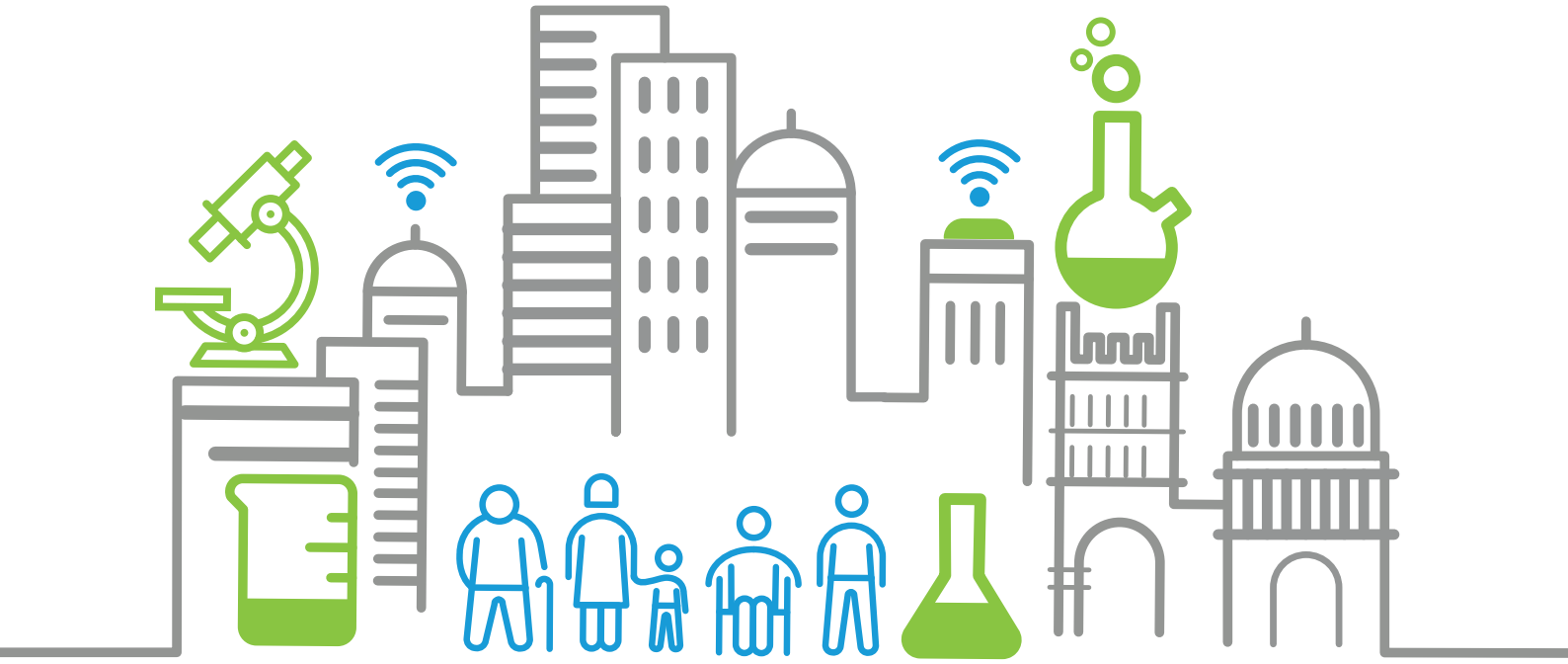
iSCAPE
Living Labs

COMMUNITY FEEDBACK REPORTS

D2.5



The iSCAPE project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 689954.

February 2019

Project Name and Acronym	**Improving the Smart Control of Air Pollution in Europe - iSCAPE**
Grant Agreement Number	689954
Document Type	Report
Document version & WP No.	V. 01 / WP2
Document Title	Community Feedback Reports
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Release date	4th March, 2019

The publication reflects the author's views. The European Commission is not liable for any use that may be made of the information contained therein.

DOCUMENT CONTROL PAGE			
Short Description	This report outlines the activities (dissemination, engagement and co-creation) undertaken by the six Living Labs (LL) with a variety of stakeholders. The activities started in June 2017 and aimed to create awareness of, and educate the wider public about, air pollution in general, and the LL interventions specifically. The ultimate intention was to collaboratively develop the iSCAPE LL interventions with citizens and other stakeholders. This report has been produced as part of the WP2 and forms the deliverable D2.5.		
Review status	Action	Person	Date
	Internal Review	Ines Vaittinen (ENoLL), Antonella Passani (T6)	Feb, 2019
Distribution	Public		

DOCUMENT CONTROL PAGE			
Version	Date	Modified by	Comments
0.1	16th Feb, 2019	Saravjit Rihal, Katinka Schaaf	First draft
0.1	27th Feb, 2019	Ines Vaittinen, Antonella Passani	Consolidated version for the internal review
0.2	4th March, 2019	Saravjit Rihal, Katinka Schaaf	Revision of the report, integration of the comments and feedback from the internal reviewers. Final version for the quality check and submission

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List of Abbreviations

ARPAE: Agenzia Regionale Per La Prevenzione, L'ambientee L'energia Dell'emilia- Romagna (Regional Agency for Prevention, Environment and Energy of Emilia-Romagna)

CFR: Community Feedback Report

ENoLL: European Network of Living Labs

EU: European Union

FCC: Future Cities Catapult

FMI: Finnish Meteorological Institute

GA: Grant Agreement

GI: Green infrastructure

iSCAPE: Improving the Smart Control of Air

IMOB: Transportation Research Institute (IMOB) UHasselt Pollution in European cities

LBW: Low Boundary Wall

LL: Living Lab

TCD: Trinity College Dublin

TUDO: Technical University Dortmund

UCD: University College Dublin

UH: University Hasselt

UNIBO: University of Bologna

UoS: University of Surrey

VLL: Virtual Living Lab

VITO: Flemish Institute for Technological Research , Belgium

WP: Work Package

Executive Summary

This report outlines the activities (dissemination, engagement and co-creation) undertaken by the six Living Labs with a variety of stakeholders. The activities started in June 2017 and aimed to create awareness of, and educate the wider public about, air pollution in general, and the LL interventions specifically. The ultimate goal was to collaborate with citizens and other stakeholders to develop the iSCAPE LL interventions and pilots.

The stakeholder engagement plan and community feedback reports (CFR) were shared with each LL and have been introduced through previous deliverables: overview of non-technical challenges and opportunities (D1.1.), Stakeholder analysis and risk assessment (D2.1) and an implementation plan for the iSCAPE Living Labs (D2.2). The last two deliverables equipped each LL with air pollution engagement tools and a local citizen engagement strategy (D2.4).

FCC prepared and supported each LL in this process through an iterative approach that allowed them to refine their methods and ways of working both internally and externally with the city and the public.

This report tells the story of the six iSCAPE LLs, through what they did and how they perceive their immediate future as they take steps to becoming independent LLs during the concluding phase of the iSCAPE project. In particular, it showcases the effort and hard work that went into the iSCAPE dissemination, engagement, and co-creation activities as reported by the LLs themselves (see appendix). In order to compliment what was done, FCC interviewed each LL in turn to gather deeper insights on their individual experiences and learnings, learn about the current state of the interventions, consolidate the impact of the myriad of LL activities, and provide feedback from stakeholders, participants and the LL teams themselves.

In summary, this report forms the final deliverable (D2.5) in WP2 in which the LL activities are listed (see appendix - CFRs), as are the learnings, impact and feedback based on those activities. All of which should provide valuable guidance for those contemplating starting new LLs, or working with LLs.

Introduction to the Report

This document, 'WP2: Community Feedback Reports', as the grant agreement (GA) states will give the reader a brief overview of stakeholder feedback on the suggested solutions [air pollution interventions and pilots devised by the Living Labs (LLs).

First, context is given in terms of this part of the Improving the Smart Control of Air Pollution in European cities (iSCAPE) project, and in terms of the journeys so far of the six iSCAPE LLs. Then an overview of the LL activities is provided followed by an in-depth look at one activity from each LL, in turn, so to give the reader a flavour of the effort, learning and participation involved. Details about all the LL activities can be found in the APPENDIX.

An overview of the challenges faced by the LLs is then given, followed by a summary of the outcomes and impacts of these activities.

Lastly, feedback from those taking part in the LL activities is presented alongside reflections from the LLs and Future Cities Catapult (FCC) before next steps are laid out." WP2: Community Feedback Reports – these reports will give a brief overview of stakeholder feedback on the suggested solutions (GA).

Aims and Objectives

European projects are structured into work packages (WP). Each WP is made up of tasks which may have deliverables attached to them. Each WP, task and deliverable has a unique number. This report (D2.5), details the work for Task 2.3 of WP2 which focuses on Living Lab set up and management in the iSCAPE project. Below is a description of the aims for WP2 in general, followed by a summary of Task 2.3 (managing the LL).

Description of work (WP2) :

The overarching purpose of WP2 is to ensure effective stakeholder management by bringing together key local actors and the scientific iSCAPE community. The goal is to assess non-technical challenges to implementation of both the physical and behavioural interventions that will be deployed and/or assessed in WP3 and WP4.

Aims (WP2):

1. Ensure an inclusive development process of technological options and strategies for air quality and climate change
2. Promote a sense of ownership of the Living Labs amongst local communities and stakeholders, thus ensuring that the interventions will outlive the project
3. Understand the risks of implementation of the measures in each city
4. Adapt to neighbourhood-level and city-level, physical and behavioural intervention plans to minimise the risks, challenges and barriers identified
5. Set up and manage the relationship with the implementing cities and their local stakeholders.

Description of work (T2.3):

Task 2.3 is specifically concerned with the management of the LLs as they form and evolve over the three-year iSCAPE period. We put a focus on ensuring an efficient link between the scientific developments occurring during the project and the LL stakeholders.

Aims (T2.3):

1. LLs to engage with a variety of local stakeholders drawn from the city, stay in touch beyond the project and build long-term relationships
2. Engagement should cover dissemination of scientific findings, interactive activities with stakeholders and co-creative tasks
3. LL to document the process through photographs, writing and communication with dissemination partner (T6) and LL management partner (FCC)
4. Develop engaging content based on outreach and co-creation activities to share on the iSCAPE social channels as well as the virtual LL.

- Within the iSCAPE LL context, co-creation occurs when a user group actively works with the LL on a solution to the problem at hand (the LL pilot) such that the LL primarily learns about the user group's needs, perceptions, language and ideas, so that the pilot itself may evolve in some way.

The aims of T2.3 were delivered by the following:

- **Stakeholder Management Plan**
  FCC created the Stakeholder Management Plan to ensure clear communication channels between signatory partners, which helped facilitate the implementation and the optimisation process of both physical and behavioural interventions. Each LL entered details of their activities into the Stakeholder Management Plan. These entries served as short progress reports on LL activities. The entries were visible to all LLs, which enabled learning between the partners. These progress reports detailed the implementation of physical and behavioural interventions and illustrate the journey for each LL.

- **CFR (2 x all LL):**
  The CFRs report on the activities in each of the LL cities between June 2017 - January 2019, each consisting of two parts. The first part shows the first engagement and co-creation activities (2017/18). The second, slightly shorter part demonstrates a greater focus on co-creation and implementation of the learnings from the previous year (2018-2019). The first part of the CFR was shared with all partners to celebrate achievements and share lessons learned (see appendix)

- **CFR (2 x LL profiles):**
  The LL profiles form part of the report where each LL showcases one of their co-creation activities in more detail, expanding on their process and methodologies and outlining how this exercise provides learnings to other LL and future activities.

- **LL Training & Engagement Tools**
  Each LL lead (appointed on task 2.2.3) received training on how to follow-up with local communities in order to capture insights from stakeholders. The training, where tools were shared with the LL and published on the virtual LL, was delivered by FCC as part of Task 2.3 in September 2017.

- **Support on co-creation and Citizen Engagement activities (addressing WP2 Aim 1)**
  Regular contact was facilitated by FCC through bi-weekly/monthly conference calls (group and individual) and maintained through online and, where possible, face-to-face meetings. Event plans for activities and dissemination were reviewed and suggestions made to ensure that events were engaging and followed a co-creation methodology.

- **Living Lab interviews:**
  In the final phase of the LL co-creation activities, FCC undertook short interviews with each of the LL leads. The interviews aimed to gather content on lessons learned, the impact, current state and next steps.
  The insights will feed into the final deliverable D2.5 as well as in WP 7 D7.11 and WP4 D4.4. (see chapter on reflections).

iSCAPE Living Labs City Recap

About iSCAPE

iSCAPE is a European Research and Innovation project that works on integrating and advancing the control of air quality and carbon emissions in European cities, in the context of climate change. It does so through the development of sustainable and passive air pollution remediation strategies, policy interventions and behavioural change initiatives.

The Cities

There are 6 cities included in the iSCAPE project: Bologna (Italy), Bottrop (Germany), Dublin (Ireland), Guildford (UK), Hasselt (Belgium) and Vantaa (Finland). All of these cities are introducing one or more air quality interventions as part of the project.

Their interventions/ pilots

The interventions vary from the introduction of green infrastructure (Bottrop, Guildford, Vantaa, Bologna) to built interventions such as low boundary walls (Dublin), photocatalytic paint (Bologna) to encouraging citizen behaviour change (Hasselt), see CFR appendix for further details on specific interventions.

In the first year of the iSCAPE project, FCC identified sixteen city challenges (presented in D1.1, January 2017). These challenges were split into three overarching 'challenge areas': 'Urban Environment', 'Citizen Perception' and 'Government Policy' (see figure 1). The challenges are intended to spark discussions around the issues of air quality and climate change and drive the search for creative solutions amongst the project partners, city stakeholders and citizens.

In D1.1 we identified geographic conditions, modes of transport, health issues relating to air pollution and pollution measurements in each of the LL cities.

Summary page for each city

The city profiles from D1.1 demonstrate three types of challenge areas. Based on those challenges the LLs and the cities developed their intervention alongside how it might be implemented.

This section will provide a visual recap of the 6 iSCAPE LL journeys – how they started, their environmental challenges and their objectives and goals.

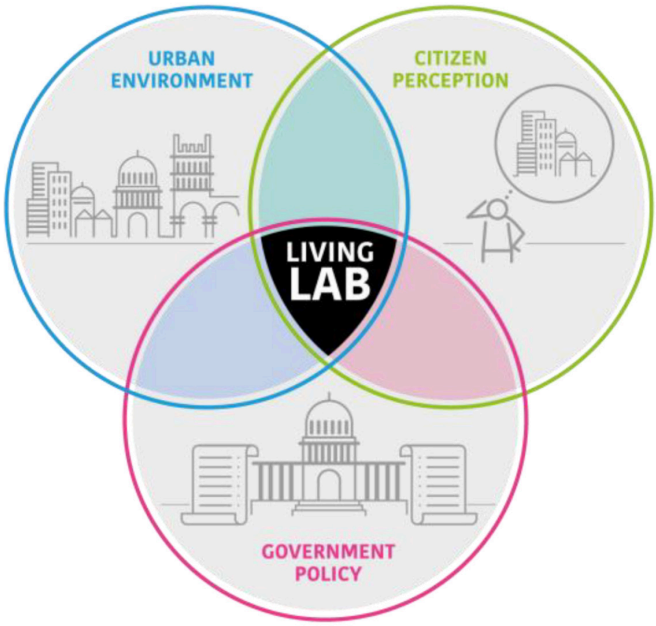


Figure 1: The three challenge areas that defined each of the iSCAPE LL.

BOLOGNA
THE JOURNEY SO FAR

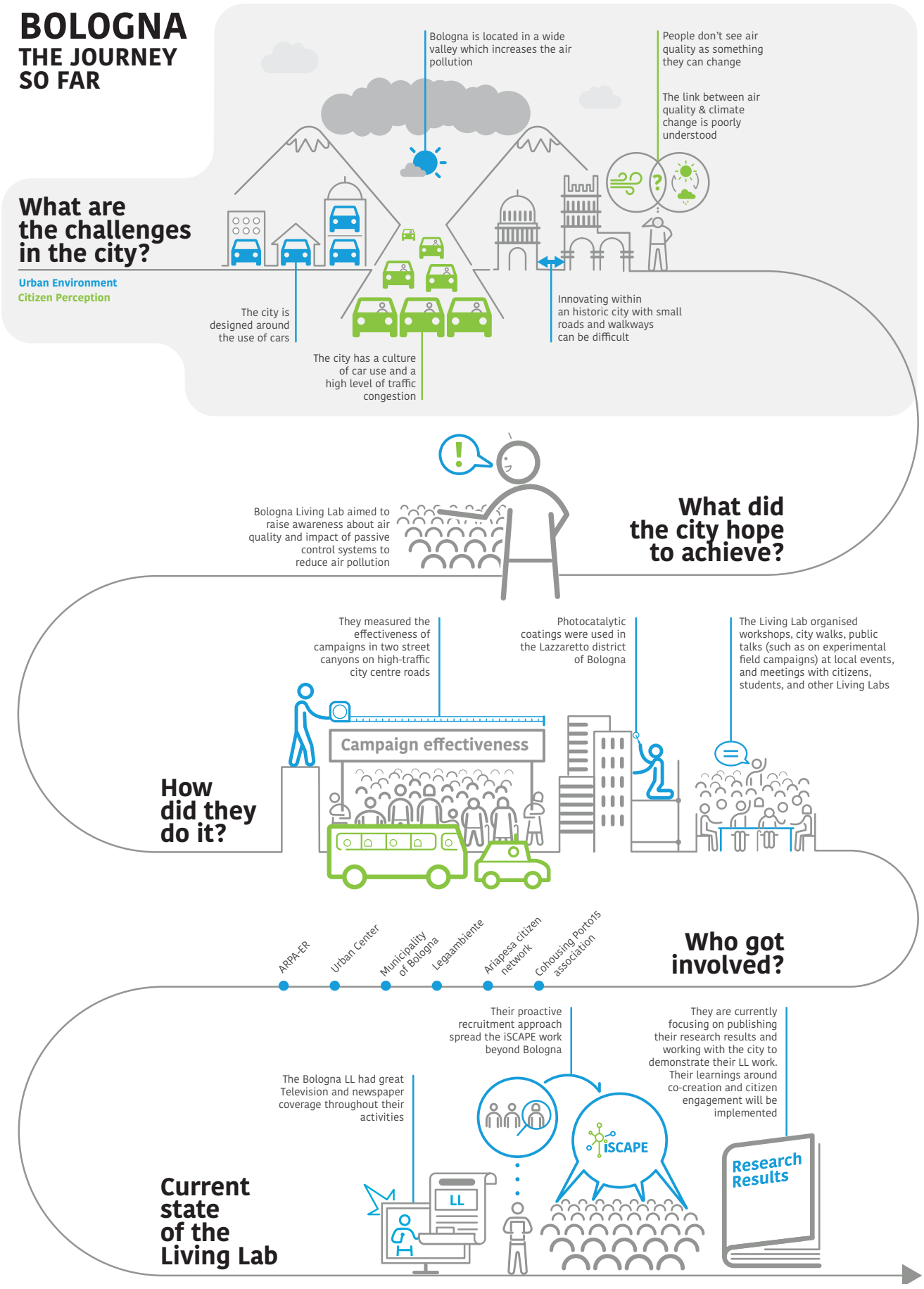


Figure 2: Bologna, Italy LL journey.

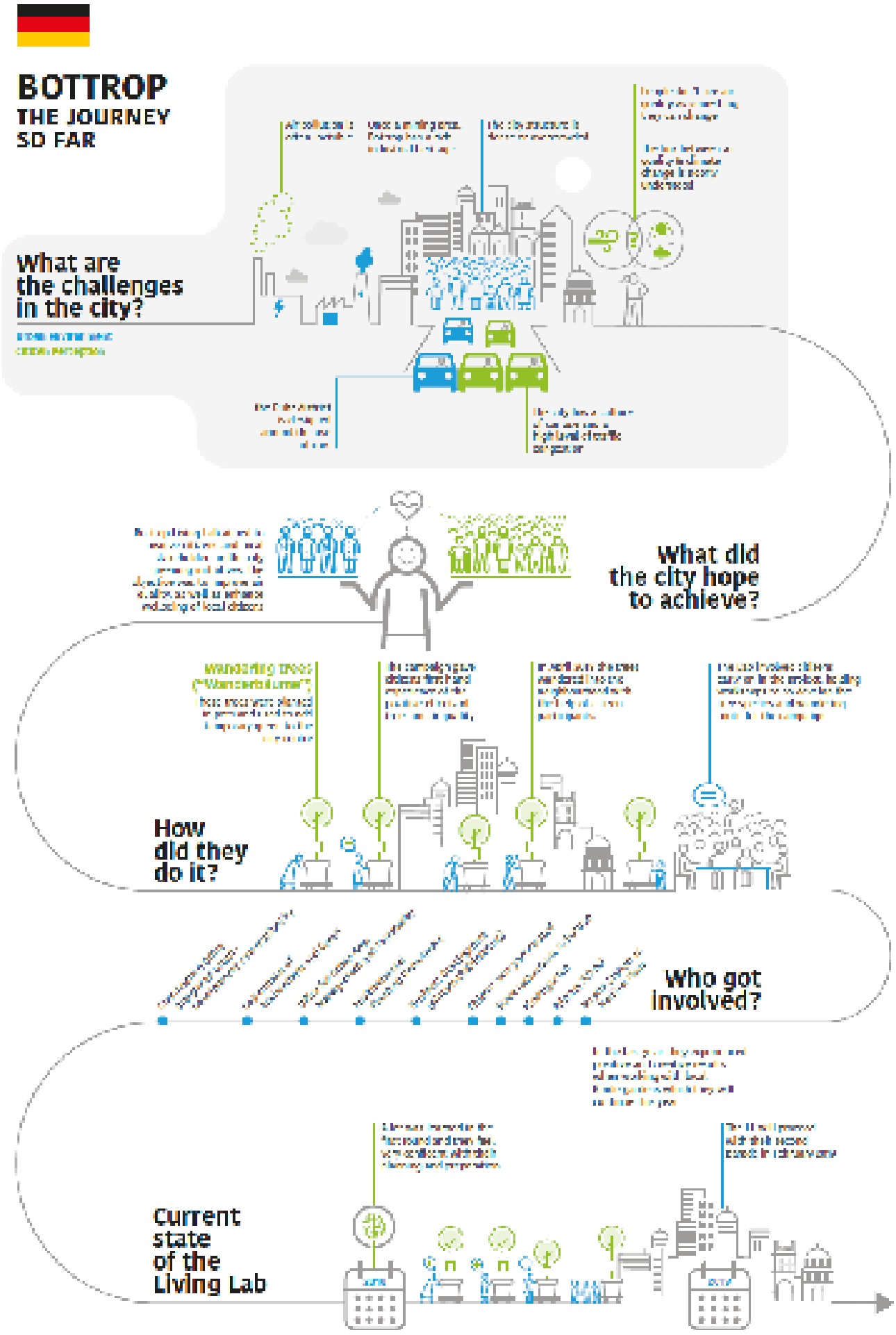


Figure 3: Bottrop, Germany LL journey.

