International Journal of E-Planning Research
Volume 11 • Issue 1

A New Era for Urban Actors

Ozge Celik Yilmaz, Istanbul Technical University, Turkey*
https://orcid.org/0000-0002-8577-1730

Ozhan Ertekin, Istanbul Technical University, Turkey

ABSTRACT

Urban technologies and smart city applications show that a new era has started in urban planning, and a new structure has been formed because of endless information flow and distribution. The participation process has also carried on a new structure with the changes. Urban living labs (ULL) is a form of experimental governance which can offer creative solutions for the problems that cities face today. The research is aimed to determine the new actors in a new era in the process of transformation while interviewing two ULLs in Turkey. Through interviews, decision-making, actualization, collaboration, and participation, processes were established. Moreover, analysis shows that the technological transformation process is currently in the digital environment rather than redound on the spatial environment in Turkey. While ULLs provide opportunities to adapt to technology, they have not become widespread or have not been identified yet to show limitations in cooperation and application.

KEYWORDS

Actor Diversity, Citizen Engagement, Collaboration, Experimental Governance, Participation, Smart Cities, Turkey, Urban Governance, Urban Living Labs, Urban Technologies

INTRODUCTION

Especially after the Second World War, city administrations started to gain importance with the rapid increase of urbanization. As in many countries and Turkey, after the 1950s, considerable rural-urban migration began, and as a result, the urban population started to increase rapidly (Ozgul, 2020). The local government's role has gained importance with the concentration of capital in certain cities and the increasing population (Ozgul, 2020). As in many countries, local management techniques have also varied according to technological change in Turkey. The reflection of the rapid transformation in innovation and communication technologies on the urban environment needs time. At the same time, how it will be reflected is still being discussed today. In this case, urban technologies and city administrations appear as essential issues that should be evaluated together. Smart governance and smart cities are gaining importance with the growing attention on technology in the built environment (Barns, 2018; Cowley & Caprotti, 2019). The smart city's primary focus is on the role of ICT infrastructure (Kitchin, 2014; Kitchin et al., 2015). However, much research has also been conducted on human capital/education, social and relational capital, and environmental interest as essential drivers of urban growth (Caragliu, Bo & Nijkamp, 2011). However, smart cities are not always undoubtedly

DOI: 10.4018/IJEPR.315749 *Corresponding Author

taken into account. Confusion about different perspectives, variance in understanding its nature, and transformation of governmental structures are critical topics in smart cities. Smart city efforts, dominated by visions of technology-enabled urban revitalization, economic development, community engagement, and enhanced citizen well-being, instead functioned as a way for private and corporate interests to become more involved in urban governance and development processes at the highest level (Shelton & Lodato, 2019). However, problems and developments such as combating and adapting to the climate crisis, digital transformation, and even the global pandemic have become issues affecting urban planning and local governments. While it is indispensable for countries to take a global step, the adoption and implementation of these steps by local governments have revealed their power in the process (Yang, 2021). Even well-meaning smart city efforts are incredibly resource-intensive, financially and humanly resource-intensive, distracting attention from the less salient but essential and pressing issues facing cities (Shelton & Lodato, 2019).

Within the context of Sustainable Development Goals (SDGs) and the New Urban Agenda, innovation laboratories and urban living labs (ULLs) have gained tremendous significance, resulting in many rapid foundations in several countries, including Turkey (UN-Habitat, 2016). A European Network of Living Labs aims to contribute a constantly growing set of networked services to promote innovation for all actors in practice and has been developed to join forces, coordinate activities, and share learning experiences (Bergvall-Kåreborn & Ståhlbröst, 2009; Timmeren & Keyson, 2017). On the other hand, the most recurrent set of critiques unveils the highly modernist planning approach of smart city discourse that conceptualizes the city as a machine that can monitor in real-time and thus controlled at a distance (Kitchin et al., 2015). However, the network's definition is "an open innovation environment in real-life settings in which user-driven innovation" is the co-creation process for new services, products, and societal infrastructures. Thus, ULLs encompass societal and technological dimensions in a business-citizen-government-academia partnership (Bergvall-Kåreborn & Ståhlbröst, 2009). In this respect, ULLs can be considered a new methodology for handling global issues.

Urban Living Labs began appearing in the early 2000s, from testing new technologies in-home-like constructed environments to the real-world context (Hossain, Leminen & Westerlund, 2019; Leminen, Westerlund & Nyström, 2018; Leminen, Rajahonka & Westerlund, 2017). Besides public-private sector-academic partnerships, Urban Living Labs conduct and promote studies designed for real-world, targeted local governments to achieve services (Gascó, 2017). Creating a new shared arena/space is Urban Living Labs' aim (Hossain, Leminen & Westerlund, 2019; Leminen, Rajahonka & Westerlund, 2017). Thus, the Living Labs are gathering people and the technology environment together in the same domain (Hossain, Leminen & Westerlund, 2019; Leminen, Rajahonka & Westerlund, 2017). However, although the living labs can use and test different equipment and methodology, the results are rarely implemented due to the living labs' work. Even though urban living labs provide an outstanding platform to review and develop new tools, the potential of the labs has not been extensively discovered in the urban context.

At this point, the purpose is to discover urban living labs in Turkey while determining the new actors in a new era in the transformation process. From the perspective of the new urban actors, the focus is on evaluating the reflection of technology on cities through the example of Istanbul and Eskisehir. Moreover, the research reaches through decision-making, collaboration, participation, and implementation process to comprise the answer in Turkey with a ULL method. In detail, the remainder of the research is structured as understanding ULL with definitions and criteria of the labs; determining the methodology and data collection process in the Turkish case; examining to find out involved actors and their roles in the process; and comparatively presenting interview results. In the end, the research discusses whether urban living labs are a new way of reaching new challenges in an urban context. In this case, new challenges are spreading urban technologies, struggling with experimental governance, experiencing collaboration and participation, and shaping cities to reflect these challenges to reach global goals.

UNDERSTANDING OF "A NEW ERA"

According to Badach and Dymnicka (2017), the political aspects of planning have been changed since modernism by disregarding social and democratic character in historically developed European cities. The situation has brought awareness about the issues in urban planning, such as participation, comprehensiveness, and openness. Furthermore, it has led to prioritizing these issues in the urban planning agenda. However, these forms are conceptualized under "urban governance," becoming a common topic. Although governance's relationship with democracy is not always apparent, it is essential to clarify governance's nature, practical aspects, and challenges (Badach & Dymnicka, 2017; Ruijer, 2021). *Governance* is defined as the three essential stakeholders; government, private sector, and civil society (Bovaird & Loffler, 2003). In addition, governance also involves vertical coordination between different levels of government and horizontal coordination between local governments (Murphy, 2012). The concept evolved from the 1990s until today: at first, the focus was on digital and technological aspects, and ICT represented the keystone of urban intelligence. Later, human capital was considered a primary factor in urban development because being smart meant being "socially inclusive" (Mattoni, Gugliermetti, & Bisegna, 2015).

