City Labs: Supporting eco-innovation and entrepreneurship through best practice exchange and cooperation

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Abstract

This paper explores how a series of City Labs, run under the auspices of the Know-Eco project, a District + sub-project, aimed to support entrepreneurship and good practice transfer in eco-innovation in the construction and mobility sectors. The Know-Eco project was led by Coventry University Enterprises Limited and funded partly by the European Regional Development Fund (ERDF), in the framework of INTERREG IVC. The City Labs drew on a range of best practices demonstrated by partners across four regions: West Midlands (UK); Lower Silesia (Poland); Saxony-Anhalt (Germany), and Tuscany (Italy).

The Know-Eco City Labs, as a form of Living Lab, brought together entrepreneurs and the innovators of products, services, technologies and approaches in mobility and construction with policymakers and those developing regional strategy. The aim of the Labs was not just to highlight examples of good practice and innovation, but to improve the effectiveness of regional strategy development and implementation. The City Labs enabled each partner to demonstrate their regional strengths and to discuss their strategy for smart specialisation. Over the series of City Labs it was possible to identify synergies and differences in regional approaches to common problems. This paper will describe the overall City Lab approach and rationale; it will highlight the benefits and limitations of the approach and provide a specific example of a City Lab by focusing on Coventry in the West Midlands of England as a case in point.

Key words: Eco-innovation, Entrepreneurship, Transferability, Best Practice; City Lab; Smart Specialisation

1. Introduction

Before exploring how the City Lab complies with the various definitions of a Living Lab, we will provide some background on the approach adopted by the overall District + sub-project programme. In total there were six sub-projects, one of which Know-Eco, and six principal European partners (Dalgleish and Healy, 2013, p. 1). The aim of the projects was to support declining traditional industrial economies and, through innovation and knowledge creation/exploitation, encourage more competitive development models that would support growth and regional economic recovery (ibid). The project was not just about knowledge and innovation creation, but also aimed to explore how regional policy supported the practical exploitation of knowledge and innovation and whether this best practice in policy could be exchanged between partners from different socio-cultural and institutional contexts (ibid). The regional partners were involved in more than one project, but different organisations represented the region. This gave a rich opportunity to share good practice within a region as well as between regions, both at the level of innovation and policy development (ibid: 6).

District+ sub-projects were intended to operate as "small epistemic learning communities focused around a number of sub-projects" (ibid, p. 20). Dalgleish and Healy go on to say, "these communities are based upon individual participation with democratic processes of engagement, allowing users to define the focus and approach" (ibid), the aim being that they form learning organisations. By learning organisations, they draw upon Garvin's definition (cited in Dehoff et al, 2001) that such an organisation is "skilled at creating, acquiring, interpreting, retaining and transferring knowledge" (ibid). The true learning organisation however goes on to use the knowledge gained to "purposefully modify its behaviour based on new knowledge and insights" (ibid). However, the District + project had no power of implementation, it is therefore better characterised as a "transfer agent" rather than a transformer. Regional economies face many similar challenges; sharing best practices enables opportunities to be spotted and pitfalls avoided.

Networks structures, such as District +, have been shown to have an impact on learning as they stimulate new knowledge, concepts and ideas which are shared within the innovation community. In this respect they act like open innovation networks, where innovation communities adopt external ideas and knowledge and combine them with internal research and development in a bidirectional relationship; this produces new ways to add value and create opportunity (Chatzimichailidou and Dusko, 2012). Similarly, "in the Living Lab approach, users act as co-creators…where everything is co-designed, controlled and evaluated under open and cooperative real world circumstances" (ibid: 3).

INTERREG IVC promotes Europe-Wide cooperation to enhance development through learning from the experiences of others and to create added value for both the partners and the wider European Community (INTERREG, 2012). The District + approach was intended firstly to provide contextual support for learning, through thematic studies which codify examples of good practice and secondly, to facilitate reflexive learning through the codification of individual examples of good practice which could be evaluated in the mutual learning space of workshops and practical practice exchange (ibid). The Know-Eco project's City Labs functioned on this basis; the details of which are provided in the case study below.