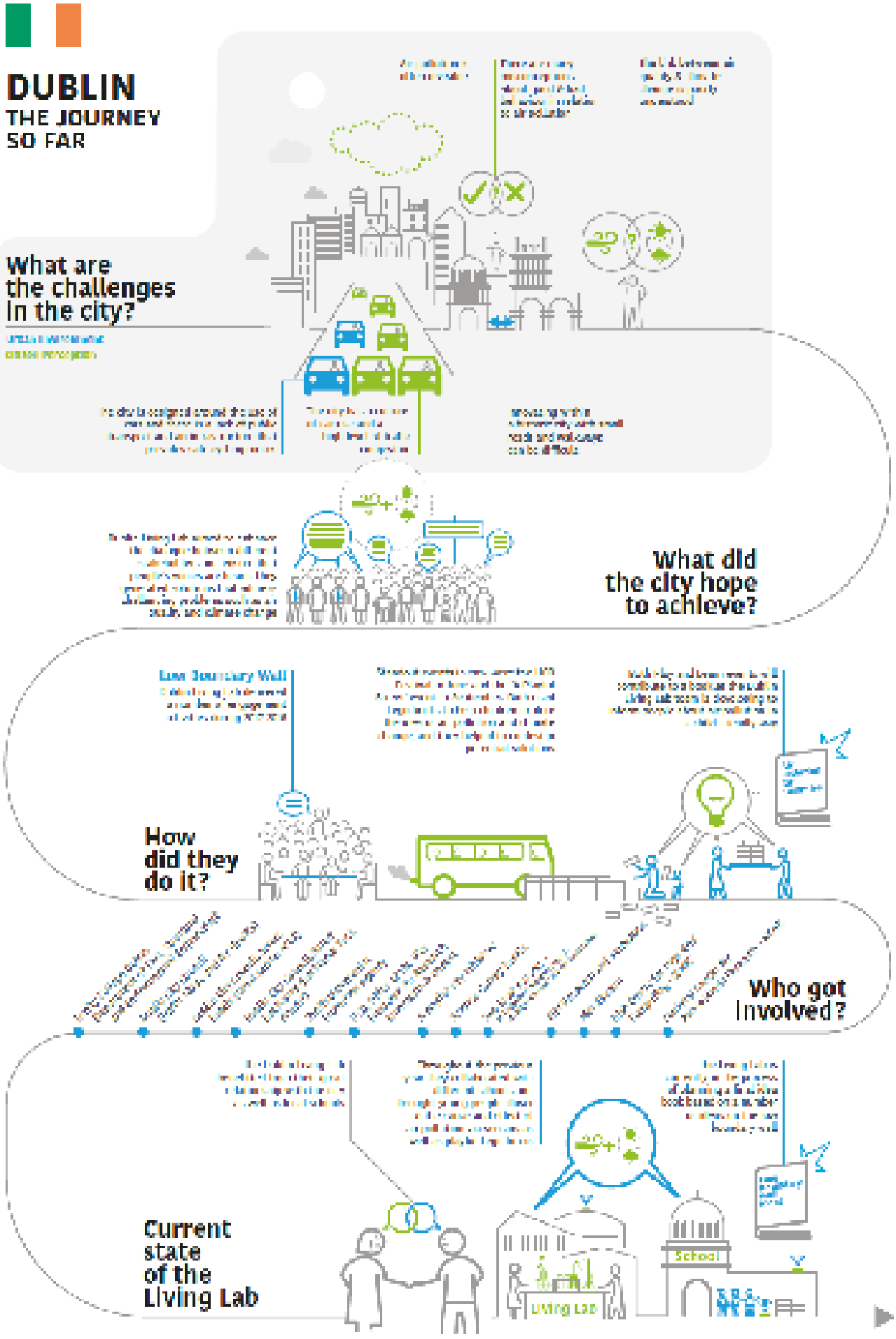


Figure 4: Dublin, Ireland LL journey.

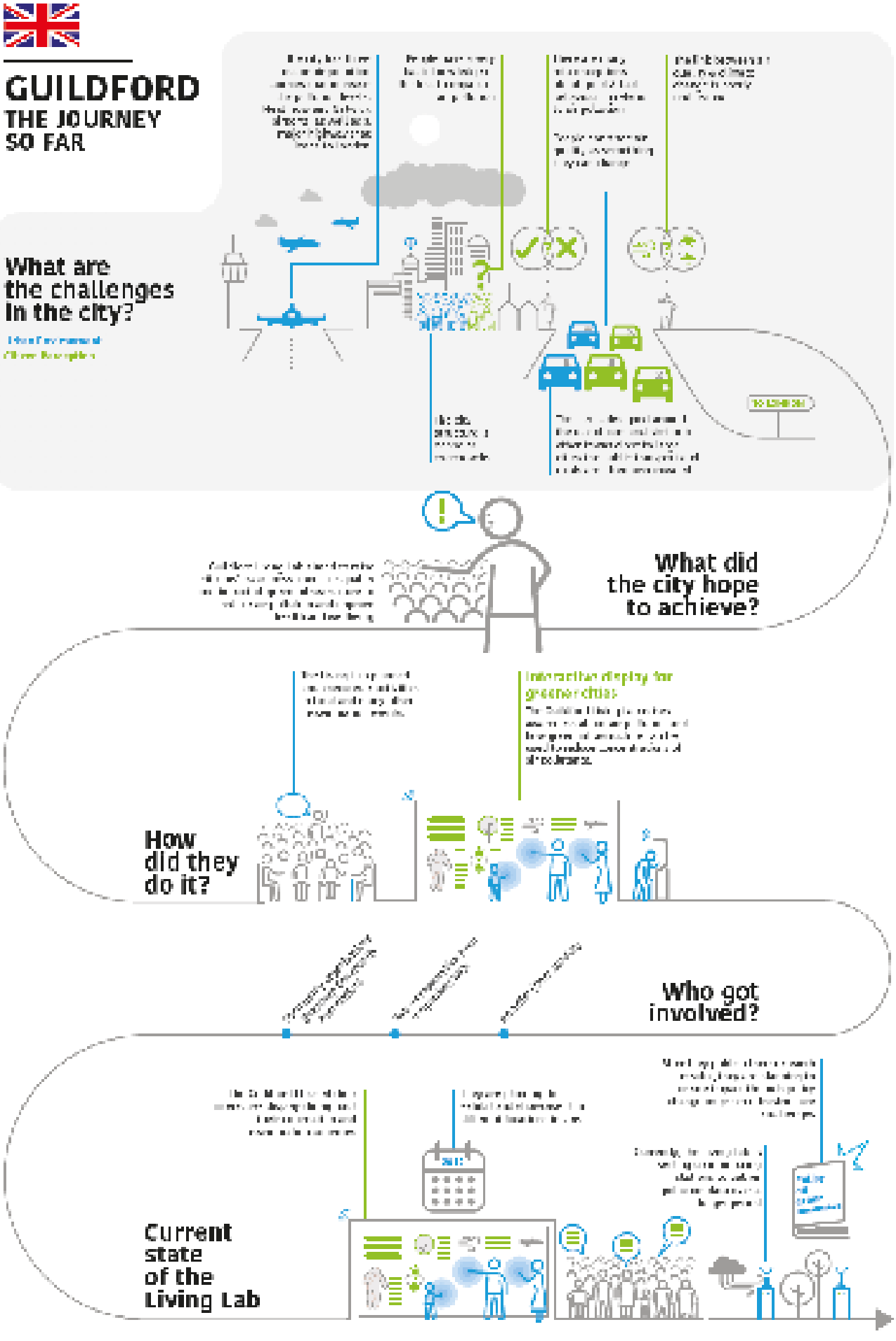


Figure 5: Guidlford, United Kingdom LL journey.

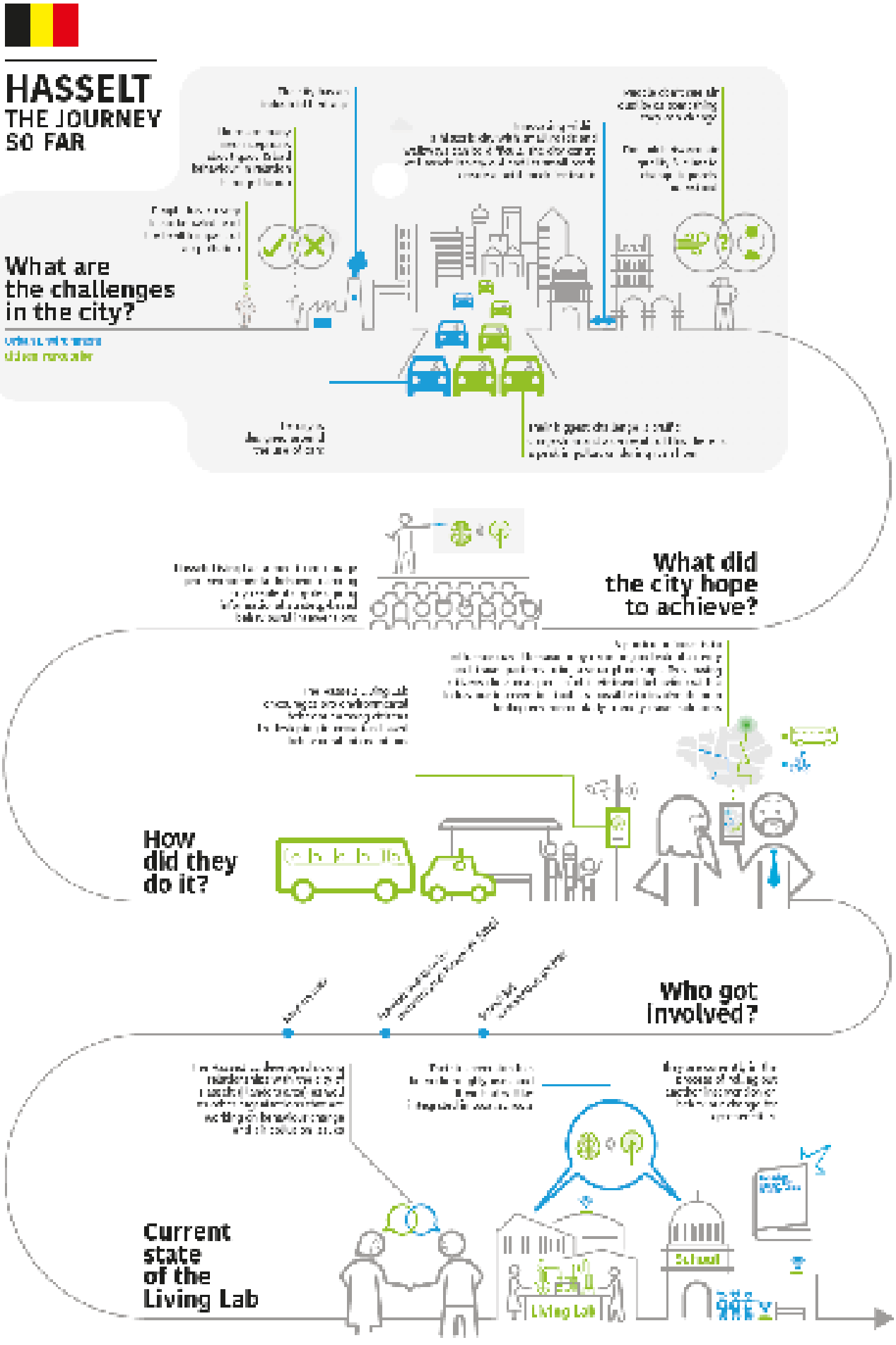


Figure 6: Hasselt, Belgium LL journey.

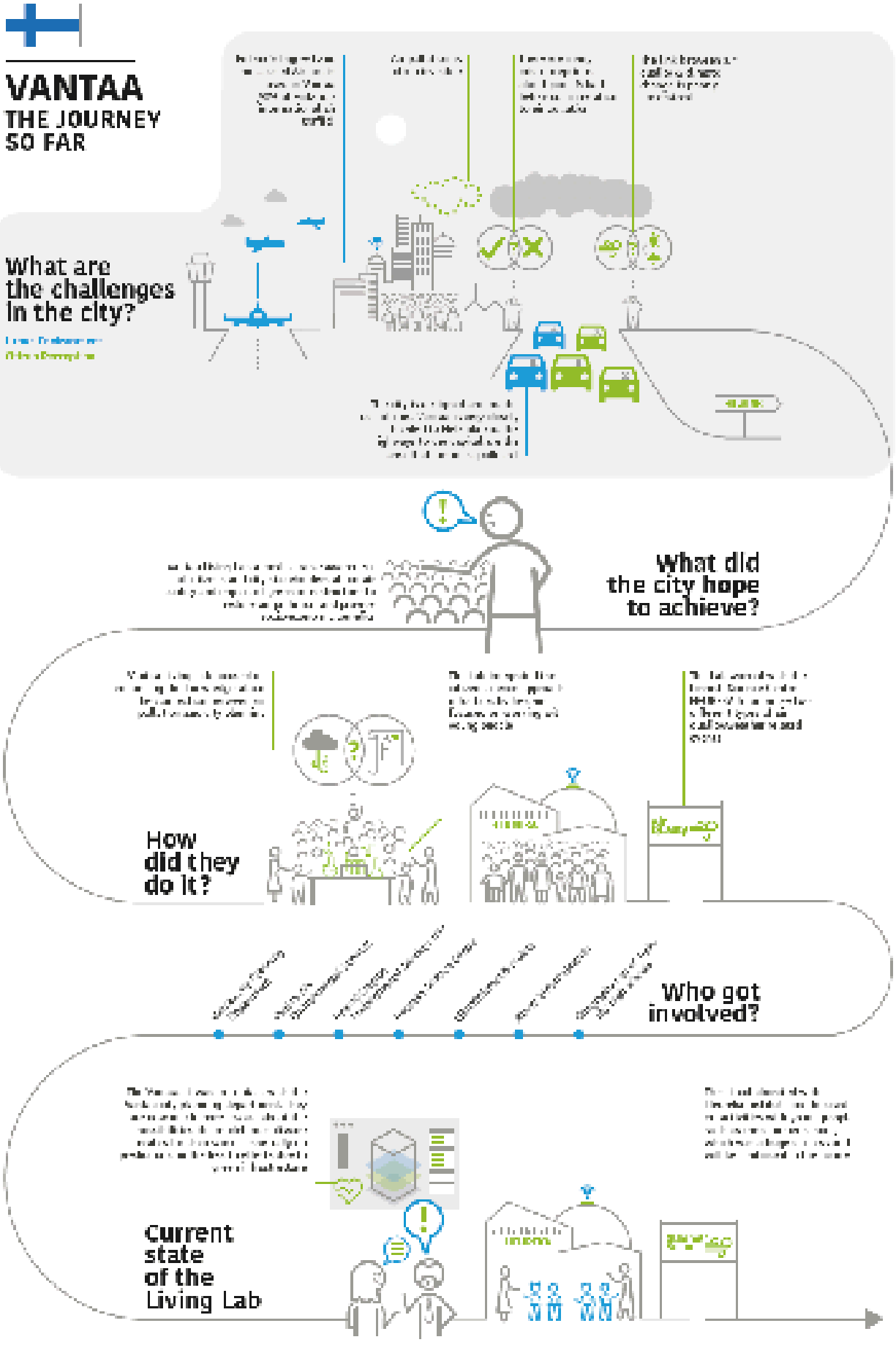


Figure 7: Vantaa, Finland LL journey.

The iSCAPE Living Labs

How the pilots evolved

A principal goal of any LL is to progress its interventions and pilots. This can be achieved by maintaining two threads of activity.

One thread (the general thread) involves promoting the existence of the LL itself, as well as the work it does through dissemination and engagement (raising awareness) to a general audience (drawn from the general public, the municipality and or other stakeholders).

In the second thread (the specific thread) the interventions/pilots (such as the low boundary walls in Dublin, see more examples in the journey Figure 2-7) themselves start to evolve when the needs/constraints of specific audiences (again, drawn from the general public, the municipality and/or other stakeholders) are understood. At this point both the LL and this specific audience work together to explore ideas of how the intervention/ pilot itself could progress (co-creation).

Our LLs have evolved their interventions/pilots by maintaining both threads of activity, and reacting to their ecosystem within their city. In some cases this meant focussing on promoting the LL first before advancing the pilot, in others it meant being able to advance the pilot relatively early, and sometimes both threads were being woven at the same time. Many times both threads were realised during the same event.

Overview of what the LLs did

From a standing start, but informed by a variety of previous LL experiences, the LLs were able to establish themselves. They then moved on to promoting themselves and evolving their interventions by conducting an average of 5.5 events each (high 7, low 4), with an average total audience over all events of 200 people per LL (high 272, low 90).

Types of activities

Dissemination

Common dissemination activities that were carried out by many LLs took the form of a presentation followed by a discussion. The presentation was often about the LL itself, its credentials, its work and how this was relevant to the audience. Discussions often allowed for unprecedented and detailed introductions of the subject matter experts to the public, and for the public to learn how the LLs work could be applied locally.

These often short activities provided networking opportunities that frequently led to further invitations to present, perhaps to different audiences, or to more senior colleagues etc.

Examples of dissemination activities include:

- Bologna LL - Research presentation at a high school (50 students)
- Guildford LL - Meeting with Guildford councillors (14 councillors)
- Hasselt LL - Behavioural Intervention Tool kick-off event (30 students)

Engagement

Engagement activities carried out by the LLs took many forms, and were much less ‘generic’ than the dissemination activities. At their core, the engagement activities concerned some sharing of information or learning during an activity performed by key audience groups (and therefore more interactive than the dissemination activities).

Examples of engagement activities include [LL - Title of activity (participants)]:

- Bologna LL - Walk with low-cost sensors (10 citizens)
- Bottrop LL - Creation of tree decorations at a school festival (20 students)
- Dublin LL - A playful street event (30-40 children)
- Vantaa LL - Heureka Summer Camp - urban planning and air quality sessions (20 teenagers)

Co-creation

With a few exceptions, co-creation activities started to appear towards the end of T2.3 (with a few exceptions, co-creation activities started to appear after about 18 months of activity). This was in part due to the time taken to establish the LL and determining the exact nature of the intervention/pilot (partly dependent on direction and feedback sought from the local municipality).

Co-creation, in this case, involves the LL working with key audiences on a common problem and towards a common goal. Often this takes the form of the LL imparting knowledge to the key audience participants – and in working with the participants the LL learns about the participants see the problem, the factors they take into consideration, the reasons why, and the language used – all of which helps define new solutions or research questions, as well as identifying refinements that could be made to the intervention/pilot.

The most successful LLs report that they have indeed either modified their intervention/ pilot or obtained actionable ideas for new solutions/research questions though the co-creation activities that they have run (addressing the specific thread).

Less successful LLs meanwhile have still reported a greater understanding of the key audience perspective, as well as significant participant enjoyment of the LL activities leading to a greater willingness to attend future events (addressing the general thread).

Examples of co-creation activities include:

- Bologna LL - Co-creation mapping (45 international students)
- Bottrop LL - Wandering trees workshop (5 citizens)
- Dublin LL - 'Hack the Air' event (13 children)
- Guildford LL - Workshop with the Burpham Community Association (30 citizens)
- Hasselt LL - Co-creating informal intervention (Summer school) (25 students)
- Vantaa LL - 'Guinea pigs' in Urban planning - (45 students, 2 teachers)

Types of audiences

Looking across the LLs and the activities they have conducted, it is clear they have interacted with many people and organisations. What should be commended is the diversity of people and range of organisations each LL has helped become part of their ecosystem.

People

The LLs have interacted with the following diverse participants [LL - Title of activity (participants)]:

- University students (local and international)
- Primary school students
- High school students (including a special event for 14-16 year old girls)
- Kindergarten students
- Parents
- Teachers
- Air pollution scientists
- Everyday citizens
- Municipality officials (including councillors)
- Local retailers/business owners
- Officials from national and regional institutions

Organisations

The LLs have interacted with the following types of organisations (both for and outside of their events).

- Schools (kindergarten, primary, high school)
- Local municipalities
- Local businesses
- Universities

- Summer schools
- Festivals
- Galleries
- Local community groups and associations

Locations of activities
Activities have been both varied in nature and have taken place in a wide selection of physical locations. Whilst a majority of LLs took place in offices, schools and universities, a significant number also took place in more unusual locations:

- Streets/Parades
  - Testing low cost sensors (Bologna LL)
  - Wandering Trees Parade (Bottrop LL) Part 1 (2018)
  - Future: Wandering Trees Parade (Bottrop LL) Part 2 (2019)
- Galleries
  - 'Hack the Air' at the Science Gallery (Dublin LL)
- Festivals
  - Talks at the Waterloo Festival (Guildford LL)
  - Creating tree decorations at a school festival (Bottrop LL)
  - Information booth at a market festival (Bottrop LL)
  - Activities for children at the UCD festival (Dublin LL)
- Summer schools
  - Co-creation at the University of Hasselt summer school (Hasselt LL)
  - Urban planning & air quality sessions - Heureka Summer Camp (Vantaa LL)
  - Workshop Head-Start Summer School (Guildford LL)
- Meeting halls
  - Workshop with the Burpham Community Association (Guildford LL)

iSCAPE Community Feedback Reports (CFR)

The iSCAPE project supports sustainable urban development by sharing the results with policy-makers and planners using local test-cases, and providing scientific evidence for ready-to-use solutions that could lead to real-time operational interventions. In this CFR the reader will find detailed feedback from each of the Living Labs, which will in turn inform future interventions in each of the Living Lab cities, as well as providing a solid basis for sharing these learnings with cities worldwide.

FCC assembled the LL content for the CFR in two parts, the first part (the longest period) provided information on their co-creation activities between May 2017 - August 2018. The second part shows their final months of co-creation and citizen engagement between September 2018 and January 2019. The full CFR of all the LL co-creation activities can be found in the appendix.

