Evaluation of the West of Scotland Science Park (UK)

1. Introduction

This case study reviews the *Evaluation of the West of Scotland Science Park*.[1] The West of Scotland Science Park (WSSP) opened on the 19th of September 1984 to provide a location for high-tech and science-focused businesses, to enable them to have easy access to affordable, well-equipped accommodation and enjoy the benefits of collocating next to the University of Glasgow and the University of Strathclyde.

In Scotland, Science Parks originally emerged in the 1980s 'as a response to the decline of the traditional industry base and the rise in importance of new knowledge-based industries.' The very first Science Parks were set up by universities in order to capitalise on knowledge spillovers and create spin-offs. To a large extent the model of the Science Park has been based on the successes of the US, especially around Silicon Valley and route 128, which has led to the 'popular (but not always substantiated) conception' that by linking businesses to Higher Education Institutions there would be an 'explosion' of innovation and high-growth firms. The WSSP is designed to support the development of 'inter-organisational cooperation' in the production and transfer of knowledge for innovation.

The evaluation was commissioned by Scottish Enterprise, who describe in their Terms of reference that they want a 'full' evaluation of the West of Scotland Science Park covering the entire life span of the Science Park since 1984 to the present day (2008). It would include both qualitative and quantitative feedback, including consultations with all the major stakeholders and an assessment of the economic impact at local and national level. The Terms of reference also explain that the reason for the evaluation is to enable Scottish Enterprise to build an updated estates strategy for the Park. This means that it wanted the winning consultant to develop a complete set of options for what Scottish Enterprise could do with the Park. An independent consultancy called EKOS was commissioned to undertake the work.

2. Description of the evaluated measure

The West of Scotland Science Park (WSSP) is situated next to the University of Glasgow and the University of Strathclyde, just 3 miles north of Glasgow and is spread over 24 hectares and divided into two Campuses. The Todd Campus is jointly owned by Scottish Enterprise and a number of private sector companies, while the Kelvin Campus is held on a long-term ground lease from the University of Glasgow. The Science Park was originally developed by the Scottish Development Agency, which merged with the Scottish Training Agency in 1991 to become Scottish Enterprise. It does not received ERDF co-funding.

One of the principal challenges that the Evaluation of the West of Scotland Science Park was intended to overcome was the fact that the original approval papers for the Park had been lost, partly because they dated back to 1984, and partly because they had originally been signed by the Scottish Development Agency, but the Science Park was now being run by Scottish Enterprise. This meant that the original market failure argument that justified an intervention had been lost and it was not entirely clear what the original targets and objectives had been. However, in order to set the WSSP into a

[1] *Evaluation of the West of Scotland Science Park*, a report written by EKOS Limited for Scottish Enterprise, 2008. Available at: http://www.evaluationsonline.org.uk/evaluations/Browse.do?ui=browse&action=show&id=381&taxonomy=ESB

current policy context, when Scottish Enterprise published the Terms of reference, it highlights the role of WSSP as a means to meet the Central Government's long-established Regional Economic Policy, and explains that WSSP 'offers a foundation for companies through the provision of an environment which:

- Is of an appropriate standard for high-level technology.
- Provides easy-access to the technical, business and leisure facilities of the Universities of Glasgow and Strathclyde.
- Connects tenant businesses to business advisory services through SE's Account Managers.'

In terms of how EKOS found the WSSP Project fits into the wider Scottish Enterprise policy background, it found that there was no clear provision for Science Parks in the Government Economic Strategy, but that the WSSP project was a good fit under a number of other strategies. In particular, there are many Life Sciences companies residing on the Science Park, which are all covered by the Life Sciences Strategy 2008.

In broader terms, EKOS also found that the Science Park was highly valued by the companies located there, and was even attracting interest from private investors who wanted to develop parts of it by providing co-funding for research facilities. EKOS understood this to be evidence that the Science Park had become more commercially viable over time, and suggested that if the market failure argument had been that high-tech businesses needed a higher specification of premises than the private sector was willing to invest in, then in this sense the Science Park had matured and could arguably survive without further public support.

