 2% of the main Fund. For some time, there was only one investment, in a film project, before the introduction of the SIS made a difference from late 2013 onwards. The range of investments now makes it easier to illustrate the relevance of low carbon innovation and equity across the sector.

LCIF have expended a great deal of effort in promotion to the sector and tested different methods of engagement, funding models and minimum levels of investment. However, many parts of the sector are dominated by micro businesses and freelance workers, unlikely to be interested in seeking equity. Demand for finance is often project-related (eg, in film and games) and there can still be a mindset that public funding comes in the form of grant.

Stakeholders from the sector argue that action is needed on a broader front to capitalise on business potential of the sector, and not financial initiatives on their own. They also recognise that many creative industries are 'behind the curve' on low carbon and more sustained promotion is needed.

3. What has LCIF achieved? b) Impact on SMEs, jobs and innovation

3.1 Impact on SMEs

By the end of June 2015, some 56 SMEs had been supported by LCIF in raising risk capital, of which 36 had negotiated investments with LCIF. The other 20 are recognised as 'assisted' companies, where they have benefited from LCIF advice and proceeded to obtain finance without the need for LCIF monies. LCIF expects to hit the ERDF target of 70 SMEs by the end of 2015.

Nearly a third of investees are new or very young businesses, incorporated in the past two years.

Where the data is available, turnover in investee companies has more than trebled since their application to LCIF, from £9.4m to £31.8m in the current year. GVA has increased from £3.7m at application to £13.6m in the current year in 13 portfolio companies. This is forecast to grow to at least £23.7m next year and £46.9m the year after.

3.2 Impact on jobs

Job creation is central to the ERDF aims for LCIF along with low carbon innovation. In mid 2015 **investee companies employed over 400 people, of which 205 qualify as ERDF jobs created**, based in the East of England and held for more than one year. This is against the *initial* LCIF target of 320 set in 2010 and the revised target of 617 set in late 2012, to be achieved by December 2017. **A further 61 posts have been filled which do not yet count for ERDF purposes**. Jobs have doubled in investee businesses since they submitted their original application.

Achievement of the job creation target lags that of most other ERDF-backed funds, though these have not had significant additions to their targets part-way through the funding period. Several comparable funds were launched earlier, in regions with more of a track record on publicly-backed equity funds. A further factor is the time lag inherent in the co-investment model, where investees must secure other investors before receiving their monies from LCIF.

Job creation is on an upwards curve, and LCIF have reprofiled their forecast of job creation to achieve the final ERDF target. Available data from a majority of investees suggests recruitment of over 260 people in the next 18 months, raising the ERDF job creation figure to at least 450-460 by December 2016. While there is considerable uncertainty surrounding this, investees are already employing nearly two thirds more staff than they proposed at the point of first investment. (These numbers exclude investments made since June 2015 and jobs in 'assisted' companies.)

The figures understate wider impact on employment, eg, while one investee company reported recruits to three new jobs, they also pointed to work for 17 staff in sub-contractors. Jobs have also been created by investees *outside* the East of England, and there have been shorter term, project-related posts.

By June 2015, **LCIF had exceeded its target for jobs safeguarded by nearly 50%** (169 against 115). This is a serious achievement, in that we found investee companies reporting that jobs would have been lost had they failed to raise investment.

Jobs for women

Some 21% of both ERDF jobs created and jobs safeguarded had been taken by women, the same percentage for women across investee sectors. The total is substantially below the target, which was based on an assumption that 40% of new posts would go to women. The shortfall on jobs safeguarded was less (-23%). There have been a few applications which offered proportionately more jobs for women, but these did not prove investable despite LCIF's efforts.

Performance on these targets is largely outside the control of LCIF, though it was hoped that promotion of the Fund to creative industries would have an impact. This has made little difference, with less than six additional jobs for women. **Where LCIF has had more effect is in supporting female entrepreneurs**: there are currently seven CEOs and 10 have women on their executive teams. Nationally only one in seven businesses are led by women, and US research found only one in forty where venture capital was raised.

3.3 Impact on innovation and carbon emissions

Investments incorporate genuine innovation and relate primarily to products and systems that enable lifetime cost savings and lower carbon emissions by end users. Examples include: optimising the effectiveness of LED lighting installations; improving vehicle fuel efficiency without fundamental engine redesign; reducing the energy used for air conditioning in buildings; and reducing waste, maintenance and testing costs. The monies have contributed to activities such as the costs of tooling up, recruitment of technical and marketing/ sales staff, and early entry into international markets.

The first investment in the creative industries was the 'Peter Grimes on Aldeburgh Beach' project where LCIF helped fund not only the film of the opera, but also the story of how conventional production techniques were changed to reduce waste and energy use. A more recent innovation is a digital music platform for superfans to support their favourite artists in return for privileged access to their music and worlds behind the scenes.