Community Feedback Reports (CFR)

On the following pages each LL showcases on **one** of their co-creation activities, demonstrating their methods, processes and recommendations, as well as stakeholder (city, citizens and facilitators) quotes. See APPENDIX for all activities.

- 3 CFR detailed co-creation activities up to August 2018 (Bottrop, Dublin and Vantaa).
- 3 CFR detailed co-creation activities up to January 2019, with a greater focus on impact (Bologna, Hasselt and Guildford) .

ACTIVITIES & LEARNINGS

BOTTROP
WANDERING TREES

Wandering Trees are moving into the neighbourhood - Beginning of the Wandering Trees parade

Facilitators: 4 city administration employers from Bottrop, 3 research associates from TU Dortmund University (TUDO), 12 students from TU Dortmund University

Participants: approx. 100 citizens at the event, with 5 residents helped transporting the wandering trees into their neighbourhood

Duration: approximately 7 hours

> “The idea of having trees wandering around in the city is great.
> It is an innovative and creative way to get people involved and sensitized.”
>
> Representative of the City of Bottrop

photo by Jana Wilhelm and Silva Ritter

ACTIVITY DESCRIPTION

This Living Lab event was connected to an existing city festival. Together with students from TU Dortmund University we prepared an information stand to inform citizens about the iSCAPE project and the Wandering Trees. In addition, citizens were given the opportunity to take part in a participatory mapping process to find further tree locations. Citizens and children in particular were invited to create tree decorations and seed balls. After the city festival, we let the trees wander together with some residents into the neighbourhood.

WHY DID YOU CHOOSE THIS ACTIVITY?

We have chosen various information formats and participation formats in order to be able to offer a wide spectrum for many different population groups and target groups. It was important to us that we are available to answer people's questions and suggestions, but also offer a range of active participation opportunities - such as mapping the locations of the trees. In our experience, active formats have always been well received by participants as they increase the acceptance of projects through enabling people to design and implement the project themselves.

WHAT ENGAGEMENT METHODS DID YOU USE?

1. Information stand

photo by Jana Wilhelm and Silva Ritter

Why did you choose it?

To give citizens the opportunity to ask all their questions and raise awareness of green issues, we have set up a small information stand.

How did you deliver it?

Step 1: Preparing the information material.
Target group-oriented preparation of information material. Both citizens and employees of the city of Bottrop were present at this event, so we chose various forms of information material.

Step 2: Appealing presentation of the information stand
To attract as many people as possible to our stand, we have decorated it with signs and already made tree decorations. The wandering trees next to our stand made us visible from afar.

Materials used

Roll-up posters and leaflets.

2. Participatory mapping of locations for the wandering trees

photo by Jana Wilhelm and Silva Ritter

Why did you choose it?

We used this form of community-based mapping to find suitable locations for the wandering trees. Participants were invited to mark these locations on a prepared map.

How did you deliver it?

Step 1: Preparing a map.

In order to use the local knowledge of the citizens for the selection of the locations for wandering trees adequately, a map with an aerial photograph was prepared on a appropriate scale and printed out in a suitable size. The map shows the neighborhood in which the trees are supposed to wander. Various pins were served for this purpose.

Materials used

A prepared map and pins.

> “If I walk through green streets, then I think how nice it is when everything is green.”
>
> Citizen of the City of Bottrop

3. Joint creation of tree decorations and seed balls

photo by Jana Wilhelm and Silva Ritter

Why did you choose it?

Together with the festival visitors, we created tree decorations and seed balls to raise awareness for green issues, especially among children.

How did you deliver it?

Step 1: Preparing the mixture for the seed balls.
We have prepared the mixture for the seed balls from the necessary ingredients in a bowl. These only had to be portioned with the help of a spoon and rounded off with the hands. Then we provided a bowl of water for hand washing.

Step 2: Preparing a material base of wires and small branches.
First we prepared a base of wire and small branches. Then the children wrapped these prepared designs in wool and made beautiful patterns. In addition, the children were able to label their own tree decorations with their name.

Materials used

Wires and small branches, wool and scissors for tree decorations and various seeds, peat-free earth, natural compost, brown clay powder, water, a bowl and a small spoon for the seed balls.

4. Joint transport of the wandering trees to the neighbourhood

“I’m happy about the wandering trees in my neighbourhood. With more green, everything is better!”

Citizen of the City of Bottrop

photo by Jana Wilhelm and Silva Ritter

Why did you choose it?

The possibility of active participation in the tree entry increases the interest of the citizens and promotes their motivation to accompany and support the project.

How did you deliver it?

Step 1: Preparation of the first locations of the wandering trees.
In order to find suitable locations and citizens who temporarily adopt a tree, all citizens were directly approached and involved through participatory mapping during the workshops and also during this event. This formed the base for the organization of the first locations of the wandering trees.

Step 2: Preparing the wandering trees for transport.
To make it easier to transport the trees in the neighbourhood, they were placed on a board with wheels.
Step 3: Transport of the wandering trees.
The trees were transported to the neighborhood with two persons each.

Materials used

Small trees in plant pots and boards with wheels for transporting the trees

WHAT WENT WELL?

- Great collaboration with the citizens
- A lot of support from the employees of the city administration
- Broad public attention
- Fantastic atmosphere at the event

WHAT WOULD YOU DO DIFFERENTLY NEXT TIME?

- Early involvement of the citizens
- More active and direct addressing of the target group(s)

WHO WAS INVOLVED?

Many different actors were involved in the planning and implementation of the wandering trees parade. Above all, the target groups are the citizens and civil society groups in Bottrop, so that they play an essential role in the implementation process. Citizens are the main target group for which the project is being developed and which should benefit from it. Furthermore, the smooth implementation also requires close cooperation with the employees of the city administration, so that they were also involved at an early stage.

HOW DID YOU RECRUIT PARTICIPANTS?

As our Living Lab event was connected to an existing city festival, most of the participants were addressed via the distribution channels of the city of Bottrop, which organized this festival. These include, for example, the public press, leaflets and news on a website. In addition, we have personally invited all participants of previous Living Lab events who have given us their contact details. The target groups of the event ranged from citizens and children to civil society actors and city administration employees.

WHAT WAS THE FEEDBACK FROM PARTICIPANTS?

Some members of the TUDO study project then contacted the residents of the neighbourhood directly and asked for feedback. We did not preselect the respondents, but the surveys were based on a random principle and depended on which residents were at home and agreed to receive feedback.

The feedback from citizens is mostly very positive. All citizens surveyed said that participation was very important and they would like to have more projects like the Wandering Trees. The distribution of specially made wandering tree postcards was positively highlighted. Few of the citizens surveyed mentioned that the neighborhood is already very green and other neighborhoods had benefited more from the wandering trees. A few stated that they had not attended any of the previous Living Lab events because they had either no time or no interest. In this context, it was proposed to create stronger incentives for participation in the future.

OUR ADVICE TO OTHER LIVING LABS

- Early involvement of citizens or other target groups
- Building a strong relationship with the city administration
- Early involvement of press and public
- Always be flexible in your organisation and activities
- Let your target group(s) actively participate
- Find ways to maintain the motivation of your target group(s)
- Ask participants for feedback for your own evaluation

NEXT STEPS (WRITTEN IN SPRING 2018)

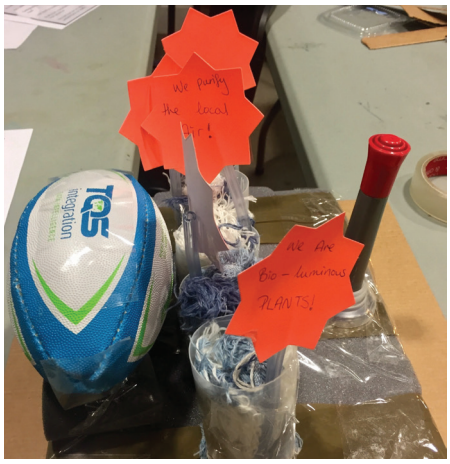
The trees wander through the neighbourhood up to two times during the summer months. In order to do that we address the residents and invite them to participate. The first move of the trees is planned for 15th of June 2018. In August, part of the trees will wander to a local kindergarten. Due to the hot and dry summer, some trees will be planted on undeveloped land in the city in October, while other trees will move to their winter quarters and then move to a new neighbourhood in the following spring. For this reason, we hold intensive discussions with neighbourhood managers from other neighbourhoods who act as multipliers there.

DUBLIN
HACK THE AIR

Facilitators: 5 (3 from the project team and 2 provided by the Science Gallery)

Participants: Attended by 13 participants (out of 25 max spots and 21 sign ups)

Duration: 4 hours



ACTIVITY DESCRIPTION

This interactive, hands-on event was held on March 14, 2018 at the Science Gallery Dublin. Creative individuals aged 15-25 were invited to design innovative solutions to air pollution in cities. Specifically, participants worked in small teams and used processes of design thinking to generate ideas aimed to protect pedestrians from air pollution in Dublin. The teams were provided with 'weird and wonderful' materials that they used to create prototypes that brought their designs to life. The event was facilitated by researchers from UCD and TCD along with Science Gallery staff.

WHY DID YOU CHOOSE THIS ACTIVITY?

Co-creation of new products and services is at the core of the methodological approach to innovation in Living Labs. Thus, citizen engagement activities in the Dublin Living Labare focused on co-creating new solutions to air pollution. Besides, the research activities in Dublin are directed towards assessing the effectiveness of a low boundary wall, one of the Passive Control Systems researched and tested by the iSCAPE project partners.

A low boundary wall holds a great potential to reduce pedestrian exposure to air pollution. However, when we asked citizens how they would describe such a wall, the following words are commonly used: 'boring', 'grey', 'it's just a wall', and 'it's made out of concrete'. Therefore, the Hack the Air was aimed to address the aesthetic and functional design challenge of conventional low boundary walls. The structure and format of the event was developed following the design thinking process, which includes phases such as inspiration, ideation and prototyping. The activities for each of these phases were selected so that they encourage imagination and facilitate creative thinking. For example, the participants were asked to draw their ideas instead of writing them down to aid creative thinking. These activities were also discussed with the Science Gallery staff who provided

valuable suggestions based on their previous experience in organizing highly-interactive events. As the planning for the event started well in advance, the event run smoothly with no surprises.

WHAT ENGAGEMENT METHODS DID YOU USE?
1. Co-creation workshop

This workshop was a hands-on, highly interactive event where the participants designed innovative solutions to air pollution in cities alongside researchers and Science Gallery Dublin staff.

Why did you choose it?

Co-creation workshop enables designing new solutions in a highly interactive and engaging manner.

How did you deliver it?

Participants were given the challenge of designing concepts for a multi-functional solution that reduces pedestrian exposure to air pollution. The design was to have multiple functions, be no taller than a person, require low cost to build and maintain, be built from materials that last in Irish weather, and not be an obstacle for pedestrians or traffic.

Step 1 Inspiration.
The participants were provided with a brief introduction to the challenge of air pollution and ways to address it. A presentation, providing few examples of creative and fun solutions were delivered to inspire and encourage the participants to think outside the box.

Step 2 - Ideation & Concept Development.
Individuals were asked to come up with 10 ideas and draw them using pens and post-it notes. Teams then discussed all of the ideas and identified the best 3, which were sketched and put up on an idea wall. The whole group then voted on the best idea for each team. Each team discussed and selected their best idea based on the group's feedback.

> “I was delighted to host the Hack the Air event at the Science Gallery Dublin on March 14, 2018. It was absolutely brilliant for us to see all of the creative ideas and inspirational prototypes built by the participants for such a complex problem as air pollution. Events like this stimulate conversations between citizens, scientists, and education professionals in order to encourage a shared responsibility for science.”

Gillian Roddie, Interim Education and Learning Manager at the Science Gallery Dublin

Step 3 - Prototyping.
The chosen design was then built as a scaled-down solution using the provided materials.

Step 4 - Presentations.
Each team created a 5 minute story which they used to present their prototype to the group

Materials used

The Living Lab provided an extensive variety of materials including cardboard, empty bottles, footballs, PVC tubes, tape, yarn, and much more (See photos below)

WHAT WENT WELL?

- The event was well planned and organised - it ran smoothly with no surprises.
- A number of wonderful ideas were created and 3 prototypes were developed.
- The participants were very excited to use the provided materials and build their prototypes - they enjoyed the hands-on approach a lot.
- There was a great collaboration between the team members.

WHAT WOULD YOU DO DIFFERENTLY NEXT TIME?

- Provide more feedback on the prototypes developed by the participants. The workshop participants were curious to know if their ideas are feasible and would their solutions work.
- Account for dropouts - from 21 sign offs, in total 13 participants participated. This can be partially explained by the bad weather conditions in Dublin that day.
- Ask facilitators to make notes during the event to capture key items discussed in the groups.

WHO WAS INVOLVED?

Individuals aged 15-25 with a passion for bringing ideas to reality were invited. We recruited a young audience because we thought that this age group would have a lot to offer in terms of contributing innovative ideas to the Living Lab. Meanwhile, we feel it is important to provide creative, problem-solving individuals with opportunities to apply and build their skills so that they may contribute to sustainable solutions in the future. The audience had a good male/female balance which is quite uncommon in STEM (science, technology, engineering, and mathematics) related activities so it highlighted the potential of this framework to improve the involvement of females in STEM fields.

HOW DID YOU RECRUIT YOUR PARTICIPANTS?

The information about the event was published one month before the event and was promoted though the Science Gallery website. In addition, the information was shared using Facebook, Twitter, and internal mailing lists. As the duration of the event was 4 hours, a light lunch to the participants were provided. However, no other tangible incentives were provided.

OUR ADVICE TO OTHER LIVING LABS

- Collaborate and join efforts with other organizations, initiatives or projects
- Start planning well in advance
- Have a sufficient amount of experienced facilitators - they keep everyone involved and teams focused while ensuring a friendly and positive atmosphere.

WHAT WAS THE FEEDBACK FROM PARTICIPANTS?

To conclude the event, we asked all the participants to share what they liked about the event the most and what we could do differently to improve it. Overall, we received very positive feedback from the participants. They enjoyed 'getting their hands dirty' and turning their ideas into prototypes a lot. Some of the participants even wished they could spend more time working on the prototypes. A few felt that they would like to receive more feedback from the researchers and have more time dedicated to discussing the feasibility of their prototypes.

NEXT STEPS (WRITTEN IN SUMMER 2018)

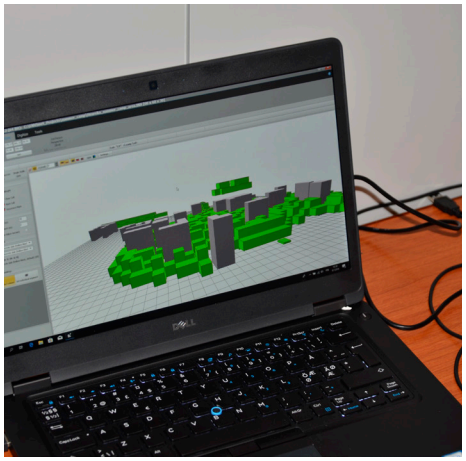
The prototypes developed by participants will be modelled to find out if the concepts can be made into feasible solutions (as part of WP6). Participant concepts along with the research results on the low boundary wall effectiveness will be presented and discussed with local city stakeholders to facilitate scaling up of the intervention.

VANTAA
CITY OF THE FUTURE

Facilitators: 1 researcher from the Finnish Meteorological Institute (FMI), 1 summer camp team leader

Participants: 40 young people split in two groups

Duration: Two - 3 hours workshops



ACTIVITY DESCRIPTION

This Living Lab event was embedded in the annual summer camp activity of the Finnish Science Center, Heureka. For one week during the summer holidays Heureka offers different activities in natural science to young people at the age of 13 to 16. This year future city planning was one of the items. The idea was to show to young people how good or bad city development can be seen by using computer-based tools like micro-climatological simulation software.

WHY DID YOU CHOOSE THIS ACTIVITY?

This was the first time Heureka has offered a summer camp session with the heading 'future city planning'. This was also the first time they invited experts from outside the centre to lead the sessions, so there were no guidelines to choose the best format for the event. We therefore decided to split the event in two parts. On the Monday of the first part of the summer camp week, we gave a short introduction to the problems associated with city planning. After that we divided the young people into groups of two. Participants were asked to design their future city on paper using colored pens and small plastic bricks. In the second part of the summer camp, the models were transferred into the micro-climatological simulation software ENVI-met using laptops. For the analysis of the models we needed larger and faster computing capacity, we conducted the simulation on FMI computers. On Friday there was a one hour feedback session to show the analysis results to the young people and have a final discussion with them.

WHAT WENT WELL?

- Cooperation between the young people, team work, even when they often didn't know each other.
- Intensive creative city planning phase, all models were different.
- The young people were interested.

WHAT WOULD YOU DO DIFFERENTLY NEXT TIME?

- There was only one researcher in charge at the sessions, therefore individual guidance was not possible.
- Give information beforehand about the aims of these sessions.
- More time for the feedback session.

WHO WAS INVOLVED?

The Finnish Science Center has a nation-wide reputation. Although most of the young people came from the metropolitan area, there were also participants from elsewhere in Finland. There were almost as many girls as boys present. The majority of the young people lived in single-family houses, which could influence the attitude towards specific types of city planning.

HOW DID YOU RECRUIT YOUR PARTICIPANTS?

The camps are part of Heureka fee-based offers for young people during the summer time. The camps are very popular and most of the participants have attended them for several years.

WHAT WAS THE FEEDBACK FROM PARTICIPANTS?

Normally after the summer camp week the participants fill out a feedback sheet with eight questions to give their response about the whole week. Unfortunately this was not done for the first week and the second week participants gave no information on their opinions about the City of the Future planning event. The participants had to judge eight different events during the week. The participants had to judge eight different events during the week, and the 'City of the Future' was viewed upon favourably.

The Heureka staff expressed how successful they felt the sessions had gone, and praised the concentrated behavior of the young people during the sessions.

NEXT STEPS (WRITTEN IN SUMMER 2018)

There is still one summer camp week left at the beginning of August. Due to the good experience from the first two weeks, there will be no changes in the process of the session. After all sessions there be almost 30 different models to show to the official city planners of Vantaa. Maybe this will help the Vantaa LL project.

OUR ADVICE TO OTHER LIVING LABS

- For working with children and young people take your time to plan the event and during the event. Explain things simply and clearly.
- Even in small or short events you can achieve high aims by motivating the participants right.
- Be yourself.

ACTIVITIES & LEARNINGS

BOLOGNA
LET'S PLAN THE GREEN TOGETHER!

Facilitators: Beatrice Pulvirenti and Sara Baldazzi (iSCAPE) Alessandra Bonoli, Sara Pennellini and Enrica Santolini (ROCK)

Participants: 45

Duration: 2.5 hours

"Participants were very interested in their tasks which covered topics from green solutions to related aspects such as mobility, alternative energies and so on..."

Bologna workshop facilitator

ACTIVITY DESCRIPTION

The "Let's Plan The Green Together!" event invited participants from the local community to share their thoughts and ideas on how trees could improve wellbeing in Bologna. We started by mapping how we might make a plan for tree-planting in the city alongside the benefits of such a plan. We also explored in some detail what it meant to 'co-create', how a scientific approach might help inform the plan, and how best to test our own assumptions and decision-making processes along the way. The session kicked of with a presentation on the role of trees in the mitigation of the 'heat island' effect and the spread of pollutants, before participants then broke into groups to explore problems and potential solutions in each of four regions of the city: via Marconi, via Laura Bassi, via Zamboni and via del Lazzaretto.

WHY DID YOU CHOOSE THIS ACTIVITY?

The activity was chosen to actively explore what could be achieved by a focused urban green planning initiative, with a particular focus on planting trees and the various impacts trees can have on pollution. The event brought together young people from different parts of the world who were less familiar with Bologna and therefore able to provide a fresh perspective on challenges the city faces. The students were also invited to participate actively in the Bologna iSCAPE Living Lab, with activities organised with facilitators from further afield – including two from the ROCK project, a separate European H2020/UNIBO partnership project that focuses on historic city centres.

> "I gained an insight into the difficulties of financing environmental projects and finding ways to engage with the authorities"
>
> Bologna workshop participant

WHAT ENGAGEMENT METHODS DID YOU USE?

1. Co-design workshop

Why did you choose it?

Having attended a similar workshop at Future Cities Catapult Urban Innovation Centre in London, it was felt that this would be the best way to engage the target audience – young adults.

How did you deliver it?

Step 1: Preparing the information material.

We worked with key Bologna stakeholders to prepare the materials needed for the workshop in the weeks leading up to the event.

Step 2: Introductory presentation

The workshop kicked off with a PowerPoint presentation that introduced the iSCAPE project itself, before then focusing on the importance of the trees and green infrastructure (GI) in reducing urban air pollution and the mitigation of the heat island effect.

Step 2: Introductory presentation

The workshop kicked off with a PowerPoint presentation that introduced the iSCAPE project itself, before then focusing on the importance of the trees and GI in reducing urban air pollution and the mitigation of the heat island effect.

Step 3: Group sessions – focus on specific Bologna city districts

After the opening presentation, the participants were divided into groups, one for each of four city districts – via Marconi, via Laura Bassi, via Zamboni and via del Lazzaretto. Each group took a virtual tour of their district on Google maps, and was asked to highlight on their printed maps which zones they thought might be most affected by varying environmental impacts, such as air pollution, noise pollution, and summer heat.

Step 4: Group sessions – focus on solutions

Each group was then split again into two sub-groups, one to focus on Green Infrastructures (GI) for that area, the other to explore communication strategies to engage each area's citizens. This step concluded with each group reforming to consolidate their thoughts and nominate a spokesperson to present them to the whole group.

Step 5: Group presentations of conclusions to each other

Each nominated spokesperson then presented their group's ideas to compare and contrast each groups findings.

Materials used

Laptop with Google maps, printed maps, projector, large white poster-size pad of paper, coloured paper sheets, cardboard, scissors, adhesive tape, coloured pens/ pastels etc., air padding, price list of various tree types, smartphones (to capture pictures and film clips of the event)

"The workshop showed the challenges of developing green spaces in historical areas, where you have to accomodate narrower spaces and respect the appearance of the street"

Bologna workshop participant

WHAT WENT WELL?

- More people than expected attended the workshop.
- Participants were all very engaged and carried out the assigned tasks enthusiastically.
- A number of attendees asked to participate in further living-lab activities.