However, EKOS also stressed that the Park is a continuing asset because of its prime location next to a university known for its life sciences research. Although the University of Glasgow has its own incubator premises, it does not have further accommodation for spin-outs to expand into, which the Science Park offers. Arguably, therefore, the Science Park is a unique asset that Scottish Enterprise should continue to support.

3. Designing evaluation study

The Terms of Reference for the evaluation were written by evaluation specialists within Scottish Enterprise, the public agency with lead responsibility for the park and a co-owner of the site and sponsor of various support activities. The evaluation was commissioned by Scottish Enterprise in order to determine why it was continuing to support the Science Park and to establish whether that support should continue in the future and if so what strategy the agency should adopt towards the park.

For this reason, the evaluation was designed to be as comprehensive as possible, covering a wide range of issues over the entire operational period, from it's opening in 1984 up until 2008, when the evaluation was carried out. The evaluation questions centred around:

- Understanding the management and delivery of the facilities and services of the Science Park. This contributed to a current understanding of how satisfied the businesses located on the Park were with it and how the major stakeholders in the Park felt about it.
- Reviewing the rationale for government intervention in the Science Park. This was needed to feed into a new estates strategy for the Science Park, and was made particularly pressing because the original approval papers had been lost, along with the original rationale for the intervention.
- Assessing how the Science Park fit with the wider policy objectives of Scottish Enterprise.

- Finally, an assessment of the benefits of the Science Park along with the business development support available on the site provided by Scottish Enterprise and its predecessors was to be conducted, including a full economic assessment of the impact of the Park on the local and regional economy, including quantifiable and non-quantifiable effects.

The Terms of Reference explained what data and methods it envisaged the evaluator would use to collect evidence to answer these questions. It anticipated that there would be:

- A desk research element. This would include a review of the relevant project data, and a review of the Science Park literature and relevant benchmarking research.
- A number of internal consultations within Scottish Enterprise, with approximately 4-5 being suggested with identified individuals.
- A number of external consultations with 6-7 key stakeholders / partners.
- Consultation with all the companies currently residing on the Park. This was intended to feed into both the qualitative and the quantitative elements of the evaluation.

Finally, the Terms of Reference suggest that the economic impact assessment should be conducted in line with the guidance set out in Her Majesty's Treasury's Green Book[2] on investment appraisal as well as the Scottish Enterprise's Economic Assessment Guidance.[3] This would ensure the analysis would cover the following key issues:

- Baseline / reference case - What was the situation like prior to the WSSP project and what is most likely to have happened in its absence?
- Net effects – What are the net changes that are brought about as a result of the WSSP, taking into account both positive and negative effects?

It particular, the assessment should take account of:

- Deadweight – what evidence is there that benefits would have occurred without the project?
- Displacement – what proportion of project benefits accounted for have been made possible by reduced benefits elsewhere in the target area?
- Leakage – What proportion of benefits accrue outside of the intervention's target area or group?
- Substitution – Have any of the supported firms substituted one activity for another, equally socially useful, activity to take advantage of public sector assistance?
- Multiplier effects – What further economic activity can be associated (through jobs, expenditure or income) with additional local income, local supplier purchases and longer term effects?

Included in this Economic Impact Assessment would be an overall value for money assessment of the West of Scotland Science Park as well as qualitative evidence on the ways that the Science Park had encouraged businesses to start-up and grow, develop new markets, improve their technology and research and have access to better skilled people.

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[2] http://www.hm-treasury.gov.uk/data_greenbook_index.htm

[3] http://www.scottish-enterprise.com/about-us/how-we-work/resources/impact-evaluations.aspx

The duration of the evaluation was to be four months and cost approximately £25,000 (€30,000).

4. Implementing evaluation: methodology and process

4.1 Data collection methods

Once EKOS had been appointed they met with Scottish Enterprise to discuss the focus of the evaluation and the direction it should take. There were a series of progress meetings throughout the evaluation and frequent telephone contact. Toward the end of the 4-month period, a draft final report was submitted.

The desk research element of the evaluation was extensive because the operation period extended from 1984 to 2008 and covered a period when the Park was supported by the Scottish Development Agency as well as a period when it was supported by Scottish Enterprise. It was important for the documentation to get to grips with all financial support that had been invested in the Science Park in order to make a full value for money assessment, which was successfully achieved back to the year 2000, although the records were incomplete beyond this.