In terms of conceptualising the City Labs as Living Labs, we have drawn upon a range of definitions. Doppio & Pianesi (2013) investigated the history of the definition of a "Living Labs" and highlighted that it can be defined in several ways. The European Commission (2008) cited in Doppio & Pianesi (2013) defined a "living Lab" as an "open innovation environment in a real-life setting in which user-driven innovation is fully integrated within the co-creation process of new service, product and societal infrastructures" (European Commission, 2008, p. 7). Similarly, Niitamo et al. (2006) again cited in Doppio & Pianesi (2013) as "emerging Public Private Partnerships (PPPs) where firms, public authorities are people work together in creating, prototyping, validating and testing new services, businesses, markets and technologies in real life contexts, such as cities, city regions, rural areas and collaborative virtual networks between public and private players" (Doppio & Pianesi, 2013). Various authors comment that the concept of the "Living Lab" is still in the course of its shaping (Doppio & Pianesi, 2013; Chatzimichailidou and Dusko, 2012; Salter and White, 2013) and that there is a lack of clear understanding of the legal profile, the organizational structure and the governance and management systems that should underpin and shape them (Doppio & Pianesi, 2013).

The definitions of the "Living Labs" above have clear synergies with the NTERREG IVC programme in which its focus is on "interregional co-operation, to improve the effectiveness of regional

development policies in the areas of innovation, the knowledge economy, the environment and risk prevention as well as to contribute to the economic modernisation and increased competitiveness of Europe" (INTERREG IVC, 2012, p. 2). INTERREG IVC (2012, p. 2) highlights that the exchange, sharing and transfer of policy experience, knowledge and good practices will contribute to achieving this objective and that this is completed through the use of "study visits as well as joint interregional training sessions involving regional staff and decision-makers in direct charge of specific policies to maximise transfer of formal and contextual knowledge and skills" to the regions (District Plus, 2012). Whilst not explicitly PPPs as defined by Niitamo above, the range of partners involved in the District+ programme included higher educational institutions (26%), regional authorities (22%), local authorities (9%), science parks and innovation centres (43%). The training events and workshops drew heavily on support from innovators and entrepreneurs as key partners in the process.

Before going on to look at the case study specifically, it is worth exploring briefly what might be understood by the concepts of **eco-innovation**, **smart specialisation**, **good practices** and **transfer.**

Eco-innovations is referred by the EU Commission as all forms of innovations, technological and non-technological, new products and services and new business practises, that create business opportunities and benefit the environment by preventing or reducing their impact, or by optimizing the use of resources (European Commission, 2013b). The European Union clearly states that eco-innovations play an important role in pursuing sustainable development. According to the eco-innovation scoreboard in 2013 produced by the European Commission based on 16 indicators, the UK was ranked 5th out of 28 Member States (Eco-Innovation, 2013).

Since 2008 Europe has been suffering from the effects of the most severe economic crisis in over 50 years. Before the crisis, Europe faced many structural challenges to its competitiveness and growth. This has resulted in high levels of unemployment (estimated at over 25 million people) and in many Member States small and medium sized enterprises have not been able to recover to their pre-crisis levels (European Commission, 2013a). Post recession economic recovery for Europe is premised largely on a low carbon strategy, which aims for "smart, sustainable and inclusive growth and the transition to a resource efficient economy" (European Commission, 2012). The target for carbon reduction for transport is 60% of the 1990 level by 2050. This is set against a background of increased demand for passenger and freight capacity on systems reaching their performance limits (European Commission, 2013b).

Eco-construction includes activities such as housing design using eco materials, urban design and rehabilitation of the brown field areas (Takhtay, 2011). The European Commission (2012c) stated that buildings are central to the low carbon strategy as nearly 40% of final energy consumption (and 36% of greenhouse gas emissions) comes from buildings. Based on reports from Eichhammer (2009) and Wesselink (2010), the cost-efficient energy saving potential in the building sector is estimated to be 65 million tonnes of oil equivalent with this corresponds to a cumulated investment need of circa 587 billion Euros for the period 2011 to 2020. Kelly et al. (2012) stated that the majority of the investment needs to be directed at the existing building stock, (constructed from 2005 onwards), 92% of which will still be functional in 2020 and 75% of which will still be in use in 2050 (Kelly et al, 2012). Current rates of construction and demolition suggest that these estimates are unlikely to change (European Commission, 2012c).

Smart Specialisation is at the heart of *regional* competitiveness. However, in this context it is necessary to look at the concept at two levels, that of the individual Member State and at a European level. The globalised world is highly competitive and key to company, regional or country success is differentiation. Europe's competitive position with respect to the rest of the world has been in decline for a number of years, but markedly so since the height of the recession (2008). The notion of specializing on a regional competitive strength is not a new one. In some respect smart specialisation is the rediscovery of a principle that has been rediscovered (sic) as a result of general reflection on the 'endemic gap in terms of the innovation between Europe and the USA, as a result of less economic and technological specialisation and a poorer prioritisation of effort in this regard at a regional level (Pontikakis et al, 2009, cited in Garatea et al, 2009, p. 6). According to Garatea et al, (2009) the underlying idea stresses that having a regional system based on a few specialised activities or strengths, which interacts with others, gives rise to new sources of competitive or comparative strengths, which they describe as entrepreneurial discoveries (ibid). Adopting this approach, they argue, resulted in a reorientation of European Policy within the framework of the Horizon 2020 strategy. It is accepted that there is a great deal more that could be said about smart specialisation in this context, the aim here is simply to highlight its influence on the approach adopted in the Know-Eco project and the other District+ sub-projects.