LCIF has exceeded its ERDF targets for innovation:

- 109 successful innovation-related initiatives in SMEs, against target of 29
- 66 successful environmental-related initiatives in SMEs, against target of 19

It has almost reached its target for businesses integrating new products, processes or services (12 against 14).

All the companies that have received investment have a carbon saving aspect. These savings are considered for every application, and if too low, then the investment will not proceed. Where the outcomes are unclear, LCIF has commissioned reports to investigate and quantify them. The carbon savings may be one-time, such as from a one-off film production; or due to sales of new products manufactured with an improved process; or accrued throughout the life of a carbon saving product. In some cases, carbon savings are indirect, where technologies or parts are embedded in customers' products. Some companies act as exemplars that demonstrate changed practices. While it is not readily possible to calculate and aggregate savings in all cases, **it can be estimated that the portfolio will save more than one million tonnes of CO_2 equivalent emissions per year**.

3.4 Net impact

The net impact of LCIF appears high relative to the gross impact, after taking into account factors such as 'deadweight' (what would have happened anyway) and 'displacement' (knock-on, adverse effects on other companies):

- on deadweight, **more than half of the investees considered that they would not have made progress without LCIF** and in a few cases stated that they would have had to close the business. The remainder felt that they would not have achieved the same level of results or they would have taken longer to implement their plans at the risk of loss of business. No business considered that they would have fared as well without LCIF.
- on displacement, **local competitive effects are limited**: nearly all investee companies are in export intensive sectors and only 3% of their competitors are based in the East of England and 29% in the rest of the UK.

Net jobs created to June 2015 (including recent appointments) are 247 in the East with an associated net cost per job of £84,659 (and £64,245/job on monies invested). At the level of employment forecast by current LCIF investees by December 2016, net job creation would be 454 and net LCIF cost per job of £46,077. These figures compare with target net cost per job of £53,333 proposed in the original LCIF Business Case in 2009, and suggest that LCIF will provide value for money.

Net costs will continue to fall as further jobs are created and monies are returned to the LCIF Legacy Fund. Because of this it is helpful to see the figures as 'investment per job' rather than 'cost per job'.

4. LCIF added value

LCIF has generated substantial added value, both operationally from the perspective of investee companies and more widely in terms of its economic development and low carbon impacts. The common thread lies in how LCIF is supporting the process of commercialising innovation. On the one hand, this concerns the LCIF role in helping businesses secure initial and follow-on funding and in providing strategic advice on the route to a successful business and investment exit. On the other hand, there is wider value in the East of England in stimulating low carbon innovation, by investees and other businesses, and in attracting co-investment.

LCIF was conceived as a showpiece for the East of England ERDF programme 2007-2014 and has become increasingly recognised as such. As LCIF's portfolio grows and investee companies prosper, so does the potential for illustrating commercially successful innovation and impact on jobs and carbon reduction, both in aggregate and through case studies. In the higher education world, UEA has taken a lead in managing a fund which goes beyond financing ventures developed by staff, students and alumni. Operating the fund has provided some reputational benefit to UEA, helping to redress a perception that the university is not commercially oriented.

However, **added value has perhaps been lower than it could have been**, with some factors outside LCIF's control and attributable to the absence of a coherent range of business growth/ investment readiness support over most of its life and across most of the region. As LEP plans become better resourced and new business growth services become more established, this should improve the potential for added value associated with the Legacy Fund and other Adapt funding initiatives.

LCIF's priorities have been to ensure successful, commercial fund management and achievement of ERDF targets, resulting in less attention to maximising wider added value, eg, in demonstrating the benefits and impact of low carbon innovation in the East of England and promoting the take-up of LCIF-supported innovations. That said, LCIF investments themselves have the potential to create positive spillovers where they support behaviour change amongst business and domestic customers and further innovation amongst suppliers and competitors. LCIF can do more in future to promote such benefits.

5. What's worked and key lessons

5.1 Fund design

The Low Carbon Innovation Fund incorporates **good practice in its design**, in particular:

- the focus on enabling commercialisation, with follow-on funding as part of the model
- the co-investment approach, drawing in private sector match funding and sharing risk on the basis of fully commercial judgement, investment by investment

- the procurement of appropriate, skilled fund managers
- a funding model which keeps fund management fees to the Fund relatively low, while still providing incentives to the fund manager to maximise returns

LCIF has adapted in the light of experience and changing circumstances, while staying firm on its intended purpose. This is illustrated by the introduction of the Smaller Investments Scheme which opened the doors to a wider set of businesses with growth plans.