However, defining governance from the perspective of smart cities is necessary to show challenges in the technological era. Meijer and Bolivar (2016) evaluate the concept of smart cities in 3 different dimensions, which are using smart technologies (technological focus), characterizing smart people in the center (human resource focus), and connecting with smart collaboration (governance focus). They offer smart city governance in 4 conceptions: the government of a smart city, smart decision-making, smart administration, and smart urban collaboration to need for government transformation to make cities smarter (Meijer & Bolívar, 2016). The highest level of transformation is presented as smart urban collaboration, whereas solid interactions at the urban level may have resulted from good policies and administrations (Meijer & Bolívar, 2016). In the decision-making process, the implementation process, participation, and collaboration process, "innovative approaches" can define as "smartness" nowadays. Emphasizing the process, sophisticated information technologies and innovative networks can better serve citizens and communities in smart governance systems (Schuurman et al., 2012; Garcia, 2012).

Moreover, smart governance defines making the right policy choices and effectively implementing processes without transforming governmental structures (Batty et al., 2012). Additionally, whenever the city promotes itself as smart, governmental management can be counted as smart governance (Batty et al., 2012)—promoting higher education centers' necessity to develop smart cities for urban governments (Winters, 2011). However, smart governance emphasizes citizen-centric approaches and collaboration between multi-level actors (Batagan, 2011). So by adapting to the new technologies and collaboration networks, smart cities can be counted as one step ahead. On the other hand, Colding and Barthel (2017) criticize smart cities as they can further marginalize those who are not skilled in digital technologies and those who refuse to use them because of negative attitudes toward trying and testing new technology equipment and services. At this point, he states that the right to justice and equal use has become the main problem for those who do not have internet access.

Furthermore, there is almost no critical thought as to whether investments will create more "screen time" in people's daily routines. Increased *screen time* in daily routines is often defined as the equivalent of time previously used to interact directly with our social-ecological environments. On the contrary, ULLs still need to be predictable in the real world to achieve the cities' global goals and urban and human problem-related solutions. However, coordinating ULL and smart city models is the new understanding of experimental governance.

Heijden emphasizes that the governance instruments interventions advocated by Campbell (1969) and Dewey (1991) should be non-traditional, at a local scale, locally problem-focused, and malleable, as well as responding to their local contexts, with traceable results, observable and learnable (van der Heijden, 2016). According to Sassen, experimental governance models can

develop a model for the urban scale, with the accomplished work at the local scale (Sassen, 2015). Along with experimental governance, with the emergence of unstructured issues on the political agenda, participation has become an essential issue in governance models. The actors involved in the process have become very diverse, with collaborative and participatory methods. Therefore, governance instruments should be developed for participation methods in decision-making and implementation processes (van der Heijden, 2016).

On the other hand, good governance's fundamental principles and characteristics include transparency, accountability, social inclusion, engagement, partnership, sustainability, and respect for the law (Bovaird & Loffler, 2003; Bajracharya & Khan, 2020; Cheema, 2013). Bajracharya and Khan (2020) highlight the growing literature on the need for collaborative planning, including improved communication and understanding, support for local development projects, and creative multidisciplinary problem-solving to deal with urban governance challenges. Although collaborative planning is supported strongly, formal participation processes are regulated in practice (Bajracharya & Khan, 2020). A more pluralistic model of governance based on processes and interactions between the state and civil society rather than institutions is a new form of government to replace representative democracy (Badach & Dymnicka, 2017). In recent years, market forces have increased their role in urban development and planning, particularly in funding resources. As a result, the role of the public sector is changing from a service provider to a facilitator to identifying and supporting standards (Bajracharya & Khan, 2020; The World Bank, 2021). Bulkeley and Mol emphasize the importance of participation to eliminate the problems in the implementation and decision-making process and increase its quality while defining *participation* as a matter of ideas and values, not representation (Bulkeley & Mol, 2003).

URBAN LIVING LABS AS A MODEL

Urban technologies and smart city applications show that a new era has started in urban planning, and a new structure has formed because of endless information flow and sharing. The participation process has also taken on a new structure with the changes. Besides, Urban Living Labs are a form of experimental governance; urban stakeholders develop and test new technologies, products, services, and lifestyles to produce innovative solutions to the challenges of the urban context.

Since the New Urban Agenda - Habitat III (2014), Turkey has achieved some living lab progress. Within the New Urban Agenda context, innovation laboratories and urban living labs have gained tremendous significance, resulting in many rapid foundations in several countries, including Turkey. However, in Turkey, Eskisehir Tepebasi Municipality was the first urban living lab, which is no longer active, enrolled in the ENoLL (European Network of Living Labs) system. After the Tepebasi Municipality experience, Eskisehir Metropolitan Municipality applied for the urban living lab project supported by the EU. Meanwhile, in Istanbul, Basaksehir Living Lab was established in 2015 and accepted as the first living lab in Turkey. Moreover, Eliminating the barriers Living Lab (Eskişehir Metropolitan Municipality) carries out its proceedings as the second living lab.

In 2019, there were 179 urban living labs registeredwith *ENoLL*. Urban living labs adopt different goals and objectives, and their methods also distinguish them. Urban living labs can be designated into six models: problem-oriented, environmental provider, methodology and research-oriented, user-oriented, concept-oriented, and education oriented. For instance, problem-oriented Puglia Smart Lab (Italy) plays a fundamental role in a holistic view that aims to understand the processes of change in the social, economic, and organizational context and to achieve harmonious progress in society by listening to all stakeholders. Meanwhile, Botnia Living Lab (Sweeden) can be defined as an environmental provider with ICT-based solutions and human-centered approaches. Finally, the methodology and research-oriented City of the Future Living Lab (Italy) explores urban living lab methodologies. The Lorraine Smart Cities Living Lab (France), established as a university laboratory, prioritizes training.

On the other hand, some labs can be concept-oriented, like Denmark Digital Urban Living Lab and Urban Nature Labs (Belgium), which target different sectors and contribute to a conceptual framework. However, in 2019, Turkey had two living labs (Basaksehir and Eskisehir) registered with *ENoLL*. Basaksehir Living Lab can be defined as an environmental provider and education-oriented, while Eliminating the Barriers Living Lab (Eskisehir) can be defined as user-oriented.

Therefore, the research methodology is based on a three-fold understanding of the urban living labs concept in Turkey; conducting Turkish urban living lab data, interviewing the urban living labs, analyzing, and comparing with the institutional perspective in Istanbul and Eskisehir.

Methodology and Data Collection

To demonstrate the contribution to the literature and practices, it is essential to examine Turkey's local government implementation process in the context of smart cities and urban governance. To understand urban governance in Turkey, the roles of the three levels of government—national, city, and local with the role of the private sector explanation is compelling. There are no limitations to the role of the national government in urban development; however, much of the funding for a city and local government budget has limited power and resources mainly controlled by the national government. On the other hand, city governments seem responsible for urban development and providing services such as transport, health, education, and recreational and cultural services involved in local land use planning controls guided by the national planning system. In addition, the local government plays an increasingly critical role in providing community, cultural, and recreational services. Although local governments most approach citizens with local knowledge and social networks, it is massively susceptible to national governments for financial resources in the economic sense.

