Governing Urban Transformation

Developing guidelines for implementing urban living labs

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Key highlights

- Cities in Europe are facing challenges requiring a new radical form of governance, as growing populations urbanise and generate increasing emissions, whilst also suffering the effects of climate change.

- Urban living labs (ULLs) have emerged in response to this requirement for new governance approaches to face urban sustainability challenges.

- This report focuses on ULL projects in Europe funded by the Joint Programme Initiative (JPI) Europe in order to review and analyse their obstacles, and achievements in urban sustainability, to produce broad guidelines for future ULLs.

- Analysis of five recently completed ULL projects highlights two key obstacles to effective implementation; institutional arrangements and stakeholder participation.

- These ULL projects' contributions to sustainable urban development are mixed and projects are still struggling to balance the conflicting social, economic and environmental priorities, with economic growth still outweighing other factors.

- However more positively there is potential to scale up some ULLs which is a significant step forward in this new form of urban governance.

1. Introducing the urban century

We are now living in what can be deemed an urban century. The past 30 years have seen an exponential rise of global urbanisation, a growth which has contributed to the parallel trend of rising GHG emissions (Dulal, 2016). Cities are responsible for 75% of these emissions but are also vulnerable to the effects of climate change (LSE, 2011). Consequently, as 'both culprits and victims' of climate change, cities have a pivotal role to play in the transition to a low carbon and sustainable future (Dulal, 2016, p. 107). A core component of this transition to urban sustainability is governance; the unprecedented challenges facing cities require radical change, which to be effectively implemented in today's world, means a transformation of traditional governance arrangements (Karvonen et al. 2014). Urban laboratories and experiments have emerged as this alternative mode of governance and created 'new political spaces', but at present there are few empirical studies reviewing their success in practice (Bulkeley & Castan Broto, 2013, p.361). Therefore this report seeks to review recently completed ULL projects and provide a clearer understanding of best practice for future projects.

This report is intended for researchers within the Collaboratory for Urban Resilience and Energy (CURE) within the Manchester Urban Institute at the University of Manchester. A key focus of CURE is urban sustainability and urban living labs, particularly within Europe, and collaborating with regional government and private and public institutions (CURE, 2016). Therefore for the report aims to be achieved and for the outcomes to be valuable to the future research within CURE, the ULLs featured in the analysis are projects within the catalogue of Joint Programme Initiative (JPI) Urban Europe. ULLs are a recent phenomenon and consequently only a small selection of JPI Urban Europe's 37 funded projects have been completed. Hence the analysis has been limited to five projects, consisting of 22 ULLs (JPI Urban Europe, 2016). The findings of these projects will be analysed to understand the major obstacles they faced and how successfully they contributed to sustainable urban development.

2. Responding to the dual challenges of urbanisation and climate change

Recent years have seen an exponential growth in urban residents, and cities now accommodate more than 50% of the global population (United Nations, 2014). In 2014 the

urban population reached 3.9 billion, increasing from 739 million in 1950, and by 2050 the urban population will reach 66% of the global total (United Nations, 2014). This translates to an increase of 60 million additional urban residents per year, and whilst this will predominantly occur in Asia and Africa, by 2020 European cities will host 80% of the continent's half a billion population (EC, 2014; EU, 2017; United Nations, 2014). These urbanisation trends, coupled with increasing economic productivity in cities, are likely to exacerbate the challenges of climate change and urban sustainability, in addition to the social challenges of inequality and poverty that urban environments inevitably face (Voytenko et al. 2015).

Responses to these challenges have in the past been hindered by the contrasting priorities held by the multitude of urban stakeholders and, in order to balance these conflicts, actors have been forced to 'cultivate new techniques of governance' which disregard the conventional systems (Hodson & Marvin, 2007, p. 303). Thus, experimentation has been adopted by cities as a radical attempt to respond to climate change and address urban sustainability issues (Bulkeley & Castán Broto, 2013). In a neoliberal era of urban competitiveness, experimentation can portray cities as leaders in innovation by allowing the trial and improvement of products and services, introducing a practical side of adaptation (Evans, 2011; Voytenko et al. 2015). The Urban Living Lab is one type of experimentation which has surged in popularity in recent years but despite this proliferation 'their origins, impacts, and implications for urban governance remain largely unexamined' (Voytenko et al. 2015, p.7). Moreover, Bulkeley and Castán Broto (2013) have commented that 'future research on urban governance needs…to engage with experiments as a potentially vital site through which governing is conducted' (p. 373). Hence the challenge of this paper will be to contribute to this developing academic area by examining this new experimental mode of governance through urban living labs (ULLs).