A second part of the desk research involved a literature review, exploring the economic development logic of science parks in general and tracing the evolution of good practice in the organisation of and public support for science parks. The literature review was also able to inform the recommendations on what the future direction of the Park should be.

The third element of the desk research was a benchmarking review. Unlike the literature review, which sought to understand how the West of Scotland Science Park aligned with current theory, this element sought to understand how well the park was performing in practice by comparing WSSP to other Science Parks under Scottish Enterprise in the West of Scotland. This was a useful way of assessing WSSP's performance because it enabled EKOS to understand whether any of the strengths or issues that affected WSSP were affecting other Science Parks in the region, or whether they were peculiar to this one.

After the desk research component was completed, EKOS conducted consultations with key stakeholders with interests in WSSP. This consisted primarily of face-to-face interviews, and included interviews with:

- Executives from within Scottish Enterprise, who have interacted with the Science Park.
- Representatives of the University of Glasgow, who have helped to manage the Science Park.
- Colliers CRE Group, who provide a broad range of real estate consultancy and manage Scottish Enterprise's entire commercial property portfolio. On WSSP, they look after landscaping, maintenance, advise on the impacts that new developments will have on the rest of the site and generate revenue's through collecting rents.
- Two private sector property developers, who have been active on the site developing space for WSSP.

The interviews were useful for finding out what each party thought the main objectives of the Science Park were and how well WSSP was performing against these targets. It was also instrumental in forming a clear view of how each party rated the management of the Science Park and how well they were communicating with each other.

The final major consultation was a survey of all 29 companies located on the Science Park at the time of the evaluation. Given the small number of companies, and the importance of their feedback, EKOS chose to survey them face-to-face, which gave it

the opportunity to explain any questions if needed and to secure a higher response rate. Ultimately, EKOS interviewed executives from 16 of the 29 companies, a response rate of 55%. This is a reasonable response rate, and almost certainly produced a larger number of views than would have been achieved through a more formal telephone survey. Moreover, the 16 respondents comprised a good cross-section of tenants.

The semi-structured interviews made use of a pre-existing questionnaire, which was specified by Scottish Enterprise in the Terms of Reference. The interview guide (survey) had been designed by EKOS for Scottish Enterprise as part of a previous evaluation of another Scottish science park, and given the survey had worked well in that instance it made sense to re-use the data collection tool and avoid the time and cost of designing a new one. It also meant the results could be compared with those from the previous evaluation.

The survey design covered three key areas:

- The first set of questions asked the firms to explain basic information about themselves and their relationship to the Park, such as the nature of the organisation and its turnover and supply chain, as well as questions like why they had chosen to locate to the Park and the length of tenure.
- In the second set of questions, respondents were asked to rate the quality of the West of Scotland Science Park's facilities and services. These included questions about the general maintenance, administration and cleanliness of the Science Park facilities, questions about the professional services offered and questions about the Park management, and the quality of Scottish Enterprise's interventions in the Park. This fed into a general assessment of the quality of services and facilities provided by the Science Park and Scottish Enterprise.
- The third set of questions revolved around the reasons for locating at WSSP over any other business park, and the full impact of Scottish Enterprise's interventions. These were asked in terms of the effect of the Science Park on the interviewed company's level of innovation, turnover and employment, and were fed into an assessment of the economic impact of WSSP.

The reason the consultation with the companies located on the Science Park was in a survey format was because the information that needed to be collected was too extensive not to follow a structured format and needed to be comparable with the other responses in order for quantitative conclusions to be drawn. This did not stop EKOS collecting additional unstructured evidence where appropriate during the interview.

4.2 Analysis

Once the EKOS had completed the data collection, it went on to analyse those data from three perspectives:

- Economic impact;
- Quality of the service provided;
- The rationale for public support and the future direction of the Park.

The first way that the information was processed was to conduct a **full economic impact assessment** of the WSSP. The evidence for this stage of the analysis came mostly in the form of survey results of the companies located there.