However, Istanbul Metropolitan Municipality (IMM) is Turkey's largest local government with about fifteen million population (2019), an area of 5,343 square kilometers, and an annual budget of about 30 billion Turkish Liras -approximately 3 billion US dollars- (IMM, 2021). Istanbul primarily covers a central business district (CBD) and inner suburbs and has many smaller councils. Also, Istanbul was formed by amalgamating 39 local governments of districts. The city's residents directly elect the mayor, and a mayor, 315 councilors, govern the city (IMM, 2021). Moreover, the committees manage community services; environment, renewable energy, and climate change; public transport, accessibility, and roads; agriculture, forest, and water/city business; urban planning/economic development; urban regeneration; smart city and information technologies; and immigration issues (IMM, 2021).

On the other hand, the City of Eskisehir's population was around nine hundred thousand in 2019. Compared to Istanbul, Eskisehir metropolitan city is formed by 14 local governments with an approximately 7 million US dollars budget (EMM, 2019). However, the city administration's vision is "To continue to be a city that develops with the understanding of sustainable urbanism, aims at agricultural development, is sensitive to climate change, resistant to extraordinary situations, equal for all, accessible, peaceful and happy" (EMM, 2019).

Since ULLs are a new subject in Turkey, a Turkish case study was conducted to understand how they work and why they were established. Since there were only two urban living labs at that time (2019), interviews were conducted with both labs (Eskişehir and Başakşehir Living Labs, and local goverments). Since ULLs are a new subject in Turkey, a Turkish case study was conducted to understand how they work and why they were established. First, information about the urban living lab studies, objectives, and institutional structure was examined and researched. Then, the interviews were conducted with the entire lab management staff (9 people). The interview data was collected between 2017 and 2019 in both labs. Each interview took between 75 and 90 minutes and was accomplished face to face. In the interviews, there were restrictions for audio-recording for transcription. In addition, secondary data was collected in the research, including materials from websites of ULLs, case reports, and strategic plans. Due to the increased interest in online activities

during the pandemic, the pre-pandemic process was taken as a basis in line with the interviews, as there was a high demand for training, activities, and projects carried out by the living labs.

Moreover, interviews with local governments and urban living labs established the decision-making process, actualization process, collaboration, and organizational background. Interviews were conducted to reveal the local government's knowledge, interest, and impacts on the issue and the living labs' activities and achievements in the urban context. Additionally, interviews with the metropolitan municipality and district municipality were carried out with smart city-related projects. The semi-structured interview questions and keywords guiding to interview are given in Table 1.

The interview questions consist of eight parts. The first part contains institutional information and is designed to determine the position and responsibilities of the interviewee. In the second part, questions were asked to identify the projects, collaborations, and actors involved in the process. This section also collects information on decision-making processes. The third part is about implementation processes. This section includes the actors involved in the implementation process and the methods used, the advantages and disadvantages of the participation process, and the actors' roles. Finally, the fourth section includes questions such as the project results, the achievements, the scale of these achievements, and the area of influence. The fifth, sixth and seventh chapters are built on technology use, governance, spatial planning, smart city and sustainability connection/relation, priority work areas, future work plans and how prioritization is made, and success criteria. Finally, the eighth chapter includes questions about the difference between the urban living lab andother urban living labs, its contribution to the city, to the region and the country, the criteria of benefit and success, and the advantages of gathering under one roof within *ENoLL*.

Başakşehir Living Lab (BLL)

Basaksehir Living Lab, founded in 2015, is the first Turkish living lab. Also, it is located in the Basaksehir district on the European side of Istanbul. The lab's purpose is to create an environment where the design of technology-related products and information technologies services can be tested by real users (BLL, 2018). Furthermore, Basaksehir Living Lab focuses on helping society see the real accretion value of new products and services while serving an experiment, research, and innovation environment (Celik & Ertekin, 2019). BLL can be defined as an environment provider and methodology-oriented urban living lab with this feature. However, smart city and ICT-based projects have adopted their plan to produce new products and services (Celik & Ertekin, 2019).

BLL organization process begins with preparing a budget, events, and programs, representing inputs and outputs beforehand, and proposing a contract to local authorities (in this case, Başakşehir Municipality). Following the agreement, online announcements, invitations for participation, and the collaboration process begin. The last part is the experience in which events, projects, activities, and

Table 1. Context of interview questions

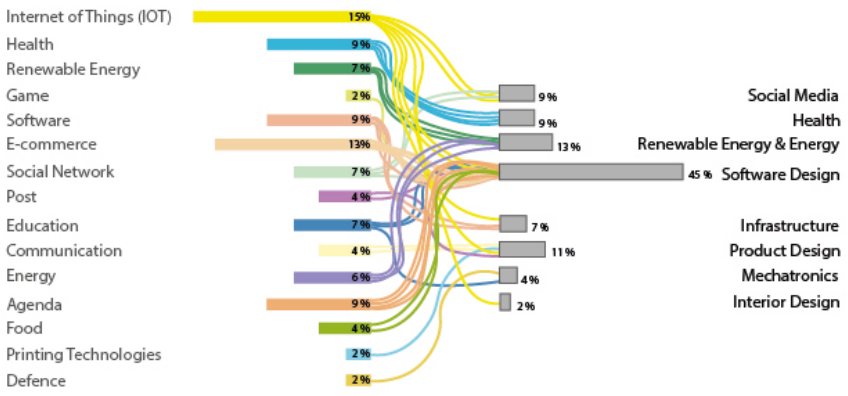
Guiding	Guiding Themes
understanding urban problems and answers; defining priority areas for future works; eliminating spatial reflections of technology	Problem Definition and organizational background
defining partnerships and actors and their roles; challenging actor diversity; challenging roles and models	Decision Making Process and actualization
describing the user engagement and participation level; defining partnerships and actor roles; challenging actor diversity; challenging roles and models	Collaboration and Participation Process
understanding the testing and producing and budgeting; difficulties and benefits in the process; choosing methods; determining influence factor; defining scale	Implementation Process and results

in some cases, implementations take place. Additionally, the contract between BLL and Başakşehir Municipality renews annually.

Between 2015 and 2019, the lab organized 370 projects and events for the citizens. Most of the events were related to the user training program. Apart from education, creating applications for social media, health, and infrastructure; designing new software and products; producing interior design ideas; and renewable energy projects were carried out in the lab (see figure 1). Nevertheless, the impediment here is unrelated projects to the urban problems apart from infrastructure and renewable energy. Only 25 urban-related tasks (see table 3) have been accomplished since the lab was established. The numbers show limited projects comprehended to urban studies, even limited implementations. However, the limitation does not involve invalidating all the time, and it can be perceived as the urban living lab has yet to focus on this issue since 2015.

Figure 1. Urban Living Labs around the world (Source: Produced from ENoLL open data access in 2019)

Figure 2. Başakşehir living lab project themes (Source: Celik & Ertekin, 2019)



However, participation level in urban context projects differs from one task to another. Four user engagement levels are defined in the ULL criteria (Pego & Bernardo, 2019; ENoLL, 2019; Bergvall-Kåreborn & Ståhlbröst, 2009), and in BLL projects, each level can be seen as a tester, informant, contributor, and co-creator. The 1st level of participation is the informant model. In the model, participation is provided via an announcement. In other words, the project is announced to the citizens, open to every user from any education level. At the 2nd level (tester), the project is carried out for educational and experimental purposes.