The paper will focus on Europe where the term 'urban living lab' was introduced by the Joint Programme Initiative (JPI) Urban Europe, the main funding agency for ULLs and the recent surge to prominence on the continent can be attributed to this availability of funding (JPI Urban Europe, 2013; Voytenko et al. 2015). JPI Urban Europe has issued three calls for project proposals in 2013, 2014 and 2015, making specific reference to ULLs as a research

infrastructure, with 37 projects granted funding, seven of which make specific reference to ULLs (JPI Urban Europe, 2016). The case studies are chosen from this selection to investigate the success of ULL projects in urban governance. Recent studies of ULLs have exposed projects which are co-opted by major funders, lack social inclusion, and depoliticized urban governance (Hodson & Marvin, 2009). These issues are significant as 'the ability of ULLs to contribute to urban sustainability and low carbon transitions … depends on how they are designed and executed in practice' (Voytenko et al. 2015, p.8.). Furthermore the outcomes of these experiments can have considerable impact on urban trajectories of economic growth (Gibbs & Krueger, 2007). In reality the ULL approach is defined and applied in myriad of ways and so identifying a successful ULL is difficult. However this paper will review recently completed ULL projects in Europe to examine how successfully they have been implemented and achieved their social, economic and environmental goals.

3. Exploring urban living lab projects in Europe: case study selection

The aim of this report is provide guidelines to be applied during the implementation of future ULLs. Therefore this paper will answer the following research questions:

> **RQ1: What are the main obstacles to the effective implementation of ULLs?**
> **RQ2: How effectively have ULLs achieved sustainable urban development?**

In order to answer these questions, this paper will examine case studies featuring in the analysis have been selected from within JPI Urban Europe's 37 funded projects based on three criteria;

1. The project description must identify the project as a 'living lab', 'urban living lab' or 'city lab';
2. A key objective of the project much be urban sustainability; and
3. The project must have ended and evaluation data must be available

The five projects achieving these three criteria can be viewed in table 1. The analysis will be a cross case comparison reviewing the evaluative data available in literature produced by the selected case studies. This presents limitations in the breadth of material that is available for analysis. In order to answer RQ2 the selected case studies will review the three

key areas of sustainable urban development; social, economic and environmental. By selecting only case studies from within the JPI Urban Europe catalogue, these case studies are restricted to examples from those countries which qualify for the agency's funding. However as ULL projects are rarely implemented without access to external funding it is reasonable to assert that the selected sample represents the present ULL landscape in Europe (Voytenko et al. 2015).

Table 1. Selected Case Studies (JPI Urban Europe, 2016)

Project Title	Acronym	Focus	Completed
Action oriented planning, regulation and investment dilemmas for innovative urban development in living lab experiences	APRILab	Applying new planning practice and research methods, shifting away from teleocratic research approaches and applying context-based adaptability.	2016
Co-creating Attractive and Sustainable Urban Areas and Lifestyle – exploring new forms of inclusive urban governance	CASUAL	Promotion of sustainable living and consumption with consumer and citizen perspectives.	2016
Green/Blue Infrastructure for Sustainable, Attractive Cities	Green Blue Cities	Win-win intervention in urban storm water management. Developing tools and knowledge to manage challenges but also to utilize opportunities arising from these challenges	2016
Social uplifting and modernization of suburban areas with Urban Living Lab approach	SubUrbanLab	Working with residents and stakeholders to modernise and socially uplift less affluent suburbs for a sustainable, attractive and economically viable future	2016
Towards new forms of urban governance and city development: learning from URBan Experiments with Living Labs & City Labs	Urb@Exp	Understanding the problems ULLs can address and their organization and integration within local authorities and government	2017 (Early evaluative data available)

4. Exploring the effectiveness of ULL implementation and lessons for future projects

This sub section will outline the findings from an analysis of the final reports available for each project. These reports have varying purposes depending upon the aims of the project and those with a specific focus on furthering research on urban living labs provided the most insight. As the titles and brief descriptions of the projects state (see Table 1) all selected projects are targeting urban development and sustainability, albeit with different approaches. Therefore in order to review the outcomes of the selected projects and their contribution to the emerging ULL literature, the analysis will be divided into the three core factors of urban sustainability; social, economic and environmental. In addition a section on the methods of ULLs is also included.