WHAT WOULD YOU DO DIFFERENTLY NEXT TIME?

- Allow more time for each of the activities.
- Explain the scope of the workshop more clearly.
- Provide a list of concepts and objectives for the participants to keep in mind throughout the activity.
- Use a room with tables instead of desks, and free walls to hang posters on.

> "The workshop showed how green areas can reduce hotspots temperature in cities and increase citizen wellbeing by reducing air pollution through increasing the number of trees"
>
> Bologna workshop participant

WHO WAS INVOLVED?

The event was attended by international students aged 20-30. They were chosen as the workshop was designed to engage university students in the broader concerns of the iSCAPE project. Turnout was greater than expected during an intense period of university lectures, and the workshop successfully increased the participants' awareness of the effect of GI on air pollution within their cities.

HOW DID YOU RECRUIT PARTICIPANTS?

As well as through the main social networks (Facebook, Linkedin, etc.) the event was also published on school hall notice boards, and was announced to students by University of Bologna colleagues during lessons and lectures. Further help promoting the workshop came from the campus green office and the ROCK H2020 project with whom we partnered. Attendees of previous iSCAPE Bologna Living Lab science workshops were also invited to attend.

WHAT WAS THE FEEDBACK FROM PARTICIPANTS?

Feedback from the event was collected via a questionnaire at the end of the event itself. Noteworthy feedback at the positive end of the spectrum indicates that participants gained valuable insight in how to run a co-creation workshop. They also broadened their practical understanding of green infrastructure and how it impacts, and is impacted, by a breadth of considerations including: financing challenges, communicating the value of initiatives to the authorities, and how areas of historical significance are harder to change.

One especially significant concern expressed was how historic buildings might limit the implementation of green infrastructures. Participants explored this challenge by trying to identify places to deploy green solutions between streets and squares.

Negative feedback was less specific, but included a measure of disappointment that the workshop could only really dip into this topic due to time constraints. This in turn created some frustration about a lack of deliverable actions being created from the workshop, especially at a time of heightened university course/exam activity/pressures.

NEXT STEPS (WRITTEN IN JANUARY 2019)

As well as publishing the learnings from the event in detail, plans at this stage are limited to exploring continuing ways of working together outside work while we await confirmation of any further engagement from the city on these interventions.

OUR ADVICE TO OTHER LIVING LABS

- Word of mouth is a great method for recruitment
- Don't underestimate your participants' enthusiasm – and nurture it for increased word-of-mouth recruitment
- Encourage participants to communicate and discuss
- Don't over-manage the conversation – open questions are particularly effective
- A number of 'good ideas' were generated, and next steps might include exploring funding options for some of them
- Learnings from the event – both positive and negative – should (and will) be employed iteratively to improve future events or research opportunities.

GUILDFORD
ISCAPE AIR POLLUTION SOLUTIONS & CO-CREATION WORKSHOP WITH BURPHAM COMMUNITY

Facilitators: Prashant Kumar, Thor-Bjørn Ottosen, Sachit Mahajan, Gopinath Kalaiarasan and Abhijith Kooloth Valappil

Participants: Approximately 30

Duration: Approximately 3.30 hours

"I felt that we had achieved something really positive, and look forward to future cooperation"

Liz Critchfield, Secretary to the Burpham Community Association

ACTIVITY DESCRIPTION

The UoS team organised an air pollution workshop in collaboration with Burpham Community Association (Burpham is a part of Guildford). Following a talk from Professor Kumar to set the scene, there was a co-creation activity where participants split into smaller groups to explore Green Infrastructure (GI) solutions for the local area. The session concluded with each group presenting their conclusions to the others, and a general discussion about air pollution in Burpham.

WHY DID YOU CHOOSE THIS ACTIVITY?

The Guildford Living Lab focuses on GI (trees and hedges) as a means to reduce air pollution exposure. The focus area of this workshop was the Burpham neighbourhood in Guildford, which is characterised by a number of large heavily trafficked roads. Through dissemination and co-creation approaches, the citizens were able to participate in meaningful discussions about locations and types of GI as well as idea generation for air pollution mitigation in Burpham.

WHAT ENGAGEMENT METHODS DID YOU USE?

1. Presentation, participatory mapping, group presentation

Why did you choose it?

The placement and design of GI, and how it can reduce air pollution exposure, is a research area with many large knowledge gaps – for example, aspects such as

width, height, density and species type are under researched. As such it makes sense for both citizens and scientists to collaborate on forming solutions, as this across-the-board understanding of the benefits, and by extension ownership of the solutions, paves the way for public acceptance and thus more likely implementations.

> "I feel sure this event has not only helped bring both University and local residents closer together but also now provides us with an opportunity to take such studies forward in a jointly cooperative way"
>
> Tony Teal, the former Chairman of the Burpham Community Association

How did you deliver it?

Step 1 - Presentation

To ensure the participants, each with different background knowledge, could participate in the discussions, Professor Kumar set the scene by covering topics such as:

- What is air pollution?
- How can trees & hedges near roads help reduce exposure to air pollution in Guildford?
- iSCAPE research results
- General results on the effects of GI.

This presentation led directly into a co-creation activity, where the participants were divided into smaller groups.

Step 2 - Participatory mapping

Participants marked in coloured pen on large A0 maps where, and what type, of GI they would like to see in Burpham. This then helped facilitate a group discussion about GI.

Step 3 - Discussion

Each group then presented their conclusions from the participatory mapping to the others, with discussion points for each that included:

- Where they would like to see GI.
- What type of GI they would like to see (photographs of different types of GI were used for this part of the discussion).
- The specific outcomes of the individual group work.

Once everyone had presented and discussed their findings, this part of the exercise concluded with a general discussion about air pollution in Burpham.

Step 4 - Air pollution quiz

Using an interactive display system, the event finished with an air pollution quiz that helped review and reinforce the learnings from steps 1-3 outlined above.

Materials used

Slideshow, A0 maps of Burpham based on OpenStreetMap, colored pens, instructions to facilitators, photos of green infrastructure, interactive display system and printed material from iSCAPE.

WHAT WENT WELL?

- Good number of participants.
- Good interest in the topics and the methods used.
- Participant engagement throughout the event was exemplary.
- The workshop proceeded (mostly) as planned.
- Good participant engagement with air pollution research.
- Enthusiastic response to engagement in actual research (e.g. hosting citizen science sensors).
- Enthusiasm from participants for harnessing this knowledge for political change.

> “Excellent workshop today in Burpham Guildford. Volunteers were briefed and educated on air pollution in the local community. Amazing presentation from Professor Kumar and enlightening talk explained what air pollution really is. Thank you for providing solutions for our daily life too”
>
> Puran Bhardwaj, Director
> Expedition Leaders

WHAT WOULD YOU DO DIFFERENTLY NEXT TIME?

- Whilst potentially time-consuming to produce, participants should be provided with detailed maps of pollution and existing local GI prior to drawing proposed GI on the maps.
- Explain the purpose of the co-creation activity more clearly to participants before starting.
- Stick to the time plan to avoid people having to leaving before the activity is concluded.

WHO WAS INVOLVED?

The event was organised in collaboration with Burpham Community Association, who had long requested an air pollution presentation, and took place at Burpham Village Hall. As such the vast majority of participants were Burpham residents recruited by the Burpham Community Association. Demographically, the group consisted mostly of elderly people.

HOW DID YOU RECRUIT YOUR PARTICIPANTS?

As well as the recruitment activities undertaken by the Burpham Community Association, the event was advertised in the Burpham Pages in the local newspaper with a poster produced by the UoS Team. The communications department at the UoS also sent out several tweets via @UniOfSurreyCPE, @AirPollSurrey, and @iSCAPEproject, as well as directly emailing local residents associations and groups who might be interested in the workshop. Participants were not incentivised through tangible compensation

OUR ADVICE TO OTHER LIVING LABS

- Preparing materials for a co-creation activity like participatory mapping is very time-consuming if created from scratch. If possible, divide this task with the organisers (in this case the Burpham Community Association) to make it more manageable.
- Ensure the rationale behind discussions is clear (e.g. why we are discussing the aesthetics of GI?).
- Ensure the first presentation part of the event focuses on solutions you want to discuss as a part of co-creation, whilst also providing a broader overview of the problem.
- Ensure participants consent to their photos being taken as some might prefer not to be photographed.
- Wherever you can provide participants with as much information as possible (such as pollution maps, aerial photos etc.) to qualify discussions.

WHAT WAS THE FEEDBACK FROM PARTICIPANTS?

Burpham Community Association has provided feedback by email. Questionnaires were also distributed as another means of feedback. Attendees were very positive about the event.

NEXT STEPS (WRITTEN IN JANUARY 2019)

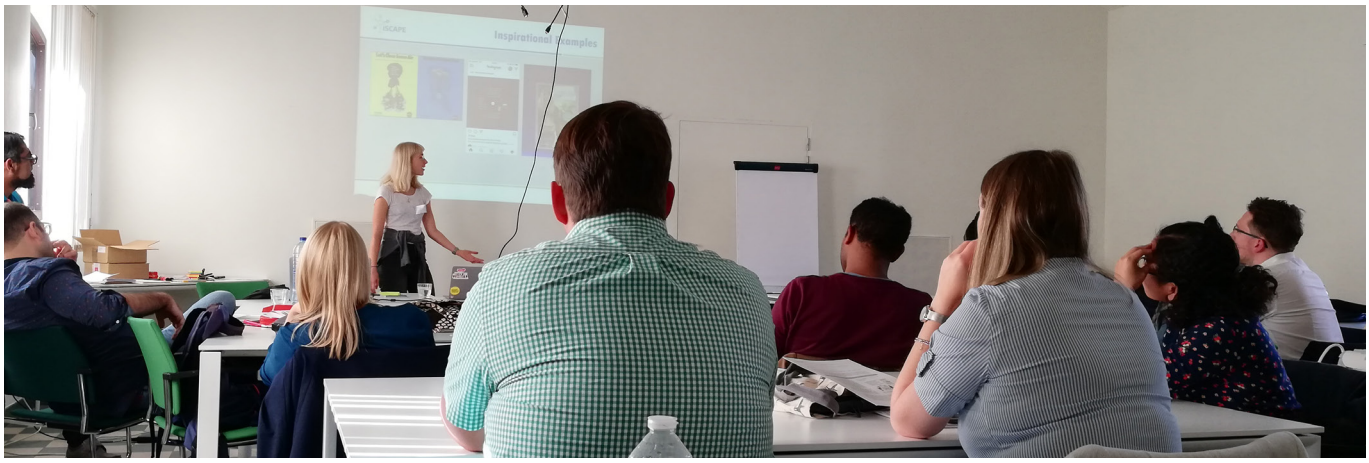
The workshop revealed significant engagement with air pollution issues among the participants, and work on planning future collaborations (e.g. citizen science activities) is ongoing. Plans are also underway to try out future greening (hedge rows) options at a number of nearby locations (along the busy roads, schools and parks) identified in the co-creation workshop.

HASSELT
CO-CREATING AIR QUALITY INFORMATION THAT DRIVES BEHAVIOUR CHANGE

Facilitators: Muhammad Adnan, Katinka Schaaf, Shiraz Ahmed, Syed Fazal Abbas Baqueri, Muhammad Arsalan

Participants: 25 Approximately

Duration: 2.5 hour



"The activity seems to me like solving a common problem through collective wisdom"

Graduate students of transportation and environmental sciences

ACTIVITY DESCRIPTION

The Hasselt Living Lab organised a co-creation workshop to design an informational intervention that encouraged sustainable and less polluted routes to school. The primary audience of this intervention were parents who drive their children to school every day. The workshop was part of the summer school organised within Hasselt in the 3rd week of September 2018 and was attended by participants from the Summer School, including other iSCAPE Living Lab representatives, University Hasselt students (with a background in environmental sciences), as well as other collaborators such as Flemish environmental agency representatives and parents living in Hasselt and its surrounding region.

- Create a poster or document to communicate your thoughts (visually through drawings, collages or storyboards) - Encourage them to use the existing examples
- Every team presents their motivational "Air Quality Information / Visuals" to the audience
- Identifying what works well / outcome

WHY DID YOU CHOOSE THIS ACTIVITY?

The Hasselt Living Lab seeks to encourage sustainable and less polluting changes in mobility behaviours among citizens. With that in mind, a general informational intervention was designed and implemented, as well as, based on learnings from previous experiences, another informational intervention with a more targeted audience (in this case parents who drive children to school) focusing on mobility behaviours (home-to-school routes and transport modes).

Hasselt Living Lab designed an informational package for this intervention that was quite detailed (2-3 A4 sheets) – and therefore unsuitable for young people or busy parents. For this reason we developed the co-creation workshop to gain a better understanding of what would the target audience reads/watches and and which might influence change in their mode of transport or route. We also further refined the information material based on how this specific audience might respond to the given challenges, as well as what we felt they would like covered in the intervention.

WHAT ENGAGEMENT METHODS DID YOU USE?

1. Co-design workshop

Several methods were used within the co-creation workshop, including a warm-up exercise, collaging and completing a questionnaire based on the supplied information material.

> "I like the activity because it was fun and interactive session and in the meantime I learn"
>
> Researchers and experts from iSCAPE Team

Why did you choose it?

The co-creation workshop was designed and conducted in collaboration with Future Cities Catapult. The aim was firstly to introduce the concept of informational intervention. Then, based on that, to conduct a co-creation activity that formalised the information needed to encourage behaviour change from the target audience.

How did you deliver it?

The initial information material was designed by Hasselt Living Lab, which then sought input from the target group and relevant experts to ensure it could achieve its goals. This approach was taken to explore any alternative approaches with the audience that might enrich the information and materials to broaden its appeal to the target audience. For example, in developing a collage with infographics to convey a key message based on the answers from the questionnaires, some key shortcomings were identified.

Step 1 - Presentation

Dr. Adnan introduced an overview of the details and context of the informational intervention alongside identification of the target group and how required data might be collected. This helped focus participants on the overall goals of the intervention (i.e. how relevant information should be presented to the target audience to encourage behavioural change). The key points covered by the presentation were:

- The details and context of the intervention, its goals, and a brief discussion on why this informational intervention is important.

- How intervention can encourage parents to adopt more eco-friendly/less polluted routes between home and school.
- How such routes and different modes of transport affect the physical activity levels of the school-going children and their exposure to air pollutants.

Consideration was also given to what different types of data would be most effective for this informational intervention, and how it might be acquired. For example:

- School routes and mode of transport information of the target group to be collected from an online platform developed by Hasselt Living Lab.
- Pollutant concentrations at street level resolution available from the Flemish Institute of Technological Research.
- Walking and cycling network data available from open Street map.

Step 2 - Co-creation warm-up exercise

Following this presentation, we ran a brief Q&A session with the audience ahead of the co-creation exercise. The purpose of this was to explore what they considered most relevant to issues of changing mobility behaviours, and what information presented so far they felt most inclined to respond to.

Step 3 - Review and re-frame the information

Participants were then divided into six groups. Three groups focused on pollutant levels, whilst the other three focused on physical activity. Information packages were provided to each group and covered general information about physical activity or exposure to pollution, as well as maps with two hypothetical home-to-school route examples. Using the information provided, each group was then asked to review their information pack and consider issues relating to the visuals and data provided.

- What are your first thought when looking at the information pack?
- What do you think is good?
- What could be better or improved?

Each group then discussed and considered how the information might be enriched. For example:

- How might this information create behaviour change?
- What messages does the information sheet communicate?
- How could this information sheet be evolved and enhanced?
- What more could the information sheet provide, and in what format?

We also shared a number of successful examples, different ways that communicate data as well motivate the user to change their behaviour.

Step 4 - Co-creation activity

- Create a poster or document to communicate your thoughts (visually through drawings, collages or storyboards) - Encourage them to use the existing examples.
- Every team presents their motivational “Air Quality Information / Visuals” to the audience.
- Identifying what works well / outcome.

Having considered/ discussed the relevant visual communication methods to reach people, the participants were then encouraged to develop their own visuals/informative pieces with the help of images, magazines and diagrams. Their visuals had to be based on the most compelling data from the original information pack. The aim was to make their pack more impactful for its specific audience. The participants were asked to communicate their message on one A3 sheet using the provided materials.

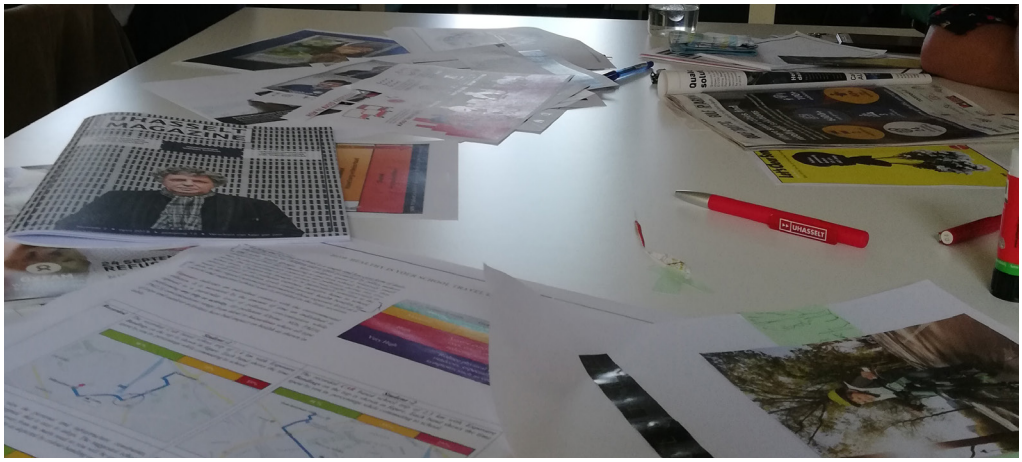
Step 5 - Group presentations

Each group then presented their co-created visual information pack to the other participants. Their presentations generated interesting questions and discussions on the visual information approaches that they had developed.

Step 6 - Feedback and summary

To conclude, feedback on the whole co-creation workshop – both positive and negative – was collated from all. Participants shared their thoughts about the workshop on post-it notes.

> "It was an activity with a high level of engagement and generated a lot of discussion but we felt stress due to time pressure"
>
> Practitioners from various organizations within Belgium such as Flemish Environmental Agency



MATERIALS USED

PowerPoint slides, A3 informational intervention sheets, questionnaire worksheets, plain A3 sheets for development of the informational visuals, small visuals based on the themes of air quality and physical activity, drawing tools, post-it notes.

WHAT WENT WELL?

- The presentation was well received and generated a lot of discussion, which laid a good foundation for the co-creation activity.
- A healthy cross-section of various groups, such as students, experts, other iSCAPE Living Labs representatives, collaborators and a few parents (i.e. the target group).
- Enthusiastic engagement from participants in understanding the informational material concerning the intervention.
- An encouraging number of suggestions for strengthening the information material – e.g. participants suggested presenting the information more simply where possible, and the addition of light-hearted imagery to broaden the appeal of the information – both of which have now been incorporated.
- The addition of real, measurable data on health as a result of changing a route was also suggested, and has now been included in the re-designed information pack.
- An event with school children and parents to emphasise the importance of behavioural change was also suggested.

OUR ADVICE TO OTHER LIVING LABS

- Always undertake a trial workshop to ascertain proper timings for each step of the activity.
- The activity provided clear evidence that the informational pack needs to be simplified for the participants and that the informational material as it contained too much detail and too many hypothetical scenarios for ease of comprehension. Based on this, several questions were asked on the worksheet. Whilst most groups demonstrated a clear understanding of the material, and also provided suggestions to improve this information, the facilitators felt that groups may have been better able to focus on specific suggestions if the information sheet had been more concise.

WHAT WOULD YOU DO DIFFERENTLY NEXT TIME?

- Improved time management for the different activities of this co-creation session.
- More time for discussion among the participants of the group.
- Fewer infographics for each group.
- Only one scenario should be presented in the informational sheet rather than two.
- Task could be simplified to help provide more appropriate answers to the questions.

WHO WAS INVOLVED?

Organised as part of a summer school by Hasselt Living Lab, this co-creation workshop had access to many presentations and session findings from other iSCAPE Living Labs, sensor deployments and installation training sessions. Due to the nature of the intervention, as well as the defined target group, other groups' feedback was also important and the summer school provided the best opportunity for this activity.

HOW DID YOU RECRUIT YOUR PARTICIPANTS?

Due to the very large scope of the summer school, it was easy to attract a good number of students, as well as stakeholders, representatives and other iSCAPE Living Lab representatives, along with a few representatives from the target group.

We used social media (Facebook) and City of Hasselt's communication channels. We also invited contacts of other key organisations (e.g. Flemish environmental agency) and channels within Hasselt University to promote the event.

The communication channels used were targeted towards the right mix of participants and attempts were made to ensure every relevant group enjoyed appropriate representation. For example, whilst student seats were limited for the event, Hasselt City, as a key stakeholder of Hasselt Living Lab, helped ensure communication reached a wider audience. The event was advertised 5-6 weeks before the scheduled date of the event.

WHAT WAS THE FEEDBACK FROM PARTICIPANTS?

Feedback was collected via a questionnaire at the event. Further comments were gathered via post-it notes at the end of the event as well. A selection of key comments indicate that:

- The personalised and locally relevant nature of the informational intervention was particularly appreciated by participants.
- Some participants shared the opinion that the target group should be f inancially incentivised to deliver the positive effects of the intervention.
- More information detailing health impacts in relation to specific behaviours would be appreciated by participants.
- It was felt that the use of more visuals would help communicate the informational intervention.
- Text within the information package needs to be more concise and include references.
- Overall, running of the workshop went well but, due to the high level of engagement.
- it overran by 15 minutes.

NEXT STEPS (WRITTEN IN JANUARY 2019)

- The outputs of this activity were very useful. The informational material has been re-designed and re-formulated by incorporating participants' suggestions.
- The next activity is to implement this intervention by recruiting parents who regularly escort their children to school. Recruiting is already underway, and by mid-February the intervention study will be completed.

Experiences with the cities

A significant factor in the evolution of each LL's intervention/pilot was input from the local municipality. From having spoken with the LLs and reviewing their activities, a connection was observed between when LLs get input from the municipality and how far their intervention/pilot has evolved – i.e. early municipality input seems to lead to greater progression of the intervention/pilot. Obviously this is in part due to the LLs efforts to tackle local city problems, being helped by clear direction from the municipality steering the direction of LL activities.