Moreover, interviews and surveys carry thorough out according to the project context. In addition, information about the project content is shared with participants. While the 2nd level affects the decision-making process, the 3rd level comes into play in the implementation process. At the 3rd level (contributor), design and planning processes are carried out with the participants during the implementation process. In brief, the participants become part of the preparation for the implementation process. Lastly, level 4 (highest level) represents the co-creator participants. At this level, the participants carry out the design and planning processes with urban living lab guidance. While it is impossible to discuss the participation model for the first level, the second level is a stage that affects the decision-making process and offers training and cooperation with the participants through various methods. Finally, the third and fourth levels describe a process carried out with and by the participant. In this case, the advantages and disadvantages of each level may vary with details such as content, time, budget, and business plan. As seen in Table 2, participation in BLL projects is concentrated at the second and third levels. Limited projects produced by users expose a promising expectation. On the other hand, it can be the reverse approach to adopting ULL methodologies.

Between 370 organizations and 25 tasks in the urban context, only three projects seem to be past the implementation process. The smart infrastructure project is related to waste and innovation topics, smart paving stones for citizens with disabilities, and a smart parking system application implemented in the Başakşehir district for cycling roads. These projects were produced, tested, and implemented by the BLL through the decision-making, collaboration, and participation process. The research reveals that a smart paving stone project is an entrepreneurial product and a smart parking system. However, the smart infrastructure project is produced by users in BLL. Even Though there are limited created and completed projects, the total engaged users in BLL organizations are distinguished (see figure 3). Being online during the pandemic helped with a tremendous increase in involved users.

Furthermore, the distribution of BLL projects and the network of participants, together with their strategic partners (Başakşehir Municipality and Istanbul Design Factory), are shown in figure 4. While the projects vary from interior design to product design, the participant profile and collaborations in each project or event differ. While the projects carried out with the participation of children, students, and sensitive groups are intense, design, transportation, and education subjects are the most inspected. It is seen that the most substantial relationship with BLL is with strategic partners.

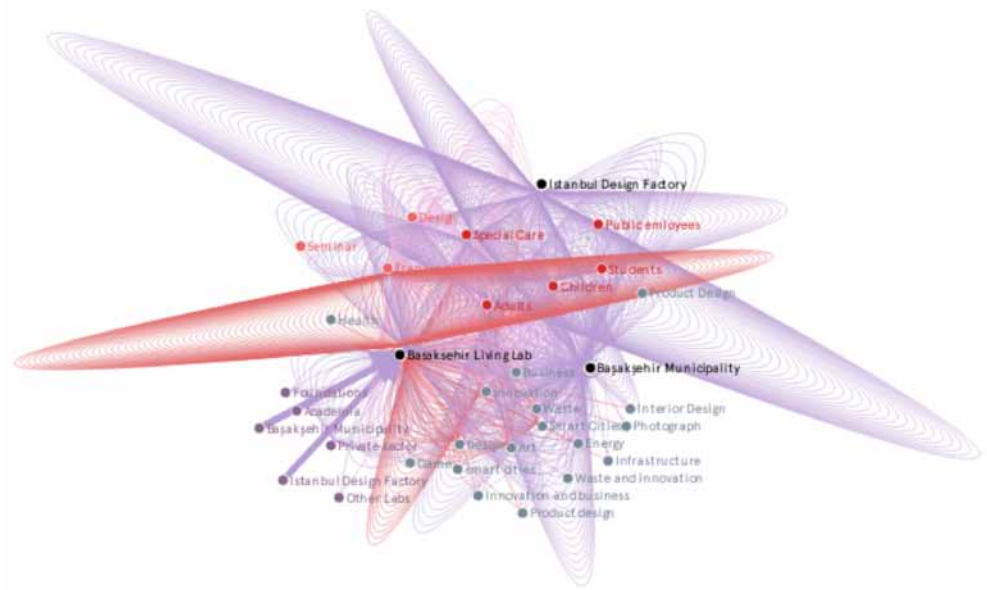
Table 2. Başakşehir Living Lab projects in urban context and users participation level

		Energy	Infrastructure	Smart Cities	Waste	Waste and innovation	Total
Level 4	Co-creator (creating by the user)		2				2
Level 3	contributor (creating with user)	2		2	6		10
Level 2	Informant			11		1	12
Level 1	informant/tester			1			1
	Total	2	2	14	6	1	25

Source: Produced from BLL open access data

Figure 3. Number of involved users and projects in Başakşehir Living Lab organizations, 2015-2020 (Source: Produced from BLL open access data)

Figure 4. BLL projects, participation and collaboration network, 2015-2020 (Source: Produced from BLL open access data)



In addition, it is observed that collaborations with the private sector, academia, and foundations are also indicated in the figure.

Nevertheless, at some levels, a profile is only set for the participation model. Any discipline, professional group or people who have a diploma in the related subject/field can apply to participate in the projects. For some projects, the collaborating institutions determine the participant profile. Additionally, certain occupational groups are chosen to work on the projects. However, in general, the purpose of ULL is to make an open call and create a project-based participation model. This way,

brisk and practical solutions can be produced to daily problems. Besides, Figure 5 shows the link between collaborations and participants.

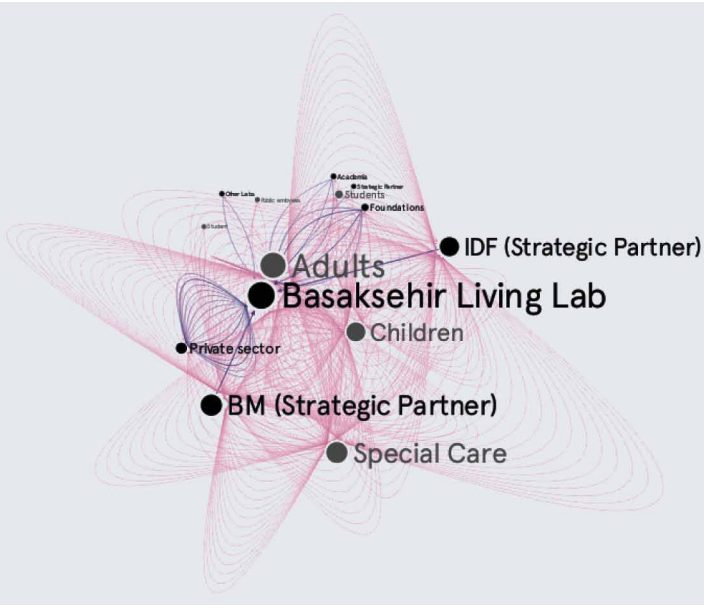
Eskişehir Living Lab: Eliminating the Barriers Living Lab (EBLL)

EBLL was established underneath Eskişehir Municipality in 2019 within the scope of the European Union project and became a member of *ENoLL* (the membership does not continue today). In addition, the first urban living lab in Eskişehir was established in 2015 within Eskişehir Tepebaşı Municipality, but it is not operating today. The organizational process of EBLL, which was established as a second lab in Eskişehir, begins with preparing a project, budget, and programs, pre-representing inputs, and outputs, and proposing a contract to local authorities (in this case, Eskişehir Municipality). Following the agreement, invitations for partners begin. The last part is the experience in which implementations and testing take place. Additionally, the contract between EBLL and Eskişehir Metropolitan Municipality renews in a new research or project proposal. Although the EBLL does not have its website or open source for its outcome, some findings have been reached through in-depth interviews.