Tenants were asked to estimate the gross impacts that the Science Park has had on their levels of turnover and number of employees. Following the guidelines set out in the HM Treasury Green Book, as well as Scottish Enterprise's Economic Assessment guidance, EKOS then used the survey to find out a range of additional information that could be used to refine this estimate. This was necessary because firms are often not

aware of the full economic impacts they have, such as the effect their success could have on other businesses in the region.

For this reason, EKOS also asked the firms whether they believed that there were many other firms in direct competition with them in the region, the answers to which were used to estimate the extent to which growth among firms supported by the Science Park had simply displaced growth among existing business in the region. The survey was also used to estimate other factors, such as whether the Science Park is targeting the right sort of firm, or whether there is 'leakage' of the benefits of the Science Park.

Finally, EKOS used information gathered about where the firms located on the Science Park buy products and services from, and how many employees they employ at what rates, in order to work out what the multiplier effect of the increased wages and turnover are and multiply this number with the full economic impacts of the Science Park.

There are, of course, known drawbacks to asking a firm to self-report their own economic impacts. These include a typical overestimation of the benefits attributable to government support, and underreporting of other factors as described above (e.g. displacement among competitors) where the firms are unaware of them. However, given the very specific nature of the information being collected there is usually (as there was in this case) no other readily available alternative method for collecting this kind of information.

The way that EKOS has overcome the drawback to using this kind of information was to ask the respondents the same question in a number of different ways, and then to compare the collected answers and draw a more realistic picture from the evidence. An example is that the surveyed firms tended to underestimate the benefits of locating on the Science Park when asked directly to estimate the impact it had on turnover and employees. It was fortunate, therefore, that EKOS also asked the firms to rate other types of benefits they had experienced while on the Park. An important example was that most of the firms had benefitted from being able to move into bigger accommodation at some point in their history, but had failed to estimate the impact that this sort of flexibility had had on their businesses until asked directly. By asking the firms to estimate the benefits they had experienced while on WSSP several times in several different ways, EKOS was able to gain a clearer understanding of the benefits the Science Park offered these businesses and could arrive at a more realistic estimate of the gross impact.

EKOS did not attempt to reconstruct the counterfactual using a 'control group', which in this case would be a sample of firms selected because they were similar enough to the firms located on the Science Park to compare the difference in growth. In our view this was the correct decision because it would be nearly impossible to select comparable businesses to the ones located at the Park. This is because given small number of businesses located there (29), the control group could not simply be 'matched' econometrically on a few key indicators, so for the comparison to have any worth the two sets of firms would have to be virtually identical. This would mean that the evaluators would have to decide what 'defined' the businesses located on the Park (size, number of employees, reasons for locating on the Park, links to universities, industrial sector, processes used, type of accommodation needed). Furthermore, it could prove even harder to find comparable businesses that were not in receipt of any kind of alternative government support.

The second way the information was processed was to make an assessment of the **quality of the service provided**, along with other managerial and operational issues. This stage of the analysis mainly relied on evidence from the consultations with key stakeholders with interests in WSSP. These stakeholders included the representatives of Scottish Enterprise, the University of Glasgow, Colliers CRE Group, two private sector property developers and survey of businesses located on WSSP.

The interview questions asked to each group were tailored to the kind of information they were likely to have. However, the questions revolved around the linkages between the actors related to the Park and the extent to which they rated the management of the Park as being of high quality (e.g. appropriate to needs, timely, efficient, etc).

One of the key findings of this stage of the analysis was that the Scottish Enterprise and the University of Glasgow were not working together as much as they could be and even had completely different strategies for the future direction of the Park. EKOS were able to suggest that they work closer together and they have now developed a joint strategy for the Science Park. Furthermore, the stakeholder consultation revealed that the firms on the Science Park were not working as closely as they might with the universities and were thus not making use of one of the principal benefits a science park offers over a conventional business park.

EKOS ran a stakeholder workshop at the end of the evaluation, which brought all the parties together to discuss the findings and to agree what actions needed to be taken as a result. This kind of group discussion is a good means by which to sanity check findings and build collective ownership of the conclusions and recommendations. This is especially important where the key messages are somewhat challenging, as was the case here, where the park was judged to be functioning more like a business park than a science park.