- **Early input from the municipality**
  The Bottrop LL had a very strong relationship with their municipality even before the proposal for iSCAPE was written (the municipality almost became an iSCAPE partner in its own right). This strong relationship ensured that the Bottrop municipality were involved throughout the process and the LL was strongly aligned to the municipality's goal of raising citizen awareness of air quality issues. In addition, the municipality provided resources (manpower, facilities etc.) to enable the development of the Wandering Parade 2018 (pilot).

  The Bottrop LL and the municipality are currently planning for the Wandering Parade 2019, and making refinements based on learnings from the previous year (e.g. minimising municipality person-hours, selection of trees etc.).

  The Hasselt LL also received clear direction from their municipality regarding the behavioural intervention tool the LL was developing. Early direction from representatives of the Mobility department and the Environment department (in terms of specific information being delivered to citizens, customisation for the individual user etc.), ensure the LL tool would generate data specific to the individual end user.

- **Finding the 'right' individuals/teams/departments within a municipality is not a trivial process and relies on timing**
  It is easy to perceive a municipality as a single cohesive organisation. In fact they are made up of many departments, each with their own goals, tasks, schedules and politics. Some LLs describe early engagement efforts where they spoke with a particular department within the municipality, but were then referred to other departments or people, until they eventually connected with a suitable sponsor.

  However, even when a sponsor (an individual, team or department) is found, that doesn't mean the sponsor can necessarily move forward. They may be constrained by lack of finance or resources or other more pressing needs. For example, one LL reported having successfully connected with a department, only to find themselves 'on hold' whilst that department prioritised a long-term master planning exercise.

- **Municipality departments are interested in different things**
  LLs are likely to be interacting with one or more departments within a municipality, each having different interests and expectations, which may vary in the degree to which they match the LL's pilot or approach.

  One LL described such an experience where a particular department, Department of Environment and Traffic, was only interested in quantitative data concerning the pilot whereas another department, concerned with Smart Cities, was most interested in the engagement and co-creation methods used by the LL.

- **Municipalities increase engagement when LL has raised its profile**
  Some LLs report that municipalities have taken a much greater interest in their work after the LLs raised their profiles locally and had built up a body of activities and events.

Major challenges faced by LLs

Underestimated effort and time required for engagement and outreach

For the majority of LLs, the amount of person-hours and elapsed time required to establish relationships with the municipality, citizens and other stakeholders far exceeded their expectations. This was particularly pronounced for those LLs starting with a small ecosystem of external local contacts or where relationships, especially with the municipality, were plutonic (not having formally worked together previously).

LLs should factor in time to form these relationships, and realise that relationships are built up through several encounters and introductions over time, as advocates for the LLs introduce more senior colleagues or peers, or other suitable organisations. In short, LLs should dedicate a significant amount of time to relationship building.

Recruitment of suitable participants

Issues with respect to recruitment are impacted by building relationships, being flexible to participant constraints, and giving them a reason to partake.

Some LLs commented on experiencing difficulty engaging with citizen groups and that such groups were not responding to email invitations to take part in LL events. LLs must recognise that an essential part of relationship building is to meet in person, and given that it is the LL seeking others to partake in LL activities, the responsibility is on the LLs to reach out to these groups, and to attend events where they can meet these groups face-to-face.

LLs must be flexible to the constraints (e.g. meeting durations, meeting frequencies etc.,) of the target audience. LLs need to design their activities around these participant constraints wherever possible. It's important to remember that, particularly in their formative stages, LLs need participants more than the participants need LLs.

Participants need a reason for investing their time in LL activities, especially for longer activities or for activities where they are required to do something (e.g. co-creation). Our LLs needed to rely on participants being motivated by the LL activities alone (e.g. offering insights on what the LL was doing locally, insights on the method employed or networking opportunities). It is clear that citizen recruitment would have been less problematic, if they had more personally valued incentives (e.g. data, financial, or privileges etc.,). Many LLs were able to successfully recruit participants by 'piggy-backing' off existing events and/or recruiting for future events during their own events.

The Hasselt LL experienced significant data privacy issues, which were eventually overcome, during recruitment due to the nature of their intervention requiring access to the participant's location and for the participant to be identifiable so that personalised recommendations could be made.

Maintaining participant motivation

Participants are likely to experience a drop in motivation if they don't feel any benefit from the activity. This does not, however, need to be financial or commensurate. LLs need to understand what motivates their participants to engage and ensure that they appreciate their own value to, and from, each activity. This was not an issue for most of the LLs as they did not run a connected series, and therefore the same participants did not need to return.

This was an issue, however, for the Bottrop LL as they noticed that some participants, who took on tree tending responsibilities after the Wandering Trees parade, experienced a drop in motivation. Upon reflection, this could have been for several reasons – e.g. duration of care was too long, a

long hot summer which meant that trees needed more care than expected etc. The learning from this experience for the Bottrop LL is to ensure that any such responsibilities for the Wandering Trees Parade 2019 will be much shorter.

The Vantaa LL were able to build motivation from one of their events (involving urban planning co-creation) with students that led to a previously unplanned follow-up session in which the LL played back the analysis of the co-created models.

Building relationships with municipalities

Building productive relationships with municipalities is high on the agenda for our LLs.

For some LL, this relationship was strong before iSCAPE started and for the others it has been something that they have been working on since the start of the project.
The experiences of our LLs with municipalities, outlined earlier in the document (p. 45) are now at a stage where many LLs are about to meaningfully engage with the LLs around specific pieces of work.

Upon reflection on their relationships with municipalities, the Vantaa LL suggested that having a LL representative embedded within the municipality for some period of the collaboration would have been very valuable when discussing and planning work. It would have greatly helped facilitate the rapid organic development of a strong and more meaningful municipality-LL relationship.

Permissions and approval

LLs need to factor in time for gaining permissions to both undertake research with people and deploying interventions in the city itself. However, it is not always known that a particular permission is required, who the authorising body might be, or how to apply.

Our LLs had to, or will have to, resolve the following permission related issues:

- Further ethics approval (resolved)
  - Guildford LL
- Deployment of green infrastructure (resolved, on-going)
  - Dublin LL
  - Guildford LL
- Data collection and privacy (resolved)
  - Hasselt LL
- Institutions of learning or care (resolved)
  - Bottrop LL
  - Dublin LL
  - Hasselt LL
  - Vantaa LL

Lack of user research expertise in-house

From the start of the iSCAPE project, it was clear that individual LLs would undertake and run dissemination, engagement and co-creation activities themselves, despite many lacking significant experience of co-creation activities in particular. The LLs were supported by FCC through training and regular guidance, and have now undertaken an array of these activities themselves.

Some LLs flagged a lack of skills in-house for designing or facilitating such activities, and that they had to learn these skills over and above their technical skills. Most of the LLs embraced and enjoyed this experience of learning these new skills and can now see clear and tangible benefits to their LL work and academic research.

Audience definitions of what is possible

Many of the LLs sought participation from specific people groups. One of the biggest groups were young people (ranging from kindergarten to university students), which in itself is a wide spectrum. Each of these groups have particular strengths/weaknesses which in turn determine which activities and level of involvement the LL can deploy. For example:

Activity considerations

- Duration
- Location
- Timing
- Eligibility of personnel (security clearance)
- Complexity
- Safety
- Language (actual language used as well as level of technical language used)

Permissions

- Consent
- Photography or videography
- Data protection
- Public relations
- Chaperones/parental oversight etc.

Other

- Inclusion of widest possible audience
- Accessibility etc.

LLs must carefully weigh up the objective of the activity for a given audience group and tailor the activity for that group. This is especially critical if the LL has little or no experience of interacting with that audience group in LL activities. However, LLs quickly accrue experience as they interact with specific audiences over a series of events and have reported refining their approach iteratively for each new event based on previous events.

Activity planning

As with any activity, things sometimes don't quite go as planned. It's vital to have a Plan B (and perhaps even C and D!) ready for such eventualities.

Two LLs reported needed to radically redesign important activities with key audiences due delays in receiving sensors that formed a central part of their activity. Both LLs were able to meaningfully redesign their activities.

In Bottrop, the municipality described how the planned number of municipality people-hours was exceeded 30 times for the Wandering Trees Parade 2018. Despite this the Wandering Trees Parade 2019 was never in doubt. Instead the lessons were learnt and the efficiencies identified.

Linking activities to intervention/ pilot advancement

One of the objectives of the LLs is to advance their intervention through co-creation with citizens and/or stakeholders. For some LLs, co-creation was not something that could be done immediately for a number of reasons, such as the need to raise awareness of the LL, waiting for municipality engagement, and learning co-creation skill-sets etc. Having overcome the many challenges faced, all LLs have made significant progress towards this goal.

The clearest example of advancing a LL pilot is the Wandering Trees Parade 2018 in Bottrop. This pilot has had strong municipality support and guidance from the outset, and has involved citizens and stakeholders at most, if not all, stages of development. It is now undergoing a second iteration for the upcoming year.

The Hasselt LL has also been able to iterate on its principal pilot, and is now using that experience to guide the development of a second pilot.

Miscellaneous issues

The Hasselt LL reported that the issues of air quality and air pollution were thought to be non-issues in a small city such as Hasselt

The Bottrop LL reported that the unexpected long, hot summer as well as the summer holidays, created logistical challenges as well as contributing to fatigue amongst the participants chosen to care for trees from the parade.

Outcomes and impact

When compiling the first CFR, information about outcomes was not sought from the LLs. This was rectified for the second CFR and the main impacts were:

Suggest we title this Outcomes: Municipality engagement and future plans

For almost all the LLs, there is ongoing or future municipality engagement in progress or planned.

- **Bologna LL** - Do not anticipate any imminent municipality engagement concerning their current pilots. Though they anticipate that there will if further EU funding is secured for projects relating to the current pilots (especially those that were inspired by the co-creation)
- **Bottrop LL** - The Wandering Trees Parade 2019 is being planned now with the full backing of the municipality. It is also cited by the municipality as a good example of collaboration.
- **Dublin LL** - The municipality's Smart Cities team has promised to help the LL with dissemination via the municipality's Smart City website, with locations, sensors and calibrations
- **Hasselt LL** - The municipality is actively seeking to help with automating, scaling up and possibly funding the LL's pilot (the behavioural intervention tool)
- **Guildford LL** - Guildford Borough Council are currently hosting the LL's interactive tool (pilot)
- **Vantaa LL** - Will be working with the municipality on modelling urban green infrastructure within Vantaa

Tangible Impacts

- **Behaviour change**
  The municipality of Bottrop has adopted the recommendations from TUDO regarding how to encourage people to dwell in Berliner Platz during the summer (a place where there was previously no cause to dwell).

- **Behaviour change**
  The personal mobility behavioural intervention tool from Hasselt has shown evidence of behaviour change.

- **Requests to return**
  A number of LLs have been invited to return to conduct workshops at the same venue (summer schools etc.) or have been enthusiastically referred to other groups by previous participants.

Raising awareness and dissemination
The area in which all LLs especially excelled through series of activities, events and use of social media. The LLs have directly interacted with 1201 people, held 33 events/activities and 116.6 K social media impressions between January 2018 and January 2019 (when most of the co-creation and citizen engagement took place).

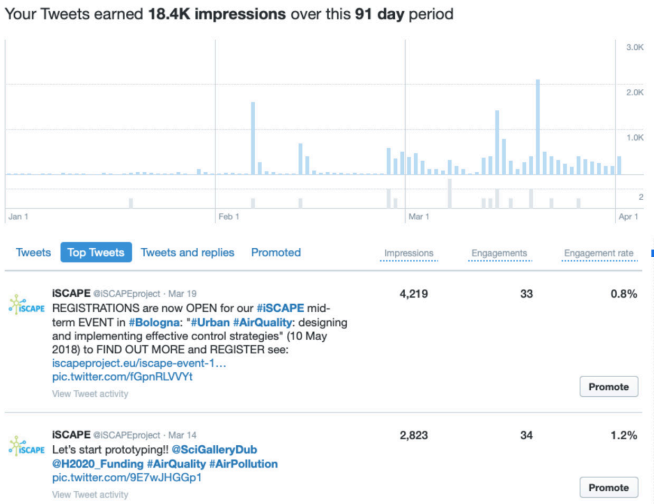


Figure 8: iSCAPE Twitter statistic screen grab 2018. At the beginning of 2018 Bologna and Dublin had the highest impressions with their tweets about the registration for the urban Air Quality event and the Playful Lego activity in the Dublin Science Gallery.

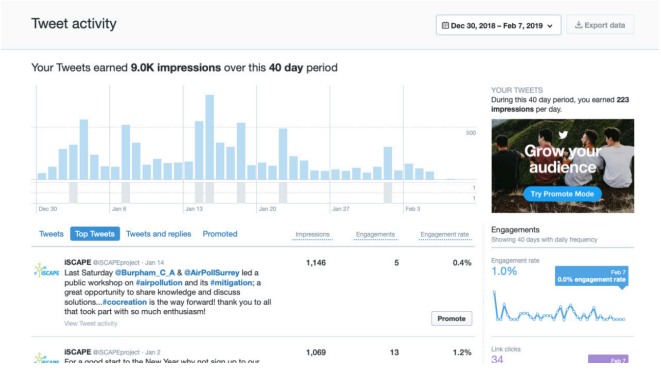


Figure 9: iSCAPE Twitter statistic screen grab 2019. Over the Christmas and NYE period the iSCAPE social media channels had less engagement, with the highest impressions being attained by a tweet concerning the Guildford co-creation activity on the 14th Jan in Burpham.

The iSCAPE communication team shared all iSCAPE Project events and co-creation activities via social media channels and the website. Twitter emerged as the most popular and active platform. The figures below show a summary of impressions from Jan 2018 - Jan 2019, with the top posts achieving between 1,000 - 4,200 impressions. The iSCAPE Twitter account retweeted the individual LL, citizens, and cities that shared content relevant to iSCAPE.

The Dublin LL raised their profile nationally with their Hack The Air event (January 2017) that involved the use of colourful plastic bricks, and which later influenced their kids' book 'The Air We Breathe' (2018). Both posts tweeted by Francesco Pilla (iSCAPE Coordinator and Dublin LL lead) reached high impressions and 25-29 likes, and were retweeted by the iSCAPE twitter account.

Publications

A number of LLs are planning to write academic papers capturing learnings from their LL co-creation activities. This co-creation has also given some LLs ideas for new proposals for which they hope to get further EU funding:

- With respect to non-academic publications, the Dublin LL published a book for school children called, 'The Air We Breathe', as part of their Play and Learn series of workshops

The Guildford LL are writing best practice guidelines for green infrastructure for the mayor of Guildford.

Partnerships and collaborations

Over the course of the iSCAPE project to date, LLs have either interacted, collaborated and/or partnered with a number of organisations and companies, as they build their LL ecosystem. An overview of these organisations is provided below:

Bologna

- **ARPA-ER** - regional environmental protection agency
- **Urban Center** - center for analysis, communication, elaboration and co-production on urban transformations to cope with environmental, social and technological challenges
- **Municipality of Bologna**
- **Legaambiente** - Italian environmentalist association
- **Ariapesa** - citizen network formed by associations and groups of citizens unified by the defense of territory, environment and health
- **Cohousing Porto15 association** - cohousing initiative born for under 35 and who was

Figure 10: Francesco Pilla's tweet about their co-creation with school children activities.

interested in our workshop

Bottrop

- Municipality of Bottrop
  - Coordination Office Integrated Urban - Development / InnovationCity
  - Department of Environment and Green
  - Office for Green Area Management and Cemeteries
  - Environmental Planning Department
  - Business Development (Wirtschaftsförderung)
- Three local restaurants
- Kindergarten
- Primary School
- Bicycle Station at Berliner Platz

Dublin

- Trinity College Dublin
  - Department of Civil, Structural and Environmental Engineering
- Dublin City Council
  - Traffic Noise and Air Quality
  - Smart Dublin (Great Dublin Area)
  - Smart Docklands (Docklands Tech district)
- The Environmental Protection Agency
- University College Dublin (UCD), Office of the Vice President for Research, Innovation and Impact
- A playful city initiative
- Science Gallery Dublin
- Two local national schools (St. Catherine's and St. Brigid's Senior Girls)
- IBM Research and Innovation
- Met Eireann
- Irish Centre for High-End Computing (ICHEC)
- National Center for Atmospheric Research (NCAR)

Figure 11: Francesco Pilla's tweet about the Dublin LL book for kids, 'The Air We Breathe', which educates young people about air pollution and how they can combat it.

Guildford

- Guildford Borough Council
- Community organisations
  - Burpham Community Association
  - Guildford Labour Party
  - Guildford Vision Group
- Knightsbridge School
- Head-start Summer School
- Waterloo Festival
- An artist (creating a CitySkin)

Hasselt

- Stad Hasselt
- Flemish Institute for Technological Research (VITO)
- Partnering schools (intervention collaboraters)

Vantaa

- Vantaa City
  - Planning Department
  - Environmental Services
- Helsinki Region Environmental Services HSY
- Heureka Science Centre
- ClimateStreet.fi-project
- Forum Virium Helsinki
- Geography Lab of Turku city high schools

Feedback based on co-creation activities

An important aspect of the engagement and co-creation activities was to gather feedback on the workshop delivery and the iSCAPE LL approach. FCC encouraged the LLs from the outset to gather feedback both during and after their co-creation activities. The LLs were introduced to different ways of capturing valuable insights and feedback, such as the iSCAPE 'How to Guides' and FCC training days (2017) – one popular example of this was the 'Two Stars and a Wish' exercise, where participants note two positive elements and suggest one improvement for any workshop:

Figure 12: Two stars and a wish feedback collection template.

Data capture happened took place over the full course of the LL activities, and a steady improvement in the quality of feedback, discussions and lessons learned/reflection was observed over the two years. These documented iSCAPE workshop experiences of participants, cities and facilitators – particularly how the activities affected their understanding, mindset and approach to air pollution/quality – can be divided into four main areas of learning:

1. Increased awareness of air pollution and its impact on health

One of the WP2 objectives was to inform and educate citizens about local air quality issues.

This was integral to all of LL WP2 activities, from the initial introduction stages of the interventions/pilots right through to citizens co-creating with the LLs as they opened up to and encouraged wider public input and more diverse audiences.

The latest co-creation workshop in Burpham, Guildford, for example, raised awareness of local air pollution levels and the LL team demonstrated that issues with air pollution are not exclusive to cities like London, and that green infrastructure is one way to mitigate these problems.

The workshops highlighted a shortage of effective local campaigns contributing to educating people in the area who could co-develop solutions that actively tackle local air pollution levels.

"I felt that we achieved something really positive, and look forward to future cooperation." (Participant, Guildford)

"I feel sure this event has helped bring both University and local residents closer together

and now provides an opportunity to take such studies forward in a jointly cooperative way." (Participant, Guildford)

Other Feedback:

"The Hasselt LL increased the awareness of the negative effect of air pollution on participants' health" (LL Lead, Hasselt)

In January 2019, the Dublin LL organised a follow-up activity with the same group of young people they had collaborated with in April 2018. The team showed the students what had happened since their last meeting and demonstrated the outcome – the publication of the book, "The Air We Breathe" – which was in turn influenced by their iSCAPE "Play and Learn about Air Pollution" workshops of 2018. The young people felt appreciated, valued, and very happy that their work had inspired the Dublin LL to create a book designed to motivate young people to proactively tackle air pollution. Furthermore, looking ahead the young people are eager to continue the collaboration with the Dublin LL scientists.

"The children were delighted to hear how their ideas had inspired the team to produce a book for children that encourages young minds to work together with scientists to fight back against air pollution." (Workshop facilitator, Dublin)

2. Establishing new ways of thinking and working

A crucial part of the learning curve, and a necessity for LL sustainability, is establishing new ways of learning, thinking and working collaboratively with a variety of stakeholders. Therefore, each LL created local city platforms that opened up conversations around air quality, increased awareness and explored ways of mitigating air pollution. This in turn positively impacted the ways of working for iSCAPE participants and facilitators through:

- **Inclusive working**
  "Co-creation activities bring different stakeholders together and stimulates conversation between citizens, scientists, and education professionals – it encourages a shared responsibility for science" (Gillian Roddie, Interim Education and Learning Manager at the Science Gallery Dublin).

New methods

Co-creation activities gave each LL the freedom to try new methods and tools beyond their usual work/own practice. In Bologna, for example, the LL combined green infrastructure theory with practical hands-on activities, which motivated participants to develop exciting ideas around green infrastructure interventions such as positioning cardboard trees, green facades and roofs on a map.

"I learned different techniques to create a workshop and have a better understanding of what green infrastructure is in a practical sense." (Workshop participant, Bologna)

"I learned the difference between a street with trees and without." (Workshop participant, Bologna)

Guidance from experts

Other LLs, Hasselt being one, particularly benefited from expert contributions which fed into co-creation activities and interventions and highlighted new ways of thinking about air pollution and modes of transport.

"The interactive session allowed participants to be more hands-on and create possible solutions for the exercise" (LL lead, Hasselt)

Engaging ways of working

The Vantaa LL gained very positive feedback from the Heureka summer school 2018, as those involved were impressed by the engagement and excitement of the participating young people – so much so they have been asked to return to the Heureka summer school in 2019.

"The students and teachers all appreciated the experiment. Firstly, they learned how city planning directly affects the local climate and air pollution concentrations. Secondly, they discovered state-of-the-art tools used in climate modelling and how the results can be used e.g. in decision making. Most of all, the participants were delighted by this opportunity, where instead of listening to "boring" presentations they coould take part in actual scientific work!" (LL lead, Vantaa)

Participants were not the only ones to benefit from new ways of working. In Bologna the LL members

put their newly learned skills and LL mindset, adopting it in their own day-to-day practice.
"I left the teaching chair behind and actively contributed in the co-creation activities"
(LL partner, Bologna)

3. Gaining a better understanding of user groups, insights and interests

As well as creating knowledge/ideas and sharing information on their latest interventions and air pollution mitigations, the co-creation activities helped align LLs more closely with their cities and citizens. The discussions and feedback sessions during the workshops generated valuable data that helped the LLs adjust their way of working to better suit their stakeholders.

In Bottrop, the LL developed a very strong relationship with Bottrop city as well as its schools, kindergartens and communities. Based on feedback from the workshop, a clear desire to make the city greener emerged. Having the Wandering Trees tour the city was perceived as very positive by both the city and its citizens. Furthermore, conversations and interviews showed that people want to live a more conscious and sustainable life – a mindset change the Bottrop LL supports, but whose long-term impacts will become clearer in the future through the Wandering Trees.