In the decision-making process, meetings were held with the neighborhood residents who will be users in the project EBLL, and their opinions were taken through a survey analysis. Usually, after the implementation process, reconciliation studies are carried out with the users to convince them to the projects. (Interviewee, 2019)

According to the interview determinations, bureaucracy is the main problem of complicated and long-term implementation processes. Besides, in the decision-making processes, meetings can be organized with stakeholders as part of the participation method. In other words, all stakeholders related to the implementation project are invited to these meetings. However, suggestions were made regarding the preliminary meetings, which should be continued during and after the end of the

Figure 5. Relationship between involved users and collaborations in Başakşehir Living Lab organizations, 2015-2020 (Source: Produced from BLL open access data)



project. However, no proposal was made regarding the participation process, participant profile, or stakeholder detail.

EBLL hold implementation projects acknowledged within the scope of the Municipality, with a budget provided by the European Union, and most of them are social support projects. However, there are few implementation projects on smart cities, sustainability, and reflection of technology on cities. The priorities of the implementation processes carried out within the scope of urban planning are determined by the Municipality in line with the problems of the citizens. Moreover, the problems of citizens are stated as priority areas such as urban transformation, transportation, environment, and agricultural production. As for ULL success criteria, it was stated in the interviews that specific criteria such as quality of life, effective use of resources, user satisfaction, time spent in open spaces, and travel time in transportation should be determined.

However, as in the ULL criteria, it is not manageable at this stage to gather information about EBLL, which has not to reach the openness principle and learn the project's details. According to the interviewees, three projects are being implemented within the provincial borders of Eskişehir. However, interview findings are unclear about these projects' budget, process, and content. Furthermore, the interviews show that actor diversity only ensured participation at the beginning of the project with public surveys and collaborations made with design faculties of universities. Therefore, the limitations in the implementation process are comprehended concerning EBLL in the research. Regardless, supporting women with health issues, helping with children's education, and encouraging disabled people with their needs are essential issues to unravel in the city for EBLL. On the other hand, the EBLL uses the advantage of being part of the Metropolitan Municipality to meet problems in the urban context. Experiencing the ICT-based solutions and technology-related challenges stay behind socio-capital difficulties. Although users have no voice and power in the implementation process, user involvement is limited in the decision-making process.

RESULTS

Analysis shows that the technological transformation process is currently in the digital environment rather than redound on the spatial environment in Turkey. In other words, it is social enforcement powers that can trigger the development of such transformations. While urban living labs provide opportunities to adapt to technology, the fact that they have not become widespread or are yet to be known shows limitations in terms of cooperation and application. However, the urban living lab approach can help governments under pressure to adopt a smart city approach to improve the city visibility and the citizens' life quality. Living lab success is measured by living labs principles and theoretical indicators, but the development process and future tendencies lead to success.

Table 3 shows projects and events in each urban living lab in 12 dimensions. Lifespan refers to short-term projects to long-term or permanent assignments. In EBLL, projects are still proceeding, while in BLL, up to 6 months of projects are more desirable. In both cases, the level of openness for partnership and intellectual property rights is semi-exclusive. Even though BLL provides an environment for its users with technological infrastructure and knowledge-based solutions, the lab's openness level and user role are restricted. Contrarily, although EBLL has no environmental opportunities for its users, it is still more engaging with citizens in context research and ecosystem approach (creation and sharing for most of the stakeholders in the living lab ecosystem). However, user feedback is captured in both living labs, but users have no decision-making power in the innovation or implementation process (co-creation level). Additionally, the scale exposes the number of users involved in the living lab's projects, activities, and events. Moreover, real-world contexts with severe limitations on time or space (geographical limitations, required skills, or devices) are seen in BLL. In Eskisehir's case, real-world content without any restrictions is recognized.

Appropriately, when evaluated in line with the ULL criteria, BLL is a lab that provides technical support and environment. While BLL is educational, open to cooperation and new projects, and

Table 3. Meeting with ULL's criteria

Criteria		Level 1	Level 2	Level 3	Level 4
lifespan	**BLL**	**Short term Project (<6 months)**	Medium term Project (6 months-1 Year)	Long term Project (1-2 years)	Very Long term Project with the possibility to live on permanently(> 2 years)
	EBLL	Short term Project (<6 months)	Medium term Project (6 months-1 Year)	Long term Project (1-2 years)	**Very Long term Project with the possibility to live on permanently(> 2 years)**
Real-world context	**BLL**	A laboratory settings	**real-world context with severe limitations on time or space (geographical limitation, required skills or devices)**	real-world context with some time or space limitations	real-world context without any limitations
	EBLL	A laboratory settings	real-world context with severe limitations on time or space (geographical limitation, required skills or devices)	real-world context with some time or space limitations	**real-world context without any limitations**
Community	**BLL**	**No community**	Mostly a passive community	Neither passive nor active community (equally shares)	mostly an active community
	EBLL	**No community**	Mostly a passive community	Neither passive nor active community (equally shares)	mostly an active community
Technical Infrastructure	**BLL**	No Technical Infrastructure	Infrastructure without monitoring and technical testing	Infrastructure with basic monitoring and technical testing	**Infrastructure with extensive monitoring and in-depth technical testing**
	EBLL	No Technical Infrastructure	Infrastructure without monitoring and technical testing	**Infrastructure with basic monitoring and technical testing**	Infrastructure with extensive monitoring and in-depth technical testing
Evaluation	**BLL**	No evaluation by users	Limited evaluation by users (post survey)	**evaluation by users through an interactive process (focus groups)**	Multiple possibilities for feedback and evaluation by users (before, during and after an activity)
	EBLL	No evaluation by users	**Limited evaluation by users (post survey)**	evaluation by users through an interactive process (focus groups)	Multiple possibilities for feedback and evaluation by users (before, during and after an activity)
Level of Openness-partnership	**BLL**	Completely exclusive partnership (Controlled by a single actor)	**Semi-exclusive partnership (only open to members of a consortium)**	Inclusive partnership: everyone is welcome to use the platform but access is limited in time and space	Inclusive partnership: everyone is welcome to use the platform with no time or space limitations
	EBLL	Completely exclusive partnership (Controlled by a single actor)	**Semi-exclusive partnership (only open to members of a consortium)**	Inclusive partnership: everyone is welcome to use the platform but access is limited in time and space	Inclusive partnership: everyone is welcome to use the platform with no time or space limitations
Level of openness - intellectual property rights	**BLL**	**Exclusive regarding and information generated in the living lab**	little results and information generated in the living lab are shared (only brief updates or summaries)	most of the results and information generated in the living lab shared (presentations), but some results need to kept confidential	inclusive regarding results; everybody has access to the results and generated knowledge
	EBLL	**Exclusive regarding and information generated in the living lab**	little results and information generated in the living lab are shared (only brief updates or summaries)	most of the results and information generated in the living lab shared (presentations), but some results need to kept confidential	inclusive regarding results; everybody has access to the results and generated knowledge