4.1 Lessons for ULL design and implementation

Whilst there are a multitude of factors involved in the design and implementation of ULLs there are two themes emerging from the analysis which present significant obstacles to the success of a project; **institutional arrangements** and **stakeholder inclusion**.

ULLs must work within the local institutional arrangements to overcome obstacles which embedded institutional practices can present. A key characteristic of ULLs is their geographic embeddedness; however their success is dependent on the suitability of the specific urban location for experimentation and present narrative (Voytenko et al. 2015; CASUAL, 2016). ULLs **effectiveness can be limited by institutional factors beyond the project's control**. If a city is lacking a broader framework for sustainable urban development the ULLs aims are **in danger of becoming unfocused and ineffective** in the long term (Scholl & Kemp, 2016). Furthermore a ULL must **contribute to the city's broader sustainability aims**, or it risks being abandoned once the project and external funding has ceased (SubUrbanLab, 2016). In their Vienna-Liesing case, CASUAL found the ULL was unable to overcome the conflict within the political environment which came at a cost to social inclusion (CASUAL, 2016).

In addition ULL projects and outcomes **must be integrated within decision-making** processes. Whilst it is common for ULLs to initiate a strategy for knowledge dissemination within the project, **effective feedback to local authorities is often overlooked**. However it is

essential that outcomes of the project are effectively communicated to the decision-makers in the city to **ensure effective facilitation of urban sustainability transitions** (Scholl & Kemp, 2016). The APRILab project also recommended that the role of ULLs in planning be formalized. The project concluded that as formal procedures of participation are embedded within law and irreplaceable, ULLs risk becoming useless when their innovative nature is extremely valuable in participatory planning (APRILab, 2016).

ULLs must achieve effective co-design and creation to reach the project's potential. All projects within the selected cases benefited positively from increased participation however there are a number of obstacles which also emerged. Every ULL within the SubUrbanLab project was **significantly improved with co-creation and development** but all struggled to encourage participation in the early stages (Holopainen et al. 2016). The narrative of participation within the city's public sector had an impact on the willingness of residents to engage and therefore the scale of participation each project received in the early stages (SubUrbanLab, 2016). However URB@EXP exposed how these **processes of participation** must be **transparent, include all perspectives and be open to debate**, otherwise they risk being hijacked and manipulated by those in power, negatively impacting joint learning mechanism of ULLs (Scholl & Kemp, 2016). Additionally, CASUAL highlights how ULL **participatory methods can feature identical flaws to formalized processes** within urban planning to in equality, transparency, durability and legitimacy which privilege certain characters and disadvantages others (CASUAL, 2016).

4.2 Exploring contributions to sustainability

This subsection is seeking to answer RQ2: *How effectively have ULLs achieved sustainable urban development*? The following sections are divided into the three key areas of urban sustainability – social, economic and environmental.

4.2.1 Social sustainability

A key finding here from the SubUrbanLab project is the **difficulty in measuring the impact of ULLs on social sustainability**. These objectives often depend on a personal perception (e.g. risk and security) and are difficult to observe in the immediate aftermath of a project as the social impacts are typically longer term (Holopainen et al. 2016). However they did see successful measurements of social sustainability. One example is the 'sense of security' in

the 'New Light on Alby Hill' ULL, residents fear at night decreased from 79 to 55% (SubUrbanLab, 2016). However a large proportion still felt insecure at night but the after survey sample may have feature different people and therefore risk perceptions, or vice versa (Holopainen et al. 2016). The SubUrbanLab project also found that whilst ULLs could inspire and interest within a specific project, i.e. urban gardening, this knowledge did not scale up into the broader issues of urban sustainability and the environment (SubUrbanLab, 2016).

The Green Blue Cities project on storm water management also demonstrated effective social sustainability. Their success stems from **excellent two-way communication channels** within the partnership which was well integrated within the aims of the project (Green Blue Cities, 2016a). The project also benefited from **strong existing relationships** from previous collaborations, allowing researchers, local authorities and citizens to communicate their needs and capabilities. As Green Blue Cities was also working towards the broader aims of Kiruna's relocation, the project was able to deliver knowledge and tools to contribute towards Kiruna's new sustainable future by incorporating the needs of the local authorities and citizens (Green Blue Cities, 2016b). However, a ULL within the CASUAL project, focused upon sustainable lifestyles through urban planning, received **significant opposition** for removing individual choices and was **accused of social engineering** when developing housing projects (CASUAL, 2016).