"A greener city increases the feeling of a 'healthy city" (Workshop participant)

"The idea of having trees wandering around in the city is great. It is an innovative and creative way to get people involved." (Representative of the City of Bottrop)

In Bologna, one participant was particularly concerned about the current air pollution situation in Bologna, and beyond.

"I don't know how people will live in the next 30 years in the city of Bologna, but I certainly know that if we do not modify our lifestyle our children will not be able to go out to play in the park" (Living Lab participant, Bologna)

Other Feedback:

''There are more sustainable alternatives to move from a to b – we have to act in a more pro-environmental way."
(Living Lab participant, Bologna)

"The children were very enthusiastic about the workshop prior to the event, having recalled and enjoyed the first workshop... They were very excited about seeing their ideas published and about being involved in research that benefits the world around them...The children were completely invested in the workshop and felt that their input was valued."
(Teacher, St. Catherine's National School, Dublin)

4. Introducing innovative ways of seeing and experiencing cities

In delivering innovative ways of mitigating and tackling air pollution in different iSCAPE cities, LLs helped their audiences look at their cities in new ways. They considered everything from alternative ways to use green infrastructure, model future city scenarios and explore low boundary walls, to exploring how such solutions could be both multi-functional and more aesthetically pleasing part of the city infrastructure etc.

One trial and fine-tuned behavioural intervention even demonstrated innovative photocatalytic paint as a means of of increasing the visibility of air pollution.

In Bologna, workshop participants explored more than just air pollution concerns. They also gained a clearer understanding of how individuals can drive change in their city, and that this can be done in a social and fun setting (LL activity). Observing participant impacts like this is vital for LL facilitators seeking to help citizens implement long-term changes.

"The students are now more creative than they were before the iSCAPE LL activities" (LL partner, Bologna)

"I learned about the difficulties of financing environmental projects as well as finding new ways of approaching the authorities."
(Workshop participant, Bologna)

Other Feedback:

"Positive impact on the young attendees

increased their awareness about their city, green infrastructure and air pollution." (LL lead, Vantaa)

"Controlling traffic and air quality are major challenges for a growing city such as Hasselt, as these two components have a huge impact on our living conditions. The iSCAPE study took into account both factors, which is a good approach. It gives the city of Hasselt the opportunity to develop a suitable policy based on these results. I am also pleased to hear that there remains considerable scope for behavioural changes. That is what the city aims for." (Habib El Ouakili, Alderman for Transportation, Hasselt)

"Dublin City Council values the air we breathe. I feel that a problem that affects everyone around the globe requires broad collaboration between city stakeholders, researchers and citizens. We are eager to participate in the development of new solutions that reduce pedestrian exposure to air pollution as part of this project." (Brian McManus, Head of Traffic Noise and Air Quality, Dublin City Council)

In conclusion, the six LLs explored and tested various citizen engagement and co-creation techniques. They gained experience with each activity and constantly improved their approach to co-creating and engaging with the public. Some LLs are now in the process of improving their pilots ahead of launching revised versions, whilst others are currently setting up new pilots that emerged from the iSCAPE experiment.

A successful demonstration of a new pilot is Vantaa. Here, the LL struggled early on to engage a suitable audience, but after trialling different approaches they found their optimal way of working. In their final year Vantaa LL met with the Vantaa City Planning division to discuss how they might help develop the Vantaa city masterplan. Their subsequent session with the planning department generated great feedback and enthusiastic questions, and has marked the start of further collaboration that will hopefully form a new pilot for the Vantaa iSCAPE LL – one derived directly from their intervention.

"The climate scenarios for Vantaa presented in the workshop were extremely useful; we did not have this information available before. Also,

Vantaa City Planning Division – Feedback & Questions:

- The modelling possibilities had not been thought of before. Could we model present land usage vs the land usage in the new Master Plan, and factor in climate change? If so, we can give detailed information on the land usages.
- How dense can a city be? Can it be modelled? Vantaa citizens would like to live in a dense city, but are there limitations? e.g. is the heat island effect a limiting factor? What is the role of green infrastructure in this?
- How do high buildings affect urban climate, e.g do they impact wind and air quality? Could you model one of our planned skyscrapers?
- Social and economic impacts are important too – especially segregation. Could the impact of how green infrastructure, such as parks and air quality, affect housing prices be modelled?
- Access to the material shown at our internal planning of work session would be much appreciated.

Responding to feedback

All LLs actively sought feedback from participants and stakeholders about their pilots and activities. Pertinent feedback was actioned when appropriate, for example:

- Hasselt LL adjusted their Behavioural Intervention Tool to reflect municipality objectives.
- Bottrop LL trialled citizen generated suggestions for their parade route.
- Dublin and Vantaa LLs refined workshops based on participant feedback.

Reflections

The LLs were asked to reflect on their LL activities over the last two years and to outline what they would have changed, what they had learnt, and what they might tell others about their experiences:

Bologna

- **Communications with external audiences**
  "My advice is to use social networks for communicating new activities and to keep this going to the young people."

- **Co-creation as a new way of working**
  - "Two workshops changed my point of view, [the workshop at] FCC and the one in Bologna 6 months ago with the Lego. 3D things are more fun!"
  - "Being at the same level as the students, as a professor, is more exciting."
  - "Activities can create better results and inspiration than the scientific studies."

- **Participant creativity**
  "Students' creativity was less before the Living Labs."

- **Expertise/Focus**
  "It would have been good to have the knowledge and experience we have gained at the beginning. Now that we do know how to co-create, it's a shame there isn't time to do more."

Bottrop

- **Resources**
  - "Have one full time worker from the city of Bottrop working on it."
  - "Smaller trees (they already adopted the trees and the next ones are smaller)."

- **Audience**
  "Changing the target group [to children] and making it more fun kept the motivation up."

- **Planning**
  - "Plan the project better and stick to the timeline."

Dublin

- **Exploration**
  The opportunity to explore more intervention/ pilot options before committing to a specific pilot would have been beneficial.

- **Expertise / Focus**
  "We wish there had been more knowledge and experience when we started the project. [We wanted] more co-creation rather than dissemination [early on]."

- **Recording and documenting LL activities**
  "Lego is a good way to engage kids, get them talking – they are excited to play and started talking more. It is very hard to document and demonstrate that we achieved something. We have now adjusted our approach and use different type of materials."

Guildford

- **Skills**
  "We don't have a social scientist [in the team]."

- **Dependence on equipment**
  "Sensors arrived too late - difficult to create something useful."

Hasselt

With respect to their Individual Intervention App:

- **Technology used**
  "Change the technology used on app."

- **Usability and interface design (to be integrated from the beginning)**
  "Make it more user friendly – it's not user friendly at the moment."

- **Greater guidance for participants**
  "We need to customise the information sheet provided to individuals more. Provide more helpful impacts – not enough info related to them."

Vantaa

- **Relationship building**
  "Have a climate /scientist working for 1 year with the city of Vantaa to facilitate better knowledge exchange and greater collaboration."

FCC reflections

Over the last two years, the LLs have clearly excelled at raising their profiles (including via social media), disseminating their research and engaging numerous local audiences. They have started, evolved and matured to such a stage that they are now using co-creation activities and clearly benefiting from them.

On reflection, some LLs have articulated that if they could change something on the project it would have been to have had more knowledge and experience of LLs at the outset, and/or to have given more thought to the choice of pilot and how it could evolve. Others have managed to evolve their original pilots and are either actively planning a second iteration (e.g. Bottrop), or are developing a second pilot (e.g. Hasselt). This seems to be due to having a clear idea for their pilot (either due to strong alignment with the municipality and/or a strong vision within the LL).

The reflections also suggest two points at which iSCAPE LLs could have improved and evolved further than they have within the same 2-year timeframe: the setting up of the LL, and deciding the pilot.

LL set up

The LL concept was a new concept to most parties when they were set up. Some initial training was provided to select members of each LL, and further practical experience has been accrued over the two years.

It was only towards the end of this timeframe that many LLs fully engaged with co-creation to directly evolve their pilots. Until then, co-creation and its value to academic research was unclear to some. One of many possible reasons for this development could be that communications between FCC and the LLs evolved from individual to group conference calls. Listening to the experiences of others, and collective guidance might have helped guide the LLs towards co-creation.

On reflection, FCC believes that more intense upfront training for each LL was needed. This training would involve all those working in each LL, from decision-maker to researcher. Such a course would involve greater emphasis than the original training in the following areas:

Purpose and definition

- **Providing greater clarity of what an LL is and is not**
  - Possibly with those that have set up LLs before.
  - Ideally academics – academics might be more inclined to listen to fellow academics.
  - Showing how co-creation has academic value.

- **Ensuring that the LL objective is to evolve the pilot through co-creation**
  - Highlighting that co-creation can add value to academic research.

Practice

- Involving the participants in dissemination, engagement and co-creation activities so they know what these activities 'feel like' and how each activity contributes to research.

- Demonstrate how to recruit participants from key audiences.

Vision

- Guidance on how to choose a pilot.

- Guidance on how to develop a co-creation strategy for the pilot.

- High-level guidance on planning publications.

Deciding on a pilot

The choosing of the pilot, from our sample of six LLs, seems to be a pivotal point in determining how far each LL progresses towards co-creation methods and tangible changes to the pilot.

Those with a clear vision for their pilot (either through municipality alignment and or strong internal vision) tended to involve themselves more quickly in co-creation activities that developed and changed their pilot directly.

With this clear vision they seemingly spent less time raising awareness about the LL, and their activities and engaged audiences seemed to have a common thread running through them.

Those with a less clear vision for their pilot (possibly because they were looking for not immediately forthcoming direction from the municipality, or because they were unsure how to evolve the chosen pilot) tended to conduct dissemination and awareness raising activities first with disparate audiences. Engaging activities with defined audiences then followed before co-creation activities started to appear only towards the end of the two-year period, having belatedly succeeded in generating the required municipality interest.

One of many dilemmas for LLs who found themselves in this group was knowing how long to wait for meaningful direction from the municipality before pressing on with their pilot. LLs should be encouraged not to wait indefinitely for municipality engagement. Instead they should set a time period and be encouraged to progress their pilot with a body of co-creation activities, which would themselves eventually draw the attention of the municipality. After all, the LL can only control its activities but not the structure of a municipality.

Immediate next steps for LLs

Having started LLs from scratch, the LLs have made significant progress raising awareness of themselves and their respective pilots, engaging a wide range of participants and stakeholders, and progressing their pilots. As WP2 draws to a close, the immediate next steps for each LL are as follows:

Bologna:

- Publish academic papers detailing pilot/ intervention results.
- Continue to use methods learnt during the iSCAPE project.
- Introduce new ways of working with students
- No immediate plans to work with municipality until future EU projects go live.

Bottrop:

- Wandering Tree Parade 2019 being planned with a refined pilot.
- The pilot will move into the city quarter (place in the city centre).
- Children to be the main audience for engagement.

Dublin:

- Plans to create an idea book summarising the outcome of the workshops.
- Meeting planned to bring the city/council together (dependant on other partners/ collaborators getting in touch e.g the smart citizen kits).

Guildford:

- Setting up monitoring stations until the end of the iSCAPE project.
- Complete the research, publish academic papers and create impact through policy change.
- Interactive tool won't be set up permanently and may be moved around.

Hasselt:

- Conduct another intervention (recruiting has started).
- Plan to do a workshop with stakeholders only (before involving citizens) to inform the new intervention, may invite schools involved in the intervention.
- Present information sheets developed for individuals and get feedback. Use feedback to refine materials before sharing with parents.

Vantaa:

- Modelling the main street in Vantaa (different models).
- Results will be ready in February/March 2019
- Develop price and health models for green infrastructure.

Conclusions

The LLs have undergone an eventful two years in which they have grown into organisations that have successfully raised awareness about themselves and their pilots through engagement and co-creation. There is much to praise about their progress and the feedback reported is testament to their hard work and perseverance.

We believe that their progress could have been further helped by the following:

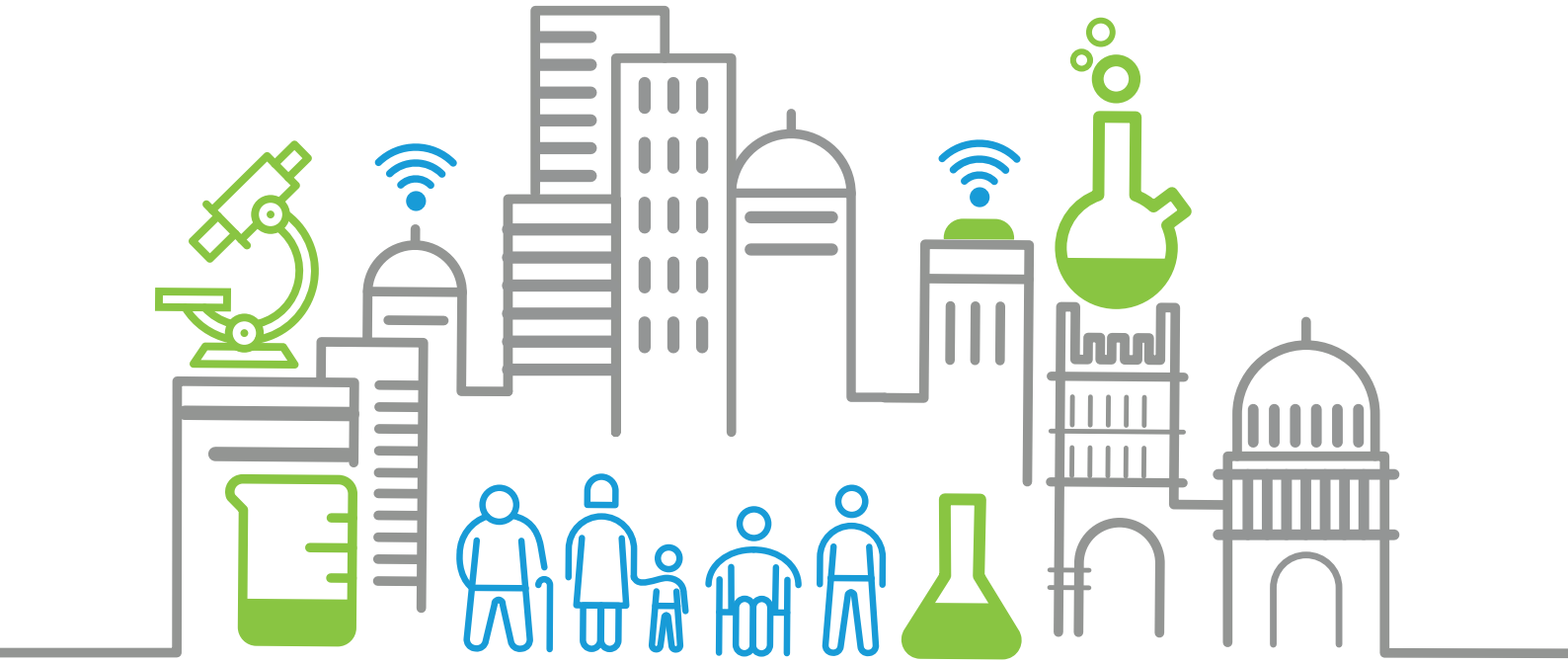
- Encouraging early practice of methodologies during hands-on LL start-up training.
- Owning the process by which a pilot is chosen and early development of a co-creation strategy.
- Encouraging LLs to work in co-creation cycles – perhaps even multiple cycles within the two-year period.
- Not waiting for municipality engagement if it is not forthcoming.
- Publicise evolutions of the pilot at the end of each cycle by:
  - publishing academic papers
  - use of social media and
  - re-contacting the municipality.

Appendix – Comprehensive Community Feedback Reports 2017-2019

iSCAPE
Living Labs

COMMUNITY FEEDBACK REPORT

LIVING LAB UPDATE 2017-2019



LIVING LAB UPDATES

BOLOGNA

5
EVENTS

WHAT WE'VE DONE SO FAR

Bologna Living Lab raises awareness about air quality and the impact of passive control systems on reducing air pollution. To do this the Lab delivered two interventions with local stakeholders. The first measured the effectiveness of campaigns in two street canyons on high-traffic city centre roads. The second used photocatalytic coatings in the Lazzaretto district of Bologna. The Living Lab also organised workshops, public talks at local events, and meetings with citizens, students, and other Living Labs such as the Urban Centre Foundation (Municipality of Bologna), Terracini in Transizione (an existing UNIBO Living Lab initiative) and Aria Pesa (a network of citizens).

ACTIVITY 1

15
CITIZENS ENGAGED

ACTIVITY 1: WORKSHOP ON HOW TO USE ARDUINO TECHNOLOGY FOR AIR POLLUTION SENSING

DATE: May 2017
LOCATION: Department of Industrial Engineering, Lazzaretto

DESCRIPTION

This was a one-day workshop about using Arduino technology to learn how individuals can produce and use their own low cost sensor for personal monitoring or scientific uses. The workshop shared the basic principles low cost sensors are built upon: open source easy-to-use technology, versatility, and a component based architecture.

The workshop was planned with another local Living Lab, Terracini in Transizione. Students were the main audience and the workshop was facilitated by a member of the engineering department of the University of Bologna. Participants helped develop project sensors which built understanding of the potential and limitations of this technology.

METHODS USED

1. **PROTOTYPING, CO-CREATION, AND BRAINSTORMING (WORKSHOP)** – The workshop was split into two sections: theory and practice. The session began with a formal lesson to learn the basic concept of the sensors and why and how to build one. During the practical section sensors were connected in order to build mini-kits capable of displaying multiple measures on a small display. Participants worked together to try different combinations of sensors, trying not to replicate a specific kit but to achieve the best solutions for their projects. The goal was to stimulate participant creativity and have them build their own sensors.

ACTIVITY 2

ACTIVITY 2: HIGH-SCHOOL TALK ON CLIMATE AND AIR POLLUTION ISSUES

DATE: 18 April 2018

LOCATION: Laura Bassi High School, Bologna

DESCRIPTION

As part of 2018 Climate Day (La Giornata del Clima 2018) the Lab participated in a local dissemination event with high school students. Scientists and City Hall officials presented research and urban policies for tackling global warming and its effects. For example, Prof. Di Sabatino talked about "Air quality: what to do if the climate changes" (Qualità dell'aria: cosa fare se il clima cambia).

The event introduced high schoolers to different ways of protecting the environment and the idea that their choices and voices are important as they become part of the labor market, drive political choices, and influence economic development.

METHODS USED

1. **PRESENTATION –** The presentation discussed air pollution and climate change while explaining the importance of personal behaviour change.

2. **SPEAKING –** The Lab spoke with a young audience, generating a pool of potential co-creation participants for the future.

ACTIVITY 3

ACTIVITY 3: TALKS ON EXPERIMENTAL FIELD CAMPAIGNS

DATE: 11 May 2018
LOCATION: Auditorium Hall, Regione Emilia Romagna, Bologna

DESCRIPTION

In partnership with ARPA-ER, the Lab participated in the *Urban air quality: planification and involvement of citizens (Qualità dell'aria urbana: pianificazione e coinvolgimento dei cittadini)* event for scientists and citizens. The Lab presented results of two experimental field campaigns in Bologna. The event tried to increase awareness of using low cost sensors for monitoring the experience of citizen participants. The talks were concise and used plain language in order to engage citizens as much as possible.

The event had a particular focus on passive control systems, low cost sensors, and participatory monitoring. Local stakeholders gave presentations on their experiences of participatory monitoring. Citizens shared their own suggestions, concerns, and experiences about air pollution and research activities. This provided useful lessons for future co-creation activities. For example, helping the Lab determine locations citizens preferred trees not to be planted.

METHODS USED

1. **PRESENTATIONS** - The lab gave different talks explaining results of the experimental field campaigns in Bologna to engage stakeholders and citizens in using low cost sensors and passive control systems. Citizens showed great interest, possibly because they discovered proactive ways of helping solve air pollution issues other than just cutting emissions.

ACTIVITY 4

20 CITIZENS ENGAGED

ACTIVITY 4: STUDENT WORKSHOP WITH SENSORS

DATE: 22 May 2018 & 31 May 2018

LOCATION: Department of Industrial Engineering, Lazzaretto

DESCRIPTION

As part of sustainable development week (30 May 2018–5 June 2018) the Lab organised two events around *monitoring pollution within the city using low-cost sensors*, targeting citizens interested in gaining a better understanding of the problem of air pollution in cities.

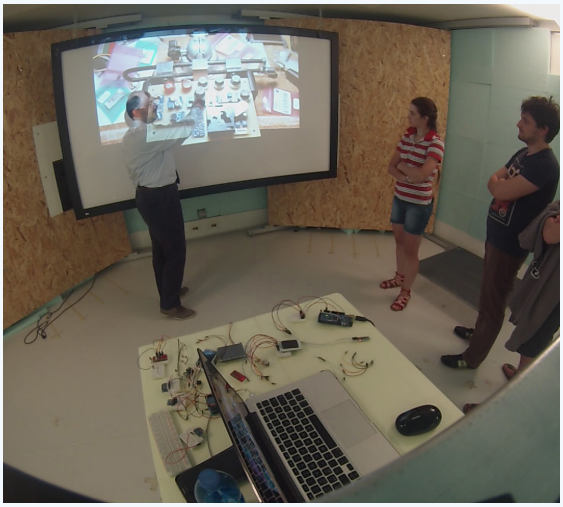
Lectures explained the role of low cost sensors and discussed urban pollution. They began with a short overview of low-cost sensors using practical examples built in the classroom, with special attention to sensors and environmental engineering. This was followed by an interactive workshop on iSCAPE low-cost sensors. Students were shown and taught how to use and measure concentrations with the iSCAPE sensors. They also learned how to read the resulting data.

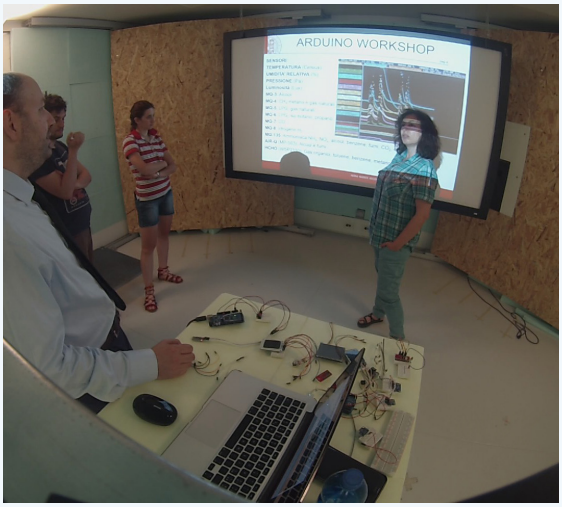
Demystifying the sensors with education and practical use helped lower the barrier to future experimentation and co-creation.