continued on following page

Table 3. Continued

Criteria		Level 1	Level 2	Level 3	Level 4
Ecosystem approach	**BLL**	No value creation and sharing for all involved stakeholders in the living lab ecosystem (stakeholders are chosen randomly)	Value creation and sharing to some of the stakeholders in the living lab ecosystem (missing links in the value chain, no equal contribution of all stakeholders)	**Value creation and sharing for most of the stakeholders in the living lab ecosystem**	Value creation and sharing for all involved stakeholders in the living lab ecosystem (long term engagement and identification with the project)
	EBLL	No value creation and sharing for all involved stakeholders in the living lab ecosystem (stakeholders are chosen randomly)	Value creation and sharing to some of the stakeholders in the living lab ecosystem (missing links in the value chain, no equal contribution of all stakeholders)	**Value creation and sharing for most of the stakeholders in the living lab ecosystem**	Value creation and sharing for all involved stakeholders in the living lab ecosystem (long term engagement and identification with the project)
Context research	**BLL**	The usage context is not considered at all	**The usage context is moderately considered (short survey)**	The usage context is substantially considered using advanced techniques (surveys, diaries)	The usage context is considered using more advanced techniques (ethnography tools, observations) and is viewed as a critical element that influences usage behavior
	EBLL	The usage context is not considered at all	The usage context is moderately considered (short survey)	The usage context is substantially considered using advanced techniques (surveys, diaries)	**The usage context is considered using more advanced techniques (ethnography tools, observations) and is viewed as a critical element that influences usage behavior**
Co-creation	**BLL**	No interaction with users	**User feedback is captured, but users have no decision making power in the innovation process**	User feedback is captured (iterative), which may lead to some modifications/ alterations of the innovation	User feedback is captured (iteratively), user can make changes to the innovation themselves; the user is part of the innovation process
	EBLL	No interaction with users	**User feedback is captured, but users have no decision making power in the innovation process**	User feedback is captured (iterative), which may lead to some modifications/ alterations of the innovation	User feedback is captured (iteratively), user can make changes to the innovation themselves; the user is part of the innovation process
Scale	**BLL**	Not involving any users (N:0)	**Small Scale (<100 users)**	Medium Scale (100-500 users)	Large Scale (>500 users)
	EBLL	Not involving any users (N:0)	**Small Scale (<100 users)**	Medium Scale (100-500 users)	Large Scale (>500 users)
User role	**BLL**	informant	**tester**	contributor (creating with user)	Co-creator (creating by the user)
	EBLL	**informant**	tester	contributor (creating with user)	Co-creator (creating by the user)

Source: Produced from interview data

produces fast and practical solutions, EBLL is an implementation-oriented lab aiming to establish a balance between the local government and citizens. As a participation model, EBLL focuses on local users, while BLL supports its entrepreneurial network. However, as a reflection of technological development, the BLL environment reveals that it can be a different participation model for the future with its projects and entrepreneurship incentives. EBLL, beyond the participation model, can be seen as a step to avoid local authorities' time, space, and budget constraints. Comparing these labs, which were established for two different purposes, may yield different results. Nevertheless, both labs have strengths and weaknesses.

The collaborative network BLL is attempting to establish and the spatial environment it offers is a substantial potential for the future. However, it has emerged from the interviews that there is a requirement for an authority for BLL. In other words, within the entrepreneurship network, carried through projects ought to provide space, law, or permission. While BLL can produce smart city projects as a tool, it does not have spatial implementation authority. In addition, to carry out an implementation project within the planning system in Turkey, permission must be obtained from local governments and periodically from the central government, and collaborative projects can be created. The situation may cause a time disadvantage to the lab's rapid and practical solutions and applications.

On the other hand, it is an advantage that EBLL is a local government-level lab and can provide rapid steps in the implementation processes. However, EBLL is in a structure that needs to develop its network of collaboration. Therefore, it should develop a network of collaborations, create an open platform, and move forward with projects that will enable everyone to participate. Otherwise, it does not offer a different method rather than municipal projects.

As a result, the attitude of local government concerning the subject and the impact on national, regional, and local progress were revealed by questioning how new technologies affect regional and local planning practices in Turkey. Regarding the strategic plan axis and actualization of projects related to smart planning, approaches were analyzed by meeting the ULL criteria. At this stage, lab criteria are insufficient for success evaluation. The scale included in the ULL criteria describes the number of participants. Nevertheless, there need to be more criteria regarding the scale of the projects. In addition, actor diversity is not included in the lab criteria. The project scale and the participants' scale can affect each other's success.

For this reason, the scale of the project, size of influence, the participant model in the environment, risk analysis, budget management, and time management are among the criteria that should be included in the decision-making and implementation processes. The relationship between the projects acknowledged within the scope of labs and the sustainability criteria was questioned in the interviews, and a general conclusion could not be reached. Although each lab determines its sustainability criteria, its relationship with the sustainable development goals in the global agenda and the ways of reaching these goals is not a priority measure by the labs. Although the participation models differ and the project implementations succeed, evaluating these successes on a national, regional, urban, or even global scale. For urban planning studies to be successful globally, it is necessary to expand the domain criteria. For this, the authority zone needs to be extended. Furthermore, improvement is necessary for experimental governance experience and powering collaboration in the process.

CONCLUSION

There is no smart city unless there is genuine participation and willingness to cooperate and cooperate between the private sector, citizens, and public institutions. (Lindskog, 2004)

Urban Living Labs and similar platforms can be used as training units, application areas, or methods that develop and test new technologies, products, services, and lifestyles to produce innovative solutions (Chroneer, Stahlbrost, & Habibipour, 2019; Veeckman, Schuurman, Leminen, &

Westerlund, 2018). This diversity also strengthens inter-institutional cooperation, expanding the scope of application and increasing the impact area. Furthermore, it accelerates the sharing and dissemination of knowledge and experience and enhances the partnership between local administrations, and ensures the spread of projects and practices. The concept is not only related to specialized applications in cities but also regulates many sectors (Claude, Ginestet, Bonhomme, Moulène & Escadeillas, 2017). At the same time, it provides a suitable place not only for spatial/physical but also for social innovation studies, as it creates a technological environment.

Regarding organizational set-up, urban living labs contain a range of semi-permanent as well as temporary projects connected with academia, technology vendors, municipalities, non-profit organizations, innovation consultants, design or marketing companies, industry clusters (Ballon, Van Hoed & Schuurman, 2018). The reflection of technological achievements has been recognized in Turkey's building scale or scale-based products. Nonetheless, smart city projects are widely produced by the lab. However, project scale and effects are crucial issues in urban planning studies, but there are fewreferences to measure in the lab projects in Turkey.

Urban areas with active urban living lab projects often engage with residents' innovation activities to produce combined value (Juujärvi & Pesso, 2018). On the other hand, various city stakeholders communicate, struggle, and collaborate and are usually defined by conflicting purposes. Stakeholders can be commonly described as those interested in the decision-making process, even if they have no legal role (Gatta, Marcucci, & Le Pira, 2017). However, actor networks are transforming while technological improvements. Furthermore, BLL is an excellent model for presenting a creative entrepreneurship environment. However, research findings show that the example model should become widespread between other platforms and local governments. Therefore, actor diversity in Turkish labs is comprehensive for experimental governance and participation models. However, even though tremendous actors participated in projects and events in the labs, there was not enough information about the procedure. Of course, this situation imposes limitations on future actors.