4.2.2 Economic sustainability

The projects for which information on economic sustainability was available demonstrated some **difficulty in achieving the multiple goals of urban sustainability**. Firstly SubUrbanLab provided evaluative information for each of their ULLs were focused on social development, their **projects were economically viable but whether or not they are economically sustainable is difficult to quantify**. The value is a political decision dependent upon the judgement of the local authorities and their perception of the value of the project's social benefits (SubUrbanLab, 2016). Also it is predicted that projects would indirectly increase economic sustainability. For example, the 'Shape your World' ULL youth resident participated in the urban gardening at a youth club. This has potential to decrease damage costs as the youths' involvement can generate commitment to the renewal and decrease the likelihood of damage (SubUrbanLab, 2016). Conversely, **CASUAL found a strong focus on**

economic growth in their studies of transit-oriented development, with spatial planning deemed a luxury and so **developers' interests are prioritized** to stimulate market-led economic development at the expense of a strategically, and sustainable city structure (CASUAL, 2016).

4.2.3 Environmental sustainability

Green Blue Cities is the only project with a specific focus on environmental sustainability and responding to climate change. As the main outcomes of this project contributed to the design of New Kiruna and the town's relocation, this is still an ongoing process with longer term outcomes. However it is possible to suggest that the project has been an **environmental success by contributing significantly** to the green infrastructure and storm water management within the **new green street design by local authorities** (Green Blue Cities, 2016). Within the CASUAL project, environmental sustainability was dependent not only on urban planning and technology, but also required efforts to change people's lifestyles and consumption choices. However, ULLs focusing on encouraging ecofriendly lifestyles found advertising campaigns targeted at disseminating information on both consumption and behavior were not particularly useful either (CASUAL, 2016). Clearly a combination of the two approaches is required for environmental sustainability but with further research on the promotion of sustainable lifestyles.

A key conclusion from the Green Blue Cities and SubUrbanLab projects is the **possibility of upscaling ULLs contribution to environmental sustainability.** One of the significant challenges to the potential of ULLs is their ability to scaled up which is inhibited by their geographic embeddedness (Karvonen & Evans, 2014). Green Blue Cities developed knowledge and tools to be used from the macro to mesoscale within urban environments (Green Blue Cities, 2016). Furthermore, **SubUrbanLab suggested not only upscaling from the specific ULL sites to the greater urban area in Alby and Peltosaari but also in other suburbs across Europe** (SubUrbanLab, 2016). A key example is urban gardening, an urban development which is a climate-smart and resource-efficient, which needs only minimal adjustment for the project to be moved and effective in a new location (SubUrbanLab, 2016).

5. Towards best practice in future urban living labs

There is no doubt that ULLs are a powerful tool within the increasingly important arena of urban sustainability (Evans & Karvonen, 2014). This report has examined five recently completed ULL projects in Europe to determine obstacles in achieving effective implementation and their contributions to sustainable urban development. Urban actors included within ULLs – the public and private sectors, academic and citizens – can be constrained by the institutional context for the ULLs geographic location. **Therefore it is critical that future ULL projects take into account aims of the city and region and political environment in the governance structure.** Furthermore the participation narrative inspired by institutional arrangements within the public sector, impacts the ease of securing and willingness of would-be participants. **Hence it is recommended that in order to achieve effective participation ULLs be prepared for and ready to overcome any shortcomings of the public sector in participatory processes.** Additionally the long term success of ULLs requires true participation of all urban stakeholders including citizens, therefore **projects must be aware of the potential for co-design processes to be manipulated** by those in positions of power – socially and financially.

Participation is also crucial to achieving social sustainability. **Full engagement of stakeholders and citizens and recognition of their needs and wants is critical for the long term social success.** Understanding all perspectives can halt opposition later in the project, and increase effectiveness of outcomes. These findings are in line with current ULL literature and effective participation requires further research. However **economic priorities have the potential to usurp other forms of sustainability**, particularly with the focus on growth after the financial crisis. Achievements in environmental sustainability were mixed, but notably projects suggested that **upscaling was feasible.** If this is achievable it would be a **significant increase in the potential of ULLs as a method of environmental governance**. Overall these findings highlight the importance of **situating a ULL project within the broader aims of the city or region** and **balancing the individual priorities** of stakeholders. If these priorities are recognized early in the project it can be ensured that all stakeholders have similar expectations and can work towards common goals.

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