METHODS USED

1. **LECTURE** – A short lecture to explain the use and functioning of low cost sensors with many practical and interactive examples.

INTERACTIVE WORKSHOP: PROTOTYPING, IDEATION AND BRAINSTORMING – An interactive workshop to learn more about the use of low cost sensors and how to critically interpret results. Students learned how to turn eqipment on and off, understand if the instruments were functioning correctly, to read the data collected, produce plots, and to understand if the data was meaningful or erroneous.





ACTIVITY 5

ACTIVITY 5: EXPLORING AIR POLLUTION THROUGH A CITY WALK

DATE: 25 May 2018

LOCATION: A walk departing from the Department of Physics and Astronomy (Bologna University) and wandering through Bologna city centre

DESCRIPTION

The *Passeggiata per Bologna... annusando l'aria* event was a Lab-organised walk through Bologna city centre with air pollution sensors. On the walk citizen participants learned about the principles of pollutant dispersion. Walkers carried low-cost sensors with the goal of identifying air pollution hotspots and new locations for green infrastructure/tree locations. Data from the walk were visualised to help link measurements to real-world places.

METHODS USED

1. **A SERIES OF ACTIVITIES -** Involved low cost sensors, a brief description of the sensors and their functions and limitations, and tests performed by participants in different conditions encountered during the walk.
2. **DATA ANALYSIS/VISUALISATION** - Graphs and figures were used to explain principles of pollutant dispersion.

TIPS FOR OTHER LIVING LABS

- Find ways to involve and motivate young people who are especially active on social networking platforms and are keen to act and interact using smartphones.
- Try to design activities involving smartphone apps. For example, Google Maps is good for tracking the sensing experience. Try to avoid apps that consume a lot of battery power.
- Try to design activities that use professional tools (e.g. Arduino technology). But also try to make it as easy as possible for non-experts to understand air pollution and climate change issues.
- Give accurate information from reliable sources. Citizens care deeply about these topics but they often lack precise information and people they can trust to inform them of the problems in their city.

ANY STAKEHOLDER FEEDBACK?

"I don't know how people will live in the next 30 years in the city of Bologna, but I certainly know that if we do not modify our lifestyle our children will not be able to go out to play in the park" – Living Lab participant

BOTTROP

5
EVENTS

WHAT WE'VE DONE SO FAR

As part of the Bottrop Living Lab, citizens were encouraged to join in with the *Wandering Trees* campaign. These wandering trees were planted in pots and used to add temporary green to the city centre. The campaign gave citizens first-hand experience of the positive effects of trees on air quality. The Lab involved citizens early on in the project, holding workshops to co-develop the tree species and wandering route for the campaign. In April 2018 the trees wandered into the neighbourhood with the help of citizen participants.

The Bottrop Living Lab and its activities were made possible by great cooperation between TU Dortmund University (TUDO), Bottrop city administration, and the citizens of Bottrop.

ACTIVITY 1

35
CITIZENS ENGAGED

ACTIVITY 1: KICK-OFF WORKSHOP FOR THE WANDERING TREES PROJECT

DATE: 30 January 2018

LOCATION: Bottrop

DESCRIPTION

At this workshop the Lab introduced the iSCAPE and iSCAPE *Wandering Trees* project to citizens of Bottrop, who were invited to ask questions about the projects. Working with citizens the Lab gathered ideas for designing the wandering trees parade. This included a discussion of desired and suitable tree species and other green design ideas.

METHODS USED

1. **SHORT PRESENTATION –** Introduced the project framework and the idea of the Wandering Trees parade to participants.
2. **BRAINSTORMING –** Participants from three groups exchanged information and ideas across three themes: tree species, other green design ideas, and other activities relevant to the wandering trees. They discussed and contributed to every theme as they rotated between themes by changing tables.

ACTIVITY 2

20 CITIZENS ENGAGED

ACTIVITY 2: SCHOOL FESTIVAL "PROJECT DAYS"

DATE: 19 March 2018

LOCATION: Bottrop

DESCRIPTION

This event was connected to an existing school festival. TU Dortmund University worked with students to co-create tree decorations for the Wandering Trees. This helped engage students more actively in the process.

METHODS USED

1. **BOOTH FOR JOINTLY CREATING TREE DECORATIONS** – Together with students the study project created tree decorations at a booth in order to raise awareness for urban greening in relation to air pollution issues.

ACTIVITY 3

5 CITIZENS ENGAGED

ACTIVITY 3: SECOND WANDERING TREES WORKSHOP

DATE: 12 April 2018

LOCATION: Bottrop

DESCRIPTION

To involve citizens in the process of finding locations and defining the route of the Wandering Trees parade, the Lab invited people for a two-hour workshop. The workshop helped find locations, explored possibilities of adopting a Wandering Tree for a set time, and generated ideas for further activities around the project.

METHODS USED

1. **PARTICIPATORY MAPPING** – This form of community-based mapping helped find suitable locations for the Wandering Trees. Participants marked their preferred locations on a map based on their knowledge of the city.
2. **GROUP DISCUSSION** – To give all attending citizens the chance to engage, the possibility of adopting a Wandering Tree was discussed, as well as planning additional activities around the project.

ACTIVITY 4

ACTIVITY 4: WANDERING TREES ARE MOVING INTO THE NEIGHBOURHOOD

DESCRIPTION

This event was connected to an existing city festival. The Lab prepared an information booth to inform citizens about iSCAPE and the *Wandering Trees* project. Citizens got the chance to actively contribute by taking part in a participatory mapping process. This helped find further tree locations. Citizens and students created tree decorations and seed balls (to attract and feed birds during colder months). After the city festival, local residents paraded the trees through the neighbourhood.

METHODS USED

1. **INFORMATION BOOTH** – This raised awareness of green issues and gave citizens the opportunity to ask any questions.
2. **PARTICIPATORY MAPPING FOR THE WANDERING TREES** – This community-based mapping found suitable locations for the wandering trees. Participants marked potential locations on a pre-prepared map.
3. **JOINT CREATION OF TREE DECORATIONS AND SEED BALLS** – Together with students the Lab created tree decorations and seed balls in order to raise awareness of green issues.
4. **JOINT TRANSPORTATION OF THE WANDERING TREES INTO THE NEIGHBOURHOOD** – Participants moved the trees to the first locations, raising awareness about the project and engaging more people.

ACTIVITY 5

80
CITIZENS ENGAGED

ACTIVITY 5: MARKET FESTIVAL

DATE: 16 May 2018

LOCATION: FUHLENBROCK MARKT, BOTTROP

DESCRIPTION

The Lab set up an information booth at a market festival to engage more residents of Bottrop in the Wandering Trees project. It also helped raise general awareness about environmental issues.

Methods used

1. **INFORMATION BOOTH –** The booth gave citizens the opportunity to ask any questions they had. This helped gather qualitative data useful for designing future activities.

TIPS FOR OTHER LIVING LABS

- Involve your target audience early on to build a sense of ownership and ensure a strong impact.
- Build a good working relationship with the city administration - it might help you involve more people and deliver projects that would otherwise be hard to deliver.
- Let the press and public know about your project early on so you can spread the word about your project.
- Design your organisation and activities to be flexible so more people can participate.
- Empower your target audiences to actively participate in activities and projects.
- Design information booths to be both informative and enjoyable for people. This helps them quickly see the benefits of active participation.

ANY STAKEHOLDER FEEDBACK?

"The idea of having trees wandering around in the city is great. It is an innovative and creative way to get people involved and sensitised." **– Representative of the City of Bottrop**

"I'm happy about the Wandering Trees in my neighbourhood. With more green, everything is better!" **– Citizen of the City of Bottrop**

"If I walk through green streets, then I think how nice it is when everything is green." **– Citizen of the City of Bottrop**

The citizen quotes are from the evaluation of the associated study project of the TU Dortmund University where citizens were personally asked for feedback on the Wandering Trees. The city representative was also personally asked for feedback.

5
EVENTS

DUBLIN

WHAT WE'VE DONE SO FAR

Dublin Living Lab delivered a number of engagement activities during 2017-2018. Standout events in 2017 were the UCD Festival in June and the *A Playful Street* event in September. Both used Lego bricks to help children explore the idea of air pollution and climate change. And they helped to co-design potential solutions.

In March 2018 the Living Lab organised an interactive event with the Dublin Science Gallery called *Hack the Air*. In this event participants came up with ideas, designs, and prototypes of concepts for a multi-functional solution that reduces pedestrian exposure to air pollution.

In April 2018 the Lab organised the *Play and Learn About Air Pollution* event at St. Catherine's National School. Children took part in a playful discussion of air pollution issues and ways to control it. Another *Play and Learn* event was held at St. Brigid's Girls National School in June where children designed ideas to protect people from air pollution using Lego. Both *Play and Learn* events will contribute to a booklet the Dublin Living Lab team is developing to inform people about air pollution in a child-friendly way.

ACTIVITY 1

25-30
CITIZENS ENGAGED

ACTIVITY 1: A PLAYFUL ACTIVITY WITH CHILDREN (DURING THE UCD FESTIVAL)

DATE: 10 June 2017

LOCATION: UCD, Dublin

DESCRIPTION

This activity was organised during the UCD Festival, a free one-day public event with dozens of workshops, performances, exhibitions, and family fun. It was focused on understanding children's awareness of air pollution and ways to control it. Children were engaged through a series of playful activities and were asked to build solutions using Lego bricks. When asked to 'protect a Lego city from a bad factory', children built trees, parks, flower gardens and even tree houses. They also built a wall around the factory. This activity was a great learning experience for the team. It demonstrated how important elements of play are for engaging children and thus helped to shape the future engagement activities.

METHODS USED

1. **A SERIES OF PLAYFUL ACTIVITIES USING LEGO BRICKS –** Children were provided with Lego bricks. While playing with the UCD team they were asked to build a bad factory and then to build solutions to 'protect a Lego city from the bad factory'.

ACTIVITY 2

30-40 CITIZENS ENGAGED

DESCRIPTION

This activity was organised during the *A Playful Street* event, a public event where children were given an opportunity to play on a safe, clean, friendly street. This activity was also focused on understanding childrens' awareness of air pollution and ways to control it. Children were given large Lego-like bricks and engaged through a series of playful activities. They built great walls and magic castles to 'protect us from air pollution'.

METHODS USED

1. **A SERIES OF PLAYFUL ACTIVITIES USING LARGE LEGO-LIKE BRICKS** – Children were given large Lego-like bricks. While playing they were asked 'how would you protect us from air pollution?' They were encouraged to say what they were building, how to build it, and why their friends would like it.

ACTIVITY 3

13 CITIZENS ENGAGED

ACTIVITY 3: HACK THE AIR

DATE: 14 March 2018

LOCATION: Science Gallery, Dublin

DESCRIPTION

Hack the Air was an interactive, hands-on event organised in collaboration with Science Gallery Dublin. Young people with a passion for bringing ideas to reality were brought together to design new multi-functional solutions that reduce pedestrian exposure to air pollution. Working in small teams, they followed a process of Design Thinking to generate new ideas, develop concepts, and build prototypes. Prototypes will be modelled to find out if the concepts can be made into feasible solutions.

METHODS USED

1. **CO-CREATION WORKSHOP –** Following a process of Design Thinking.
2. **IDEATION AND CONCEPT DEVELOPMENT** – Idea generation, selecting the best ideas, and concept sketching.
3. **PROTOTYPING** – Participants built a scaled-down version of the best solution prototype.
4. **PRESENTATIONS AND FEEDBACK –** Each group presented their solution and described what they built to the class.

ACTIVITY 4

55 CITIZENS ENGAGED

ACTIVITY 4: PLAY AND LEARN ABOUT AIR POLLUTION, ST. CATHERINE'S NATIONAL SCHOOL

DATE: 25 April 2018

LOCATION: St. Catherine's National School, Dublin

DESCRIPTION

Play and Learn About Air Pollution was held as part of the EU Green Week initiative. Through an interactive learning process and play, children were engaged in a discussion of air pollution issues and potential solutions. First, they were asked to visualise air pollution. The children's drawings were incredible and included the major sources of air pollution (cars, power plants, factories, animal farming, etc.). Next, while working in small teams, they were encouraged to build solutions to air pollution using Lego bricks. Their solutions included electric cars, quitting smoking, closing factories, government-funded solar panels, sustainable energy, wind turbines, locally-produced fresh food, and inhalers.

METHODS USED

1. **DRAWING –** To visualise air pollution the children were asked to draw where they believe air pollution comes from.
2. **USING LEGO –** To build solutions to air pollution. A vote decided which group had the best overall idea and the winners were able to use giant Lego-like blocks to build their idea while the other groups used regular-sized Lego.
3. **PRESENTATION –** Each group presented their solution and described what they built to the class.

ACTIVITY 5

ACTIVITY 5: PLAY AND LEARN ABOUT AIR POLLUTION, ST. BRIGID'S GIRLS NATIONAL SCHOOL

DATE: 20 June 2018
LOCATION: St. Brigid's Girls National School, Dublin

DESCRIPTION

A session from a series of *Play and Learn About Air Pollution* events was organised in collaboration with the Science Apprentice initiative. During this event students aged 14-16 were engaged in a conversation about the sources of air pollution and the harm it does to humans and the environment. The girls were then asked to write down and draw possible solutions to air pollution. After about 15 minutes they were put into groups of four
or five where they combined their ideas to develop a bigger, more robust idea. Lego blocks were then handed out to the groups to build the solutions.

METHODS USED

1. **BRAINSTORMING –** Facilitators discussed with students about where they think air pollution comes from.
2. **DRAWING –**The students were asked to draw solutions to protect people from air pollution, working first in pairs and then in small groups of about four.
3. **USING LEGO –** Each group put their ideas together to come up with a solution, which they then built using Lego blocks.
4. **PRESENTATION –** Each group presented their solution and described what they built to the class.

TIPS FOR OTHER LIVING LABS

- Look out for opportunities to collaborate with local initiatives, organisations and communities.
- Adjust methods and tools for different target groups (children, young people, adults etc.).
- Don't reinvent the wheel – use examples and other case studies for inspiration.
- Reflect on learnings and incorporate lessons learned into future activities for continuous improvement.

ANY STAKEHOLDER FEEDBACK?

"I was delighted to host the Hack the Air event at the Science Gallery Dublin on March 14, 2018. It was absolutely brilliant for us to see all of the creative ideas and inspirational prototypes built by the participants for such a complex problem as air pollution. Events like this stimulate conversations between citizens, scientists, and education professionals in order to encourage a shared responsibility for science." – Gillian Roddie, Interim Education and Learning Manager at the Science Gallery Dublin.

"Dublin City Council values the air we breathe. I feel that a problem that affects everyone around the globe requires broad collaboration between city stakeholders, researchers and citizens. We are eager to participate in the development of new solutions that reduce pedestrian exposure to air pollution as part of this project."
– Brian McManus, Head of Traffic Noise and Air Quality, Dublin City Council.

GUILDFORD

4
EVENTS

WHAT WE'VE DONE SO FAR

The Guildford Living Lab raises awareness about air pollution and how green infrastructure can be used to reduce concentrations of air pollutants. This has so far been achieved through three events with different audiences and engagement strategies. Three more workshops using similar engagement approaches are in the pipeline. The Lab developed a set format to maximise engagement at events: a talk, leaflets and merchandise, and an interactive stand where people can answer questions about air pollution in their city and ways to reduce their contribution to it. The hope is to provide a new method for encouraging behaviour change.

ACTIVITY 1

46
CITIZENS ENGAGED

ACTIVITY 1: KNIGHTSBRIDGE SCHOOL EVENT

DATE: 13 June 2017

LOCATION: Knightsbridge School, London

DESCRIPTION

The Lab delivered a talk and held a brief discussion at Knightsbridge School to an audience of school children, parents, and teachers. The presentation lasted 45 minutes and discussion continued for another 20 minutes. For this mixed audience the Lab conveyed complex science in a simple way. Content included sources of air pollution, their effect on human health and the environment, and tips on reducing air pollution using green infrastructure.

METHODS USED

1. **TALK AND DISCUSSION –** The Lab limited time to an hour. The talk lasted approximately 45 minutes. It covered sources of air pollution, their impact on health and the environment, and how to mitigate air pollution using green infrastructure. A brief discussion followed, allowing participants to ask any questions.

ACTIVITY 2

ACTIVITY 2: HEAD-START SUMMER SCHOOL

DATE: 27-30 June 2017

LOCATION: University of Surrey (UoS), Guildford

DESCRIPTION

The Lab delivered a workshop for residential summer school students staying at the UoS. Workshops were hands-on experiences in air pollution monitoring in the form of an experiment. Students were divided into groups and given details of the experiment they were about to conduct. Following the steps provided they measured air pollution concentrations inside a building and near a busy highway using a low-cost particulate matter sensor. This allowed them to visualise air pollution levels in real time. After analysing the data students presented insightful observations and deductions. The experiment helped students understand basic air pollution monitoring and analysis of data. This in turn raised awareness of the air pollution problems among students.

METHODS USED

1. **INTERACTIVE WORKSHOP –** Participants recorded air pollution data. The equipment for this was a low cost sensor. The needed information was shared on paper hand outs: a small introduction to air pollution, setup of the experiment, and space to record air pollution data and write up results and deductions.

ACTIVITY 3

30 CITIZENS ENGAGED

ACTIVITY 3: WATERLOO FESTIVAL 2018

DATE: 13 June 2018

LOCATION: Waterloo Church, London

DESCRIPTION

The Lab took part in a wider event organised by Waterloo Church, delivering two identical talks for two different audiences. Supported by a member from Future Cities Catapult, the Lab also manned an interactive stand where people could try a quiz on a tablet and take away printed materials. Brizi, a Living Lab collaborator, hosted the neighbouring stand. Both the talk and the stand provided material for possible co-creation activities in the future thanks to questions from event attendees.

METHODS USED

1. **TALK –** The talk was 45 minutes long and covered introduction to air pollution, air pollution patterns in London, and the impact of green infrastructure on air pollution.
2. **INFORMATION BOOTH –** Various folders, flyers, and merchandise were available for participants. And the Lab was able to discuss the citizen experience of air pollution.
3. **INTERACTIVE DISPLAY SYSTEM –** The interactive display system was a short quiz designed by Future Cities Catapult and the Institute for Advanced Architecture of Catalonia (IAAC) based on the research done by the UoS. It was entertaining and informing, keeping citizens engaged in order to understand air pollution mitigation strategies.

ACTIVITY 4

ACTIVITY 4: GUILDFORD BOROUGH COUNCILLORS MEETING

DATE: 9 January 2018

LOCATION: Guildford Borough Council

DESCRIPTION

As part of a Guildford Borough Council air quality monitoring meeting, the Lab presented iSCAPE project activities. Low-cost sensors, green infrastructure, air quality modelling, the interactive display system, and the iSCAPE behavioural study were all presented. A question and answer session with councillors followed. The meeting provided opportunities to discuss possible co-creation activities in the future such as setting-up sensors for green barriers, evaluations, and upcoming public and stakeholder workshops. The event was filmed and released to the public.

METHODS USED

1. **TALK AND QUESTION SESSION –** The session lasted just over an hour, including a presentation of 30 minutes followed by questions from councillors and attendees.

TIPS FOR OTHER LIVING LABS

- Think of your audience when developing the materials for activities. For example, explain technical concepts in simple ways for a non-expert audience.
- Prepare for an event early. This reduces stress close to deadline and helps with attendee numbers.
- Always gather feedback from participants, even if it's a simple "what did you like/dislike?" And then use that feedback to improved future activities.

ANY STAKEHOLDER FEEDBACK?

"I was particularly thrilled by the interest shown by our Churchyard gardeners, and I feel sure that your research will have a lasting legacy." **– Nicola Smedley, Organizer of Waterloo Festival**

HASSELT

3
EVENTS

WHAT WE'VE DONE SO FAR

The Hasselt Living Lab encourages pro-environmental behaviour among citizens by designing information-based behavioural interventions. A particular focus is to influence travel behaviour by recording individual activity travel patterns using a smartphone app. By showing citizens the consequences of their travel behaviour with a behaviour intervention tool it's possible to involve them in finding envrionmentally-friendly travel solutions. To this end, the Lab is involved in activities like participant engagement, study execution, and information dissemination.

ACTIVITY 1

30
CITIZENS ENGAGED

ACTIVITY 1: PILOT STUDY WORKSHOP

DATE: 17 March 2017

LOCATION: Hasselt University

DESCRIPTION

The Lab ran a project kick-off workshop with University Hasselt students and staff. After presenting the behavioural intervention study, interested attendees were recruited to the project and asked to fill out the consent form and introductory questionnaire (for recording travel activity data used to develop the behavioural intervention tool).

METHODS USED

1. **ELECTRONIC INVITATION –** The behaviour intervention pilot study workshop was sent to the Hasselt students and staff members.
2. **PRESENTATIONS –** The Lab shared the intervention methodology so audience members would know what the study entailed, reducing barriers to participation. A further training session was held to help people install the app and inform them about why data collection within the app needed to be activated.
3. **OPEN DISCUSSION SESSION –** The Lab sought audience feedback during an open discussion session. The feedback focused on the design of the intervention and participant expectations, all of which will inform future activities.

ACTIVITY 2

ACTIVITY 2: STAKEHOLDER WORKSHOP

DATE: 17 March 2017

LOCATION: Hasselt University

DESCRIPTION

City of Hasselt officials were invited to an information-sharing session. The Lab described the behavioural intervention study and sought their help recruiting Hasselt citizens to the project.

METHODS USED

1. **RECRUITMENT** – Each stakeholder was contacted via phone/email and invited to the workshop.
2. **PRESENTATION** – Detailed presentation regarding the methodology and implementation of the study.
3. **COLLECTING FEEDBACK** – Hour-long discussion sessions were held to collect feedback from stakeholders and foresee possible challenges of the study.