When ULL criteria were examined by comparing two urban living labs in Turkey, many vulnerabilities emerged. Some deficiencies are identified and listed below:

1. Lab criteria are insufficient to measure project results. In order to achieve immediate and permanent outcomes while struggling with global problems, the scale should be well defined, the diversity of actors should be specified, priorities should be determined, problem-oriented analyses should be carried out, the size of influence should be specified, and the governance model should be determined.
2. To measure the lab's success, it is necessary to offer opportunities to improve the implementation processes. In addition, it is necessary to determine the project's impact area and expand the lab criteria.
3. In the Turkish case, the budget was not disclosed in any lab. This situation can create constraints for lab sustainability and future studies. Therefore, budget details (how, when, and why required) should be specified, and a transparent process should be carried out.
4. Risk management is not among the lab criteria. The relationship between the problem, result, and stakeholders must be provided. Solution methods must be transparent and open to everyone.
5. There was no specific answer to global challenges, including smart cities, sustainability, or technological reflection. In order to seek answers to global problems and use the advantages of the lab, such as straightforward solutions, local governments need to step into the process more actively.

Moreover, seeking answers to local problems, defining priority areas for future yields, responding to the needs, and producing solutions to daily issues are crucial issues for cities. For this reason, it is critical to examine and analyze spatial reflections of technology through urban living labs.

Indeed, the answer is the urban living labs for the future and the future actors and new methods. Nevertheless, ULL is not in the space it should be, which means that it needs a new model for the urban context. Instead of eliminating barriers within BLLs' and EBLLs' approaches to reach the SDGs or any other global concerns we will be facing in the future, it is necessary to investigate urban problems and solutions commonly. However, public-private partnerships seem a beneficial tool for improving infrastructure and environmental services. Moreover, these partnerships can provide extensive public and private resources to reach SDGs on different scales (Dahiya & Bradford, 2020; Silva, 2020). Furthermore, the complex relationships within SDGs make partnerships, inclusion, and openness even more critical (Alberti and Senese, 2020; Silva, 2020), and the context of experimental governance appears to be attention. Experimental governance is understood as a new way of management that enables citizen engagement in policy-making.

Nonetheless, the Turkish case has strong public-private partnerships experience but sharing information, creating an open platform for collected and analyzed data, and accepting the citizen as an entrepreneur in the new era of technological challenges are the matters that require a solution. Therefore, a comparative analysis was conducted to evaluate living labs' success in measuring openness, innovation, partnerships, inclusion, and user involvement. In this sense, examining two urban living labs in Turkey (BLL and EBLL) demonstrates limited projects and actors in implementation processes related to the urban context. Two different lab models, one is an environment provider and education-oriented BLL, and the other is a user-oriented EBLL, are not showing the new actor's scale exactly. The limitation here is the planning system in Turkey. However, since local governments and urban living labs are not fully cooperating and there is limited information about labs in Turkey, it enhances complicated to interpret.

A new lab model proposal is necessary to further research, provide more benefits, and get efficient support from the labs for urban problems. For example, defining scale in the context of projects, impacts, participation, and collaboration; describing ecosystem approach in the context of collaboration level, education level, participation level, implementation level, infrastructure level, and entrepreneurship level; challenging actor diversity with user role, designer role, and lifespan in experimental governance processes (such as decision-making, collaboration, implementation, evaluation and co-creation process, and process of re-thinking and re-acting) can be a perspective to benefit from the labs in each level. Thus, choosing methods and determining the influence factor and success criteria can create a new participation structure. In this way, we will benefit from the reflections of the new era, which we define as solid cooperation and entrepreneurship.

ACKNOWLEDGMENT

This paper is produced from the Ph.D. thesis developed under the project "Re-thinking the city from a smart city perspective" supported by Istanbul Technical University Scientific Research Projects (BAP ID: 1475). The authors would like to thank Basaksehir Living Lab, Eskisehir Metropolitan Municipality, and Eskisehir Tepebaşı Municipality management and team whose identity was kept confidential.

REFERENCES

Alberti, A., & Senese, M. (2020). Developing Capacities for Inclusive and Innovative Urban Governance. In Governance for Urban Services: Access, Participation, Accountability, and Transparency (pp. 127-152). Springer Nature, Singapore.

Badach, J., & Dymnicka, M. (2017). Concept of "Good Urban Governance" and Its Application in Sustainable Urban Planning. *IOP Conference Series. Materials Science and Engineering*, *245*(8), 082017. doi:10.1088/1757-899X/245/8/082017

Bajracharya, B., & Khan, S. (2020). *New Urban Agenda in Asia-Pacific* (B. Dahiya & A. Das, eds.). Springer. http://link.springer.com/10.1007/978-981-13-6709-0

Ballon, P., Van Hoed, M., & Schuurman, D. (2018). The effectiveness of involving users in digital innovation: Measuring the impact of living labs. *Telematics and Informatics*, *35*(5), 1201–1214. doi:10.1016/j.tele.2018.02.003

Barns, S. (2018). Smart cities and urban data platforms: Designing interfaces for smart governance. *City*. *Cultura e Scuola*, *12*, 5–12. doi:10.1016/j.ccs.2017.09.006

Basaksehir Living Lab. (2018). *About.* Basakshir Living Lab. http://basaksehir-livinglab.com/BLL/anasayfa

Batagan, L. (2011). Smart cities and sustainability models. *Revista de Informatica Economica*, *15*(3), 80–87.

Batty, . (2012). Smart Cities of the Future. *The European Physical Journal*, *214*, 481–518.

Bergvall-Kåreborn, B., & Ståhlbröst, A. (2009). Living Lab - An Open and Citizen-Centric Approach for Innovation. *International Journal of Innovative Research and Development*, *1*(4), 356–370. doi:10.1504/IJIRD.2009.022727

Bovaird, T., & Loffler, E. (2003). Evaluating the quality of public governance: Indicators, models and methodologies. *International Review of Administrative Sciences*, *69*(3), 313–328. doi:10.1177/0020852303693002

Bulkeley, H., & Mol, A. P. J. (2003). Participation and Environmental Governance: Consensus, Ambivalence and Debate. *Environmental Values*, *12*(2), 143–154. doi:10.3197/096327103129341261

Caragliu, A., Bo, C. D., & Nijkamp, P. (2011). Smart Cities in Europe. *Journal of Urban Technology*, *18*(2), 65–82. doi:10.1080/10630732.2011.601117

Celik, O., & Ertekin, O. (2019). Re-Thinking the city: Başakşehir Living Lab (case of Istanbul). In *55th Isocarp Congress Proceedings*, (pp. 1452-1464). ISOCARP.

Cheema, G., S. (2013). *Democratic local governance: reforms and Innovations in Asia.* East West Center.