Good Practice is sometimes regarded as a 'bad traveller' (Dalgleish and Healy, 2013, p. 4). What might be regarded in one context of good practice may not be seen in the same light in a different context. Also, it is argued that 'good practice' is not 'best practice' (ibid). This is particularly relevant within the context of the smart specialisation discussion above. This District + project is particularly valuable in this respect as it enables *good* and *best* practice to be explored and the barriers to adoption related to regional specialisation. It is argued that identifying good practice in one region is a starting point for mutual learning. Reflecting on a good practice, may result in its improvement and through learning develop it into a best practice. The Commission defined a *good practice* as a generally accepted approach that deserves the attention and interest of other policy makers or practitioners, and their purpose is to inspire further change and better practice within the regions (European Commission, 2013c).

For the reasons discussed above the concept of **transfer** can be particularly problematic. In its simplest form, the idea was to identify good practices in one place and transfer them to another. This basic definition might assume the wholesale adoption of a concept from one context into another. However, building on the idea of learning discussed above, transfer may be partial or a mutual exchange of knowledge. From a Commissions perspective, transfer or adoption of good practice (from one region to another) is intended to accelerate innovation and growth (European Commission, 2013c). The notion of transfer does not relate only to products or services, but also embraced (mandated) policy transfer. The transfer of know-how from stronger performing innovators, to poorly performing innovators could help to ameliorate relative weaknesses in national research and innovation systems and strategies.

Throughout the District+ project the exchange of knowledge and of the good practices was paramount. In the next section we will give an overview of the Know-Eco project, its methodology and findings, with a specific focus on the Coventry City Lab.

2. Know-Eco Case Study

2.1 Background

The Know-Eco project was led by Coventry University Enterprise. The project aimed to enhance the take-up of eco-innovation in the mobility and construction sectors by drawing on a range of best practices demonstrated by partners across four regions: West Midlands (UK); Lower Silesia (Poland); Saxony-Anhalt (Germany), and Tuscany (Italy) (District Plus, 2010). The partners were Coventry University Enterprises Ltd (UK) (Lead partner), Lower Silesian Regional Development Agency (PL), Fondazione per la Ricerca e l'Innovazione (IT) and the ISW Institute for Structural Policy and Economic Development (DE). The key areas addressed in the project were the synergy of the activities across the regions but also the different local policy contexts which may need to be overcome for Europe 2020.

The District + project officially ran between 1st January 2010 and December, 2013. The first Know-Eco meeting was held in June, 2011, with the City Labs held in Tuscany (October, 2011); Poland (February, 2012); Germany (June, 2012), Florence (July, 2012) and Coventry (October, 2012). A second City Lab was held in Italy as the first Italian partner was unable to continue with the project. Details of the approach adopted to the City Labs is provided in the Methodology section below.

2.2 Coventry City Lab

The UK's first low-carbon economic strategy for the West Midlands was produced under the title of "Connecting for Success" in 2006 (Advantage West Midlands, 2006). The evidence base for the development of the strategy helped to set out what a low carbon economy strategy should look like and the type of interventions needed to generate the biggest productivity gains and carbon reductions.

It defined a low carbon economy as:

> "An economy that produces goods and services of increasing value while reducing the associated greenhouse gases in their production, use and disposal. Low carbon goods, services and skills are related to achieving this outcome and can be specialist; for example, wind turbine manufacture, micro-generation domestic installers or changes within mainstream processes; for example a food manufacturer improving the efficiency of its logistics or production process, or plumbers learning how to install solar heating"
>
> (Advantage West Midlands, 2006).

This definition was interpreted for the West Midlands regions as:

> "…a low-carbon economy means an economy that will underpin a prosperous and thriving region through capturing the economic benefits of increasing efficiency whilst reducing direct carbon emissions and using the region's strengths in engineering, science and technology to deliver low-carbon solutions to national and international markets"
>
> (Advantage West Midlands, 2006).