Finally, the evaluation reconstructed the **rationale** behind WSSP and examined options for the **future direction of the Park**. This stage of the analysis was informed by the literature review, by the benchmarking review and by the consultations with key stakeholders.

The literature review was an important exercise for understanding what the original rationale and objectives were likely to have been given the aims of the day. It was also used to provide suggestions for the future direction of the Park by looking at what modern theory suggests the strengths and objectives of a science park should be. This evidence was backed up by the benchmarking exercise, which looked at how the WSSP has been performing in practice compared to other science parks in the region. Finally, key stakeholders with interests in the Science Park were asked what they believed the objectives of it had been and should be.

EKOS arrived at the conclusion that WSSP had benefited the firms located on the Science Park by providing them with high-quality accommodation, but had not fundamentally affected the nature of these firms or their innovativeness. EKOS found that the interventions that had the biggest impact on the development of the assisted firms were the business and skill development measures. However, the firms found it very hard to distinguish the effects of the business support measures from the benefits of locating at the Science Park. The breadth of topics covered by the questionnaire limited the consultant's opportunity for probing any one issue in depth: the length and complexity of the questionnaire precluded a detailed discussion of individual interventions. The implications of this finding will be discussed in further detail below.

5. Effectiveness and efficiency of evaluation

In summary, the evaluation was well rounded, and judged on its own terms, highly successful. It succeeded in answering all of the evaluation questions, which created a broad picture of a wide number of aspects of the Science Park, including what the rationale for supporting WSSP is, how well the Science Park is managed and run, how well the main actors on the Science Park coordinate their actions and benefit form each other's presence, and what impact the Science Park has had so far on the regional and national economy. This is an impressive achievement on a tight budget of only £25,000 and a tight timetable of four months.

The purpose of Scottish Enterprise commissioning the study was to gather evidence of the impacts of the Science Park and to receive recommendations about the future

direction of the Park, which EKOS were able to do. Among the achievements of the study, the following were particularly strong:

- The evaluation had to overcome various important documents being missing, including the rationale for WSSP. The documentary evidence was collected by Scottish Enterprise before the start of the evaluation in order to speed the process up and to make it more cost-efficient. There were some problems obtaining early documents because the Science Park had been running since 1984 and had been managed by the Scottish Development Agency before it became Scottish Enterprise. This meant that the original rationale for setting up the Science Park had been lost and the financial details of some of the early investments were missing. This caused a small issue in that some of the larger capital investments had occurred earlier in the Science Park history. However, this does not appear to have been a big problem, as it did not impact on the evaluator's ability to address the evaluation questions.
- Because the original rationale had been lost there was no record of the original market failure argument behind the intervention or the formal objectives of setting up the Science Park. EKOS successfully overcame this problem, based on the methodology in the Terms of reference, by situating its assessment of WSSP's performance on evidence collected during the literature review and the benchmarking review, as well as consultations with key stakeholders. This helped EKOS create a new set of objectives for the Science Park, which ultimately helped to inform its recommendations for the future direction of the WSSP.
- The survey of supported businesses successfully gathered all the information needed to conduct an assessment of the full economic impacts of the Science Park. This was adapted from a survey taken from a previous evaluation to save time and money. It included all the necessary questions needed to arrive at a full economic impact assessment, and could therefore serve as a useful template for future evaluations. It also included asking the firms various different questions about the benefits they experienced while on the Science Park, in order to gain a clearer idea of where those benefits came from.
- The consultations with the key stakeholders of Scottish Enterprise and the University of Glasgow were vital for understanding how well the main actors on the Science Park were interacting and cooperating with each other. EKOS found that Scottish Enterprise and the University of Glasgow could work better together and should devise a joint strategy about the Science Park. EKOS organised a workshop at the end of the evaluation so that the key stakeholders could discuss how to bring the main findings and recommendations of the evaluation to life and discuss how to work more closely together in future.

Although the *Evaluation of the West of Scotland Science Park* answered all the questions that it set out to, and used this evidence to feed into a set of recommendations about the future direction of the Science Park, it is hard to contend that such a small evaluation amounted to a full and robust economic impact assessment.