5.2 Marketing: meeting and satisfying business needs

SME needs, experiences and the LCIF offer

LCIF has successfully targeted early stage companies which have faced challenges in raising finance, attributable, eg, to having technologies unfamiliar to prospective investors and limited, if any sales. LCIF applicants tend to contrast the broader population of SMEs in the most common purposes in seeking finance: nearly two thirds proposed to use the funding for product or service development and over a third on market development.

The Smaller Investments Scheme has proved attractive to SMEs seeking smaller sums (£30,000 upwards) and the use of convertible loans acceptable. There were one or two concerns amongst investees about the relative cost of legal services and amongst companies that had withdrawn from seeking LCIF funding, some reservations about the terms on offer.

Following feedback from businesses, the minimum threshold for creative industries was reduced from £25,000 to £10,000 in 2014. However, demand at this level has not materialised, which may reflect a challenge for micro businesses with little capital to secure co-investment. Stakeholders in creative industries argue for project-based funding models, with returns linked to sales.

Fund promotion and investor readiness support

Building a healthy deal flow is critical to fund performance. LCIF has put a great deal of effort into face-to-face promotion through presentations and networking, and seen some returns on advertising and advertorial content. There is recognition of the potential of investment readiness provision – widely stressed by stakeholders - though LCIF experiments have not been very fruitful. LCIF stress the direct support they give during the application and appraisal process.

The Fund has become established as a brand, especially within the clean tech sector and amongst potential co-investors in the region. However, **more can be made of the significant contribution that LCIF has made to early stage investment in the region as a whole over the past four years,** and of the successes of portfolio companies to mutual benefit in promoting the LCIF brand, eg, through e-bulletins, the website and events.

Targeting

Given the broad definitions of both 'low carbon' and 'creative industries', there has been a **need to target sub-sectors**, some of which have distinctive finance needs and have their own communities and cultures (eg, film, video and broadcasting). These differences have implications for how businesses are approached, with the need to access specialist knowledge/ contacts not only for promotion but also on occasion for due diligence purposes.

The 'low carbon' branding has attracted businesses and stakeholders who recognise and a share a commitment to the concept, while at the same time posing a marketing challenge in reaching organisations who do not see themselves in this way. Being able to illustrate low carbon impact across a wider set of LCIF investments has helped to spread awareness.

5.3 Investment strategy and fund management

The LCIF model has proven successful in attracting co-investors, sharing risks on a commercial basis, and adopting a 'patient capital' approach in supporting the development of the investee businesses. Streamlined procedures on SIS have facilitated screening and helped to obviate later issues. However, they have *not* significantly reduced the time that companies are in the LCIF deal flow. Smaller funding applications can require almost as much legal due diligence as larger ones, and the requirement on investee companies to secure matching funds has tended to add to the time between approval and the release of LCIF monies. This has had a subsequent impact on the profile of job creation supported by the Fund.

LCIF has had to manage tensions in decision-making, balancing a desire to maximise the numbers of SMEs assisted, jobs created and carbon savings achieved on the one hand, and a drive to ensure a full commercial return on the other. There has been a focus on additionality in deciding on investments: LCIF sought consistently to ensure that these would not happen otherwise, happen faster or bring about more significant innovation or other economic development outcomes. Assessment of low carbon impacts during due diligence has been an additional task beyond normal venture capital practice, and time-consuming on occasion. Independent members of the LCIF Investment Committee have demonstrated a valuable role in advising on technological and market dimensions of propositions.

5.4 Establishing, governing and resourcing the fund

Establishing the Fund

In common with many other ERDF-backed financial instruments, there was a long gestation period before launch. LCIF then took time to generate initial awareness, and there has since been intense pressure to deliver results. Delivery has been compressed into a shorter timescale than intended and desirable given the time needed to build deal flow, make investments, and see results.

Setting targets and expectations

The original targets for LCIF were set top-down, in relation to the contribution that the Fund would need to make to the ERDF East of England Programme. There was no prior quantification of potential demand, bottom-up. Profiling of progress and likely out-turn was only adopted part-way through the life of the Fund. Targets set for female employment were very unrealistic at the outset, and even after adjustment in the light of LCIF experience still did not reflect the typical gender split in sectors covered by LCIF investees.

There have been concerns that the scale of the SME target (70) was excessive from a fund management perspective. Private sector practice is for investment managers to hold investments in no more than 15 to 20 companies in a given fund, to achieve diversification of risk but keep the number manageable. This has been the approach of the main LCIF, with SIS helping to accommodate a larger number of investee companies.

Governance, monitoring and evaluation

The Board has played a significant role in steering LCIF, most notably in 2012/13 through commissioning and acting on the independently chaired Investment Strategy Review. There are some views that the Board's strategic role and added value could be stronger. There is a case to review Board governance relating to future funds including widening business representation.