The report from 2006 also highlighted how this strategy would apply for Business, People and Place:

> For **Business** this means fully capturing the opportunities for both existing industries and new enterprises to ensure the West Midlands region secures a reputation for profitable low carbon enterprise.

> For **People** this means up-skilling to secure the benefits from new employment opportunities emerging from a low-carbon economy, along with behavioural change, to enhance quality of life.

> For **Place**, this means creating the conditions for growth by optimizing transport networks and developing a low-carbon built environment through energy efficiency and renewable materials"

(Advantage West Midlands, 2006).

The West Midlands has been defined as a new Low Carbon Economic Area (LCEA) with £19 million in government funding being made available for research and development of the Low Carbon Vehicles (LCV) sector (Donnelly 2010, p.6). The Automotive sector is striving towards a carbon free motoring future as road based transport accounts for 22% of the CO^2 emissions in the UK (Donnelly, 2010, p. 6).

MacNeil (2003, p. 4) highlighted the West Midlands mobility cluster has a strong heritage, but in recent years might be described as 'mature'. Donnelly (2010) also mentioned that the Low Carbon Vehicle (LCV) sector holds much promise and potential for the region, however six key challenges need to be overcome:

1. *In the absence of a volume producer in the region, it might be advisable to stick to niche automotive development to remain at the cutting edge of such developments.*
2. *The lack of major volume manufacturers should not be perceived as detrimental in itself as the area is reasonably well placed to develop and exploit new technologies and materials which could be turned to commercial advantage.*
3. *A higher emphasis should be placed on design technology.*
4. *Regardless of the path pursued there needs to be continuous investment in upgrading and maintaining the right mix of skills in the area.*
5. *The above entails increased cooperation with universities and research institutes. In addition, the pursuit of LCV developments in other parts of the UK, notably the North East, suggests that regional co-operation rather than competition would be a sensible strategy moving forward.*
6. *The UK in general lacks an expertise in battery technology and faces serious competition from countries such as China where this is being developed rapidly. An alternative niche for Coventry, therefore, is the development of battery packs.*

(Donnelly, 2010, p. 4)

According to the Technology Strategy Board (2014), the UK construction cluster accounts for 45% of the total emissions in the UK, with 27% coming from domestic buildings and a further 18% from non-domestic buildings. The UK government has taken an International lead to reduce carbon emissions and in 2008 the Climate Change Act set an 80% reduction target from the 1990 to 2050 levels

(Donnelly, 2010, p. 19). To support the DCLG Code for Sustainable Homes by 2016, the TSB is focusing on six challenges where effective support for innovation can take place:

- *Design for future climate change*
- *Design and decision tools*
- *Build process; allowing the supply chain to innovate together*
- *Management and performance of buildings*
- *Materials and components for sustainable buildings*
- *Integrating with sustainable infrastructure.*

(Technology Strategy Board, 2014)

According to the Construction Skills Network (2013) the construction output in the West Midlands area is projected to decline at an annual average rate of 1.4 between 2012 and 2017.

3. Methodology

The City Labs provided the main opportunity to showcase good practices within a region to invited policymakers, local authorises, academics and SMEs. The plenary discussion provided an opportunity to discuss policy issues and to raise concerns, hopes and wishes with decision-makers from the two key sectors. The Coventry City Lab was organised around the two key sectors, with day 1 focusing on mobility and day 2 focusing on construction.

Day 1 included presentation from Coventry City Council on the Plugged in Places project, which highlights the regions strategy for creation of charging points for electric vehicles. Next Jaguar gave a presentation on their hybrids and electrification strategy, with a chance to review the *Range E*, a prototype Hybrid Range Rover, developed as part of the CABLED Project (a low carbon vehicle demonstrator project). This was followed by a visit to the Jaguar plant in Castle Bromwich. The Lab also had a presentation on Micro Cab, a hydrogen fuel cell vehicle also developed as part of the CABLED project and an example of best practice.

Day 2 included presentations on sustainable construction from Sustainable Building Futures a CU project aimed at supporting SME eco-innovation in the construction sector. This was followed by a visit to Sampson Close, a social housing project developed by Heart of England (Orbit Housing) to demonstrate low carbon construction and building management and monitoring techniques. The group was also given a tour of Coventry University's range of high energy efficiency buildings on campus where a range of energy efficiency processes and technologies were demonstrated.

On day 3 a Steering Group meeting was held to review and reflect upon the information gathered and highlight areas for future development within the consortium. Each of the City Labs focused on regional smart specialisation and so although the structure of the City Labs was common to all, the specific content of the Labs was highly variable. Learning and adaptation took place between City Labs, as individual partners built upon the experience gained from earlier Labs to enhance (as opposed to replicate) learning and demonstrate local regional solutions to the problems identified. As the Coventry City Lab was the last in the series, it embodies the lessons learned from the earlier Labs.