Chroneer, D., Stahlbrost, A., & Habibipour, A. (2019). Urban living labs: Towards an integrated understanding of their key components. *Technology Innovation Management Review*, *9*(3), 50–62. doi:10.22215/timreview/1224

Claude, S., Ginestet, S., Bonhomme, M., Moulène, N., & Escadeillas, G. (2017). The Living Lab methodology for complex environments: Insights from the thermal refurbishment of a historical district in the city of Cahors, France. *Energy Research & Social Science*, *32*, 121–130. doi:10.1016/j.erss.2017.01.018

Colding, J., & Barthel, S. (2017). An urban ecology critique on the "Smart City" model. *Journal of Cleaner Production*, *164*, 95–101. doi:10.1016/j.jclepro.2017.06.191

Cowley, R., & Caprotti, F. (2019). Smart city as anti-planning in the UK. *Environment and Planning. D, Society & Space*, *37*(3), 428–448. doi:10.1177/0263775818787506

Dahiya, B., & Gentry, B. (2020). Public-Private Partnerships to Improve Urban Environmental Services. In Governance for Urban Services: Access, Participation, Accountability, and Transparency (pp. 77-105). Springer Nature, Singapore.

EMM. (2019). Eskişehir Büyükşehir Belediyesi Stratejik Planı 2015-2019. Eskişehir.

ENoLL. (2019). *About.* Enoll. https://enoll.org/

Garcia, A. M., Onega Lopez, F. J., Crecente, R., van Holst, F., Abts, E., & Timmermans, W. (2012). *FACTS! Forms for adapting to climate change by territorial strategies. The handbook*. University of Santiago de Compostela.

Gascó, M. (2017). Living labs: Implementing open innovation in the public sector. *Government Information Quarterly*, *34*(1), 90–98. doi:10.1016/j.giq.2016.09.003

Gatta, V., Marcucci, E., & Le Pira, M. (2017). Smart urban freight planning process: Integrating desk, living lab and modelling approaches in decision-making. *European Transport Research Review*, *9*(3), 1–11. doi:10.1007/s12544-017-0245-9

Hossain, M., Leminen, S., & Westerlund, M. (2019). A systematic review of living lab literature. *Journal of Cleaner Production*, *213*, 976–988. doi:10.1016/j.jclepro.2018.12.257

Juujärvi, S., & Pesso, K. (2018). Actor Roles in an Urban Living Lab: What Can We Learn from Suurpelto, Finland? *Technology Innovation Management Review*, *3*(11), 22–27. doi:10.22215/timreview/742

Kitchin, R. (2014). The real-time city? Big data and smart urbanism. *GeoJournal*, *79*(1), 1–14. doi:10.1007/s10708-013-9516-8

Kitchin, R., Lauriault, T. P., & McArdle, G. (2015). Urban indicators and dashboards: Epistemology, contradictions and power/knowledge. *Regional Studies, Regional Science*, *2*(1), 43–45. doi:10.1080/21681376.2014.991485

Leminen, S., Rajahonka, M., & Westerlund, M. (2017). Towards Third-Generation Living Lab Networks in Cities. *Technology Innovation Management Review*, *7*(11), 21–35. doi:10.22215/timreview/1118

Leminen, S., Westerlund, M., & Nyström, A.-G. (2018). Living Labs as Open-Innovation Networks. *Technology Innovation Management Review*, *2*(9), 6–11. doi:10.22215/timreview/602

Mattoni, B., Gugliermetti, F., & Bisegna, F. (2015). A multilevel method to assess and design the renovation and integration of Smart Cities. *Sustainable Cities and Society*, *15*, 105–119. doi:10.1016/j.scs.2014.12.002

Meijer, A., & Bolívar, M. P. R. (2016). Governing the smart city: A review of the literature on smart urban governance. *International Review of Administrative Sciences*, *82*(2), 392–408. doi:10.1177/0020852314564308

Murphy, P. (2012). The metropolis (S. Thompson & P. J. Maginn, Eds.). Cambridge University Press. doi:10.1017/CBO9781139197205.011

Ozgul, C. G. (2020). Yeni Kent Paradigması. İdealkent yayınları.

Pego, A., & Bernardo, M. R. M. (2019). The role of Urban Living Labs in Entrepreneurship, Energy, and Governance of Smart Cities. In L. C. Carvalho (Ed.), *Handbook of Research on Entrepreneurship and Marketing for Global Reach in the Digital Economy* (pp. 203–221). IGI Global. doi:10.4018/978-1-5225-6307-5.ch009

Ruijer, E. (2021). Designing and implementing data collaboratives: A governance perspective. *Government Information Quarterly*, *38*(4), 38. doi:10.1016/j.giq.2021.101612

Sassen, S. (2015). Bringing Cities into the Global Climate Framework. In C. Johnson, N. Toly, & H. Schroeder (Eds.), *The urban climate challenge* (pp. 24–36). Routledge.

Schuurman, D., Baccarne, B., De Marez, L., & Mechant, P. (2012). Smart ideas for smart cities: Investigating crowdsourcing for generating and selecting ideas for ICT innovation in a city context. *Journal of Theoretical and Applied Electronic Commerce Research*, *7*(3), 49–62. doi:10.4067/S0718-18762012000300006

Shelton, T., & Lodato, T. (2019). Actually existing smart citizens. *City*, *23*(1), 35–52. doi:10.1080/13604813.2019.1575115

Silva, C. N. (2020). Global Trends in Local Governance. In C. N. Silva (Ed.), *Contemporary Trends in Local Governance*. Springer. doi:10.1007/978-3-030-52516-3_1

The World Bank. (2021). *From Crisis to Green*. Resilient, and Inclusive Recovery.

Timmeren, van A., & Keyson, D. V. (2017). *Towards Sustainable Living*. Living Labs. 10.1007/978-3-319-33527-8_1

UN-Habitat. (2016). *Urban planning and design lab tools for integrated and participatory urban planning*. UN Habitat.

Van der Heijden, J. (2016). Experimental governance for low-carbon buildings and cities: Value and limits of local action networks. *Cities (London, England)*, *53*, 1–7. doi:10.1016/j.cities.2015.12.008

Veeckman, C., Schuurman, D., Leminen, S., & Westerlund, M. (2018). Linking Living Lab Characteristics and Their Outcomes: Towards a Conceptual Framework. *Technology Innovation Management Review*, *3*(12), 6–15. doi:10.22215/timreview/748

Winters, J. V. (2011). Why are Smart Cities Growing? Who Moves and Who Stays. *Journal of Regional Science*, *51*(2), 253–270. doi:10.1111/j.1467-9787.2010.00693.x

Yang, H. (2021). *Urban Governance in Transition* (H. Yang, ed.). Springer. http://link.springer.com/10.1007/978-981-15-7082-7

Özge Çelik Yılmaz is a landscape architect and holds an M.Sc. in Urban Planning. She worked as a Research and Teaching Assistant at the ITU Department of Urban and Regional Planning between 2011-2019, also served as a guest researcher in UTL (Universidade Tecnica de Lisboa) between 2016-2017. Her primary areas of interest are citizen engagement, experimental governance, sustainable landscape design, collaborative planning, urban governance, and smart cities. She is a PhD candidate, and currently a lecturer at FMV Işık University.

Özhan Ertekin is currently working at Istanbul Technical University, Faculty of Architecture, Urban and Regional Planning Department. His researches mainly focus on urban planning, regional planning, urban design, urban transformation and performance measurement. He had studied on measurement issues for a post-doc study in Regional Economics Applications Laboratory in University of Illinois at Urbana-Campaign in 2007.