Related to its smallness, the approach was also compromised by its reliance on the views of current tenants and stakeholders, where the park has a 25-year history in the city. The evaluation found it difficult to identify any evidence of the wider economic impact and had to make use of tenants' subjective estimates of local competition (as a means by which to adjust for likely displacement effects) and their regional purchases (to feed into an estimate of the economic multipliers flowing to the city economy from increasing turnover and employment). In particular, EKOS found little evidence that being located on the Science Park had caused any significant restructuring of those businesses that would not have happened elsewhere. The interventions that EKOS found were the most effective were the business support measures that were available on the Science Park, along with an account manager that would work closely with the firms to ensure that they were making full use of all of the help available from Scottish

Enterprise and ensure that Scottish Enterprise was working closely with them. However, because of the approach taken, EKOS were not able to go into these support measures in depth and were therefore restricted in terms of finding out which of the measures were the most effective.

These findings suggest that a newer and better approach to evaluating the effectiveness of the support provided to businesses located at the Science Park would be to evaluate the full range of measures designed to any of the particular objectives of the Science Park. For example, the full range of measures designed to support the internationalisation of businesses located there, increasing knowledge transfer, university-business cooperation or stimulating innovation.

This approach is described in the book *Clusters: Balancing Evolutionary and Constructive Forces*,[4] which looks at ways to evaluate industrial clusters. In it, the author, Örjan Sölvell, finds that there are very few evaluations carried out at the cluster level. However, he also found that this is an area where Scottish Enterprise has started to take the lead. Sölvell's suggestion is that instead of carrying out an evaluation at the level of a single initiative or scheme, the evidence is more valuable at the level of a cluster of initiatives or schemes, all designed to support the same wider objectives. Carried out at this level, the evaluation seeks to understand whether the global rationale behind supporting these businesses is being met, through understanding the full policy context that the Science Park works within.

6. Conclusions and lessons learned

This evaluation successfully answered all of the questions that it set out to and used this evidence to inform recommendations for the future direction of WSSP, and can therefore be judged to be a success on its own terms. However, it has also demonstrated that there is more than one way to evaluate a science park. This is partly because science parks perform such a complex range of functions. According to some branches of literature, they are predominantly a place where high-tech industry can benefit from the skills and expertise of a neighbouring university and make use of technologically advanced premises at below-market prices. In particular, this case study has demonstrated that:

- The consultations with key stakeholders on the Science Park were very useful for uncovering how well the Park was being managed and the quality of service provision. It was also very important for finding out how well the main actors on the science Park were cooperating and interacting with each other. This investigation led EKOS to recommend that Scottish Enterprise and the University of Glasgow work closer together.
- The workshop that EKOS ran at the end of the evaluation was good practice for bringing the main actors on the Science Park together and helped them to act on the recommendations. Scottish Enterprise and the University of Glasgow are now is continuous contact and have written a joint strategy for the future of the Science Park.
- The questions that Scottish Enterprise asked surrounding the impact and value for money assessment of the Science Park, the quality of service available there and whether there was a market failure rationale for continuing to support WSSP gave a useful starting point for reviewing the future direction of the Science Park. This was important because the original papers had been lost and coordination between the main agents on the Park had become fragmented.

[4] Örjan Sölvell, Clusters: Balancing Evolutionary and Constructive Forces, The Global Cluster Initiative Survey (GCIS), 2008. Available at: http://www.cluster-research.org/redbook.htm.

- EKOS found it difficult to find evidence of economic impacts of the Science Park alone, and was limited in its scope to explore the benefits of the business support measures available on the Science Park by the Terms of Reference. These findings suggested that the overall method could have been improved by focusing on the full range of measures designed to support any of the particular objectives of the Science Park, such as increasing the innovativeness of the firms located on the Science Park. This would have allowed EKOS to make recommendations about aspects of the Science Park that were already delivering more effective results and work towards a harmonised package of business support measures that would deliver better value for money overall.
- However, judged on its own terms, the evaluation was a success: it fulfilled all of its own goals of contributing to a new Scottish Enterprise estates strategy, and answered all of the questions in the Terms of reference, and it did this on a very tight budget (£25,000) and in a very short timeframe (four months).

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