Photos from the City Lab Coventry from October 2012.

Range E demonstration from Jaguar Land Rover

Plugged in Places, a discussion with Coventry City Council

4.   Results and Discussion

This paper can only really present a snapshot of the Know-Eco Project, the problems it aimed to address and its long-term impact. This project and others that formed part of the District+ sub-projects aimed to move the debate forward by identifying and, where possible, transferring good practice between partner regions.

During the course of the Know-Eco project 26 good practices were identified (the project target was 8). From these, two good practices per region were investigated in more depth to see how transferable in reality they were. One of the main difficulties of this project was the notion of transfer. The concept of "transferability" overall was problematic. On first reading, the aim was to take a good practice that has already proved to be successful in one partner region and explore the

potential of transfer to a different geographical region. To establish a successful transfer, the good practice must be capable of providing tangible and measurable results in achieving a specific objective in one partner region and, when transferred have a concrete and measurable impact for the importing region. The intention to adopt a good practice is not sufficient to consider the good practice transferred.

However, in their evaluation of the District+ Best Practice Report, Dalgleish and Healy (2013) comment on the value of the transfer of knowledge and the value of transfer of practice. The initial focus in this project (Know-Eco) was on practice transfer. Having identified a range of good practices (innovation and policy), the aim was to secure its acceptance in another partner region. Whilst it was possible to gain acknowledgement of the good practice, bringing about effective transfer in concrete terms as described above was inhibited by time constraints, resource limitations and cultural and contextual barriers. Although we were able to identify commonality of needs in both construction and mobility (and therefore mutual learning), the actual exchange of good practice and policy was more through the transfer of ideas and concepts than the transfer and implementation of policy and good practice per se. Some of the obstacles to transfer identified by the District+ lead partner included:

- Good practices are not sufficiently targeting the actual demands and needs of the District+ partner regions.
- Key decision makers are not sufficiently involved in the project.
- Good practice transfer is not synchronized with regional policy-making.

The transfer of knowledge that took place throughout the project resulted in some real capacity building in the Know-Eco team and an "opportunity for like-minded policy makers, practitioners and experts to discuss policy development and for them to see eco-innovations first hand" (ibid: 21).

In addition, a high number of the good practices were found to overlap from region to region. In these examples the contact details for the co-ordinator and managers were exchange to hopefully to stimulate communication and future exchanges and knowledge and the sharing of good practice. This brokering and networking was not a direct output of the project, but it fulfils the overall aim of the project in that it becomes more a process of co-creation than transfer. To measure the true success of this type of project would require a longitudinal study and this would be a recommendation for future projects.

5.   Conclusion

The aim of this paper was to highlight the synergies between City Labs and Living Labs, using Coventry's Know-Eco City Lab as an example. Coventry as a City is already an example of a living laboratory. The Know-Eco project allowed us to take the examples of good practice that Coventry can evidence and share them with partners across Europe. The Know-Eco project highlighted that identifying good practice is and of itself of limited value. The knowledge exchange which took place between partners enabled real strengths and weaknesses that exist around identified examples of good practice to be explored. Whilst codifying examples of good practice has some value, of greater value is the trust that is developed between partners and the tactic knowledge that is exchanged that creates the platform for future collaboration.

Appendix 1 – The output and results indicators for the Know-Eco project

Output indicators	aim	by now
N° of interregional events	6	8 (all)
Total N° of participants in all interregional events	70	91 (all)
N° of good practices identified	8	26 (all)
N° of regional/local policies and instruments addressed in the field tackled by the SP*	8	8*
N° of dissemination events organised by the Sub-project	1	2
N° of GP transferability handbooks	1	8**
N° of strategic guidelines for policy-makers with policy recommendations	1	1***
N° of policy/GP feasibility studies for pilot action in target regions	4	4****
Other (Steering Group Meetings)	6	7 (all)
Other (Press Releases)	5	5 (all)
Other (Newsletters / Brochures Produced)	4	6 (all)
Result indicators		
N° of staff members with increased capacity resulting from the exchange of experience at interregional events	12	20
N° of regional/local public authorities and stakeholders involved in the Sub-projects implementation	20	58
N° of good practices successfully transferred	4	4
N° of regional/local policies and instruments improved in the field tackled by the SP	4	4
Other (Action Plans Developed)	4	4
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