As the Fund became better funded and able to afford its own administrator, monitoring has improved and the LCIF board and DCLG kept better informed. The various stages of the evaluation have informed improvements in practice, and later assessment of the actual impact of LCIF can build on this current report. This should involve more systematic assessment of low carbon impact associated with each investment.

Resourcing

Running costs of the Fund have been substantial but within approved limits. Delivery has been hampered from time to time, attributable to ERDF issues notably affecting the budget available for administration and marketing. Only in 2014 was UEA able to have a fully staffed Innovation Funding team with responsibility for SIS, Fund marketing, etc.

6. Conclusions and recommendations

LCIF is demonstrating impact, and has the potential to show much greater job outcomes. It has become well established in the East of England and has made a considerable contribution to early stage investment in the region. While the Legacy Fund provides a vehicle for sustaining LCIF, the flow of returns will be irregular, generating uncertainties for UEA in planning future funding offers in the form of follow-on investments and new targeted funds. **Opportunities for further impact could readily be missed if sufficient funds are not available at the right time**.

Every effort is needed to secure additional funds for LCIF, in order to further develop the Fund's impact and reputation. These could come from the new ERDF programme, the British Business Bank, Green Investment Bank and/ or organisations with a particular interest in low carbon innovation such as the Carbon Trust and the Energy Technologies Institute. A larger fund should be more cost-effective and could support more added value activity. Without this, running costs may need to be pared.

While feedback from investee companies is very largely positive there are **clear messages about the need to avoid uncertainties and ambiguities in communications**, eg, over converting loans to equity and the prospects of follow-on funding. **Concerns from investee companies regarding legal services** during due diligence and deal negotiations should be addressed.

Investees and applicants also advocate simplification and streamlining processes wherever possible, and these should be reviewed from time to time. There is also **some appetite for networking amongst companies within the LCIF portfolio**.

Some parts of the creative industries such as digital can continue to be targeted through a low carbon/ clean tech fund, while a creative content fund would require a design more attuned to project funding and with a different financing and reward model. LCIF wish to establish the latter with an interested LEP or LEPs, and this will require a well-developed business case and separate management arrangements attuned to this field.

It follows that **links with Creative England should be explored**, given their growing role in business support, the gap in their activities the East of England and the need for a more coherent approach within the region to promoting creative content sectors.

There is a **continued need to ensure that LCIF maximises its added value through publicising success on the part of the Fund and individual investee companies, and in promoting the benefits and impact of the low carbon investments**. This should be stepped up as a routine UEA task and through wider dissemination of the benefits and learning from LCIF.

There are **opportunities to raise LCIF's profile nationally**, eg, by featuring success in fostering female entrepreneurship and by ensuring that 'tracker' organisations such as Beauhurst are well-informed of LCIF activity.

The development of the Business Growth Service in LEP areas should provide a better basis for collaboration in promoting LCIF and investment readiness. Relationships should be strengthened with these teams as well as with the other providers of innovation support within the region. There will continue to be a **need for more intensive promotion of the Fund beyond the Cambridge area** when funds are available.

LCIF has proved a successful innovation for UEA, and stands out amongst universities for its focus on venture funding which goes beyond staff, students and alumni. **This should be more**

widely recognised and promoted as part of UEA's marketing, including in building links with employers in the region.

Given success in increasing LCIF/ related funding, UEA should **consider the role and operation of the LCIF board, including business membership** from outside the university to bring relevant insights and extend the range of champions of the Fund.

Adapt will need to continue to monitor the employment outcomes of LCIF investments, and should make a further assessment in 2017 of the Fund's impact on employment, turnover, GVA and carbon emissions. At this point there will be more substantial evidence of outcomes as more companies realise their plans for growth.

Recommendations

1. Work with partners to scale up LCIF.
2. Continue with the funding range of £25,000 to £1m to address on finance gaps relating to investment rounds of £50,000 to £2m+.
3. Ensure clear messages and reduce uncertainty in communications with investee and applicant companies.
4. Seek improvements to legal support and Fund processes wherever possible.
5. Provide opportunities for LCIF investee companies to network.
6. Develop a business case for a creative content fund attuned to project funding and with a different financing and reward model.
7. Explore links with Creative England to strengthen support for creative content sub-sectors.
8. Seek to maximise the added value of LCIF through publicising success of the Fund and investee companies and promoting the benefits and impact of the low carbon investments.
9. Take opportunities to raise LCIF's profile nationally, eg, on female entrepreneurship and commercialisation of low carbon innovations
10. Strengthen relationships with LEP Business Growth Service teams and other providers of innovation support.
11. Pursue more intensive promotion beyond Cambridge, when funds are available.
12. Promote LCIF as an asset of UEA contributing to employer links and economic growth within the region.
13. Review the membership and operation of the LCIF Board, given success in raising further funds.
14. Monitor employment outcomes and undertake a further assessment of LCIF's impact in 2017.