ACTIVITY 3

ACTIVITY 3: DISSEMINATION AND FEEDBACK EVENT

DATE: 24 January 2018

LOCATION: Hasselt

DESCRIPTION

In order to publicise results of the study a follow up event was organised. The event presented progress on the behaviour intervention tool based on stakeholder feedback. Further feedback for future iterations was also sought.

METHODS USED

1. **DETAILED PRESENTATION –** Presented the study methodology, implementation, and findings. Brochures containing a summary of study results were also shared.
2. **THEMATIC DISCUSSION SESSIONS –** Gained input from stakeholders and participants.

TIPS FOR OTHER LIVING LABS

- Try to design engagement activities that have some measurable impacts, such as sharing the event on social media, asking for a quick feedback note after the activity, or simply counting people who turn up to the event.
- Emphasise the approaches where consequences of a specific behaviour can be recorded and compared with a baseline – i.e. how are participants changing their behaviour compared to their normal routine?
- Focus not only on awareness campaigns but also on strategies where particular behaviour can be mapped before and after, providing the information in a specific context.

ANY STAKEHOLDER FEEDBACK?

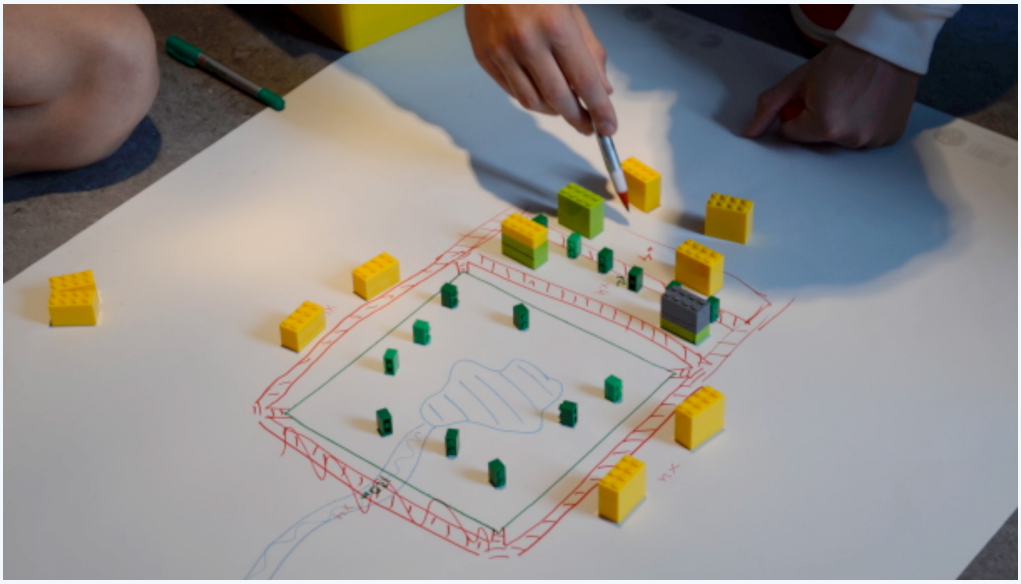
" There are still more possibilities/alternatives when moving than seems, at first sight, to act in a more pro-environmental way." **– Living Lab participant**

"Small changes in my daily pattern can have a big impact on the battle against the warming of the beautiful blue planet! Provided that a larger number of cohabitants want to participate. Every little effort counts." **– Living Lab participant**

"Controlling traffic and air quality are major challenges for a growing city such as Hasselt, as these two components have a huge impact on our living conditions and quality. The iSCAPE study was conducted taking into account both factors, which is a good approach. It gives us, the city of Hasselt, the opportunity to develop a suitable policy based on these results. I am also pleased to hear that there remains considerable scope for behavioural changes. That is what the city aims for."
– Alderman for Transportation Habib El Ouakili

VANTAA

2
EVENTS



What we've done so far

The Vantaa Living Lab focused on enhancing the knowledge about the connection between air pollution and city planning. The Lab integrated the citizen science approach into its activities and focused on working with young people.

The Lab worked with the Finnish Science Centre HEUREKA to organise two different types of air quality/weather related events. The HEUREKA staff provided facilities and support throughout most of the activities.

ACTIVITY 1

20
CITIZENS ENGAGED

Activity 1: 3 HEUREKA SUMMER CAMP SESSIONS

DATE: 2-6 July, 9-13 July, and 30 July–3 August 2018

LOCATION: Finnish Science Centre HEUREKA

DESCRIPTION

During the HEUREKA summer camp, three sessions showed young people aged 13-16 how urban planning and air quality are connected. The young people then designed their own city surroundings with streets, houses, and trees and bushes.

For every model, the young people created a simulation using the micro-climatological software *ENVI-met* to visualise the interaction between buildings and green infrastructure. The event was divided into two sessions lasting for three hours in total. The young people worked in small teams of two to three people.

METHODS USED

1. **INTRODUCTION –** Introduction to city planning, air quality, and urban heat island problems.
2. **EDUCATING –** Explaining the connection between city planning and citizen well-being as one of the tasks of sustainable city development. Emphasising the need of cooperation between citizens and city authorities.
3. **CREATIVE CITY –** Using large paper sheets, colour pencils, and LEGO-type plastic bricks participants sketched their ideas of building locations, vegetation, and different ground formations like bodies of water and streets.
4. **SIMULATIONS OF THE SKETCHES –** The young people moved their sketches into the *ENVI-met* software environment. By the end of the third session there were around 25 different suggestions of how they would plan future cities. Simulations were performed over night using Finnish Meteorological Institute (FMI) computers.
5. **EVALUATION –** Evaluating the models, feedback session, and general discussion. As each model developed by the young people was worth discussing, a separate hour with feedback was scheduled at the end of the summer camp week. There was feedback about the interaction between carbon dioxide and vegetation, narrow street canyons and wind tunnel phenomenon, as well as air cooling and location of houses and green infrastructure.

ACTIVITY 2

ACTIVITY 2: HEUREKA SUMMER CAMP SESSION FOR CHILDREN AGED 7 TO 13

DATE: One hourly event a week during the summer months from June to August 2018, totalling eight weeks (eight groups with 20 children each)

LOCATION: Finnish Science Centre HEUREKA

DESCRIPTION

In summer camp week there were up to 20 different sessions on natural and social sciences. The Finnish Meteorological Institute (FMI) helped to design a weather orienteering run, where children explored different types of weather phenomena including splash rain, temperatures at different heights, groundwater, air, wind force and direction, cloud identification, and the connection between the blue colour of the sky and atmospheric dimming. Children also needed to find auxiliary devices hidden around the building.

METHODS USED

1. **ORIENTEERING RUN –** Point boxes with the task description and the auxiliary devices were put in place. The children were split into groups to work autonomously at the orienteering run point.
2. **QUIZ –** After the orienteering run, the children answered a quiz to check that they correctly completed the tasks.

TIPS FOR OTHER LIVING LABS

- Try to involved experts for practical activities such as the orienteering run. HEUREKA have more than twenty years experience arranging summer camps with children. This support from people who already had experience with the target group helped the success of activities.
- Try to be yourself, to bring something personal into work. If you're working with young people you'll come across as being more natural to them.

ANY STAKEHOLDER FEEDBACK?

There was no specific feedback from the children. But the summer camp activities provided by the Lab were popular. It seems the iSCAPE research had a positive impact on the young camp attendees too: the researcher, due to his age, was nicknamed Science Grandpa!

Community Feedback Report
Part 2 (2018/2019)

LIVING LAB UPDATES
BOLOGNA

5
EVENTS

WHAT WE'VE DONE SO FAR

Bologna Living Lab raises awareness about air quality and the impact of passive control systems on reducing air pollution. The Lab has previously delivered two interventions with local stakeholders (see CFR Living Lab Updates Pt.1) and, as covered in this report, a further activity exploring how the local community can proactively 'increase the green' in Bologna. The Living Lab also organises workshops, public talks at local events, and meetings with citizens, students, and other Living Labs such as the Urban Centre Foundation (Municipality of Bologna), Terracini in Transizione (an existing UNIBO Living Lab initiative) and Aria Pesa (a network of citizens).

ACTIVITY 1
45
CITIZENS ENGAGED

ACTIVITY 1: LET US PAN TOGETHER!!

DATE: December 2018
LOCATION: University of Bologna, via Terracini, 28, Room TA-05
CITIZENS ENGAGED: 45 (approx)
DURATION: 2.5 hours

DESCRIPTION

This event invited participants from the local community to share their thoughts and ideas on how trees could improve well-being in Bologna. It was important to develop a clear understanding what the right balance of 'green' might be for a city like Bologna, which meant the kinds of questions that needed asking included:

- How could more plants be introduced to the town?
- What benefits might the town expect from trees?
- What does 'co-creation' mean?
- What help might science be able to offer?
- How can reasoning, priorities and language be clarified in order to make the best decisions?

METHODS USED

Co-design workshop, follow-up survey

The workshop part of this activity introduced participants to the role of trees in the mitigation of the heat island effect and the spread of pollutants. Participants worked together in 4 groups, one for each of the following areas of the city: via Marconi, via Laura Bassi, via Zamboni and via del Lazzaretto. Each group then considered which parts of their area most needed improvement, and the reasons why – e.g. too polluted, too noisy, or too hot in the summer. Each group then divided into two subgroups: one to consider the task of planting plans and proposals, the other to consider communication strategies to share these initiatives with the local municipality. Then, for the survey, a questionnaire was sent to participants to investigate whether their participation had encouraged them to change their behaviours with regards to exposure to air pollution, and whether they believed the activity could affect change across the city.

IMPACTS

How this activity impacted participants

- Enthusiastic participation.
- Some greatly appreciated how their decisions affected the three-dimensional map.
- Significant interest in how economic factors impacted on sustainability of the operation.
- Greatest enthusiasm was reserved for the Lazzaretto area, where students tend to spend most of their days in lessons.
- Post-workshop, a number of participants expressed interest in upcoming iSCAPE events.
- The most significant impact observed on the participants was their realisation that they can drive changes in their city, and that they can do so in an enjoyable, social setting with fellow citizens.

How this activity impacted our pilot

- Creating three-dimensional trees for the map had the greatest impact on the participants.
- Seeing the 3D demonstration of the interventions that could be carried out within a city area, some realizations appear more feasible than others. This concrete aspect has had a great impact on the young citizens who, moreover, have been very creative and open to work.
- About us, it has created as an opening on several of our activities. For example, on Via Marconi we had always been categorical in thinking: it's all asphalt, you can not plant trees there in the middle!
- Instead, after the workshop we added this scenario among the various that we have studied and we have seen that not only is it possible to plant trees in the middle of via Marconi, but also that it would bring some benefits (see report D6.2).
- They were very passionate about having a specific area of the city assigned on which they could focus.

- Understanding the cost of trees encouraged participants to also think in terms of business planning.

TIPS FOR OTHER LIVING LABS

- Better results are achieved if the teacher/chair/organiser of the activity also participates as an active group member – the difference this fosters in group engagement is clearly visible in the photographs that document activities carried out over three years of iSCAPE in Bologna.
- It has proved consistently challenging to recruit Living Lab participants – a Future Cities Catapult workshop that encouraged greater creativity in activity design, and by extension greater creativity for the participants, made it easier to win their engagement.
- Communicating new activities via social channels is particularly effective for recruiting – and retaining – young participants.

FUTURE EVENT

ACTIVITY: PHOTOCATALYTIC COATINGS: RESULTS FROM ISCAPE INTERVENTION AND MEASUREMENTS

DATE: February 2019
LOCATION: Lazzaretto Campus

DESCRIPTION

- We will describe our intervention at Lazzaretto and present the scientific results.
- Update the community of students and professors on Lazzaretto progress since last August.

BOTTROP

5
EVENTS

WHAT WE'VE DONE SO FAR

The Wandering Tree Parade, which began in spring 2018, was concluded with a 'wrap' event – a small gathering of stakeholders for food and ideas exchange – in late summer 2018. All those involved in the Wandering Tree Parade were invited to this event: citizens, civil society stakeholders, and employees of the city administration. This broad cross-section of stakeholders in the organising and running of the parade – all of whom were actively involved with roadside greenery and other green issues in different ways over the summer months – was a great demonstration of the success and reach of the project. Substantive feedback from the stakeholders after concluding 2018's activities will inform all planning for a new parade in 2019.

ACTIVITY 1

12
CITIZENS ENGAGED

ACTIVITY 1: MOVING OF THE WANDERING TREES

DATE: August 2018
LOCATION: Wandering tree neighbourhood (Bottrop)
CITIZENS ENGAGED: 12 children (approx), and some educators

DESCRIPTION

As an extension of the parade, two of the Wandering Trees moved to a kindergarten with the support of around 12 kindergarten children. There, a small group of children and educators took responsibility for the trees (e.g. watering them) until the they were planted in October 2018. This event was conceived as a playful introduction to green topics, prepared by the educators especially for this young audience.

METHODS USED

1. **Discussions & Networking, Brainstorming**

In preparation for the Moving of the Wandering Trees, networking activities were conducted. Meetings and discussions were held with representatives of the kindergarten about possible ideas and the implementation of the parade. The subsequent brainstorming session with the kindergarten children on further activities for the trees, was led by the educators in a playful way appropriate for children. During this session new ideas were captured and subsequently actioned by the educators, whilst long-standing ideas (such as making tree decorations and seed balls) were retained.

ACTIVITY 2

ACTIVITY 2: WANDERING TREE PARADE - CLOSING EVENT

DATE: October 2018
LOCATION: Bottrop
CITIZENS ENGAGED: 20 (approx)

DESCRIPTION

During our closing event the Bottrop Living Lab wanted to thank participants with a small barbecue. All participants – employees of the Department of Environment and Green that included 15 employees of Office for Green Area Management and Cemeteries, 1 employee of the Coordination Office Integrated Urban Development/InnovationCity, 1 member of the iSCAPE-TUDO-team – had the opportunity to exchange ideas and experiences as well as to network and make new contacts. This closing event also provided a further opportunity to gather comprehensive feedback via the questionnaires for social impact assessment developed in the iSCAPE project.

METHODS USED

Questionnaires

Together with students the study project created tree decorations at a booth in order to raise awareness for urban greening in relation to air pollution issues.

IMPACTS

How this activity impacted participants

- Supported Living Lab's medium- and long-term goals of applying an approach that involves co-creation and is bottom-up in increasing awareness of air quality and acceptance of green elements in car-dominated street spaces.
- This approach was supported by the Living Lab concept and was very popular with the participants.
- Enthusiasm and commitment of the citizens in the parade was demonstrated by the fact that many of them adopted (i.e. assuming full responsibility for watering and caring for them) one or more trees over several weeks.

- Via the co-creation activities, a broader consideration for the environment in general has been observed across all participants.
- Some participants have made specific behaviour changes – including more environmentally friendly travel behaviours and improved waste management/ recycling etc.

How this activity impacted our pilot

- Design of the Wandering Tree Parade significantly influenced by input from participants.
- All participant comments, wishes and ideas were discussed and fed back to the city.
- Tree species and location selection was decided via co-creation.
- The nature of the parade facilitated spontaneous engagement from citizens and stakeholders – for example a restaurant and a kindergarten both spontaneously agreed to temporarily adopt several trees during the parade – and this was then incorporated into the activity.

TIPS FOR OTHER LIVING LABS

- Don't over-plan your Living Lab – be flexible in the design of the Living Lab and its individual events.
- Language is crucial – find the right words and concepts to help your target group identify with your objectives.
- Living Labs are time consuming – especially the planning, the implementation of a Living Lab, and the ongoing communication with the various stakeholders.
- To create a sustainable Living Lab, you should be prepared to provide support over a longer period of time – possibly even beyond funded project periods.
- Ensure you reach and involve all citizens that are already passionate about the topic of your activity.
- Also ensure you find ways to reach those citizens whose passion you hope to nurture (e.g. those less civically engaged or who rarely participate in public affairs).
- Use target-group-specific types of public relations work – as our target audience were citizens in general, we combined different types of communication (e.g., social media, press releases, etc.).
- Find ways to maintain motivation and interest (e.g. make the Living Lab fun!).
- If a Living Lab runs for a longer period of time with the same group of participants, ensure they are kept regularly informed of progress, frequent communication and participation is critical, however...
- ...Don't overdo it! Too many emails or messages and you're likely to drive participants away.

FUTURE EVENT

ACTIVITY: BEGINNING OF THE NEW WANDERING TREE PARADE

DATE: May 2019
LOCATION: Bottrop

DESCRIPTION

- Initial information and co-creation event for representatives of local primary schools and kindergartens.
- Living Lab events in every participating primary school/kindergarten where children help select tree locations and develop the new tree route.
- As part of a well-attended Bottrop city festival, the new Wandering Tree Parade will then move the trees together with children to their primary school or kindergarten.

5
EVENTS

DUBLIN

WHAT WE'VE DONE SO FAR

In autumn 2018, Dublin Living Lab's efforts were devoted to raising awareness of air pollution challenges amongst Dublin's citizens, especially young people. For example, the Dublin Living Lab team produced a book entitled 'The Air We Breathe'. Inspired by children participating in the Play and Learn workshop series organised by the team earlier that year, the book introduces the concept of air pollution and encourages children to generate new ideas to reduce air pollution. Throughout the book, scientists and experts from Trinity College Dublin, Dublin City Council, and the Environmental Protection Agency share their thoughts on various air pollution topics to encourage children and adults alike to learn more about this global problem and make informed choices that are better for both the environment and their personal health. The work of the Dublin Living Lab team was also featured in one of the latest Science Apprentice books titled 'Up in The Air' that reached Irish schoolchildren nationwide. In January 2019, the Dublin Living Lab organised a follow-up event at St. Catherine's National School to co-create new multifunctional solutions that reduce pedestrian exposure to air pollution.

ACTIVITY 1

28
CHILDREN

ACTIVITY : CO-CREATION WORKSHOP

DATE: January 2019
LOCATION: St. Catherine's National School, Dublin
CITIZENS ENGAGED: 28 children
DURATION: 1.5 hours

DESCRIPTION

This hands-on activity brought together students of the St. Catherine's National School to design multifunctional solutions that reduce pedestrian exposure to air pollution. Even though the overall structure of this workshop was similar to that of the 'Hack the Air' event organised by the team in March 2018, there were some adjustments made to the duration, content and materials to tailor the workshop to a specific target audience. For example, the duration of the co-creation workshop was reduced from 4 hours to 1.5 hours. The workshop materials and worksheets were also redesigned to appeal more to younger participants (aged between 9-12). As a result, through a highly interactive and hands-on session, children were engaged.

METHODS USED

Co-creation workshop following a process of design thinking

The workshop began with an introduction and a warm-up exercise. This set the stage and helped create an empathetic understanding of the people children are designing for and the problems they are trying to solve. Ideation and concept development (both individually and in small groups) followed, which encouraged the children to generate new ideas both independently and collaboratively. From there, prototyping, again in small groups, helped bring ideas to life by building a scaled-down version of the best solution. The session concluded with prototype presentations, which gave the students an opportunity to share their ideas and experiences.

IMPACTS

How this activity impacted participants

- This co-creation workshop was organised as a follow-up activity, the Living Lab team having met with the children initially during the Play and Learn workshop (April 2018).
- Meeting again, the children were delighted to hear how their ideas had inspired the team to produce a book for children that encourages young minds to work together with scientists to fight back against air pollution.
- The children were eager to continue working with scientists to generate new ideas and solutions that serve multiple purposes and not only reduce pedestrian exposure, but are also fun to look at.

How this activity impacted our pilot

- The co-creation workshop and Play and Learn workshops conducted by the team previously were designed so children can brainstorm and work on the development of new ideas and concepts.
- Creative experiences with children helped the team to develop a deeper understanding of the design and functionality requirements for a new solution serving a similar purpose to that of a low boundary wall.

- The children's creative ideas also inspired the scientists to think outside the box and look at the challenge with a fresh perspective. For example, the position of the low boundary wall on the footpath was questioned and other potential locations were discussed using a lateral thinking approach. The low boundary wall was not visualised as a wall but as a vertical object to be placed in different forms in the street canyon.

TIPS FOR OTHER LIVING LABS

- Living Labs require collaboration across disciplines and institutional boundaries. They also require skills and experience in bringing a great diversity of stakeholders together to work towards a common goal. The results, however, are well worth the investment in time and resources.
- To succeed, Living Labs should not only focus on development of new products or services, but also on refining internal processes as well as finding new methods and tools to improve the performance and collaboration within a Living Lab.
- Experimentation and a trial-and-error approach should be embraced when climbing the learning curve.
- To achieve the desired impacts, communication and visibility of Living Lab activities and outcomes are also important. Results and benefits should be communicated appropriately to all stakeholders involved in the co-creation process, including citizens.
- Bear in mind the most important outcome of the activities in the Living Lab might not be the innovative solution, but rather the increased awareness of both the stakeholders (concerning the targeted sustainable challenge, e.g. air pollution) and, more importantly, also the Living Lab researchers in terms of learning actual needs, considerations, constraints, concerns, language, ideas, etc., that stakeholders have with respect to the challenge.

5
EVENTS

GUILDFORD

What we've done so far

The Guildford Living Lab aims to raise awareness about air quality and the impact of GI to improve health and well-being. This was done through a series of events of variable length and content, but with recurring elements such as the interactive display system (that raised awareness of road side GI – specifically hedges – via a quiz with recommendations/guidance) and distribution of information material, etc. In this way the Living Lab has engaged with a wide range of stakeholders that includes children, young and elderly people, air quality professionals, local councillors, and the general public. From such activities, these stakeholders have learned the most recent research outcomes on air quality that can improve quality of life. Furthermore, the UoS Team has learned a lot through this process about the advantages of interacting with local stakeholder groups, as well as the challenges posed in organising this type of event for the first time. Given that a positive relationship with a number of local stakeholder groups have now been formed, it is expected to be easier to use this type of event for information and idea generation in the future.

ACTIVITY 1

30
CITIZENS ENGAGED

ACTIVITY : AIR POLLUTION WORKSHOP WITH BURPHAM COMMUNITY ASSOCIATION

DATE: January 2019
LOCATION: Burpham Village Hall, Guildford, UK
CITIZENS ENGAGED: 30 (approx)
DURATION: 2.5 hours

DESCRIPTION

The UoS team organised an air pollution workshop in collaboration with Burpham Community Association (Burpham is a part of Guildford). Following a talk from Professor Kumar to set the scene, there was a co-creation activity where participants split into smaller groups to explore GI solutions for the local area. The session concluded with each group presenting their conclusions to the others, and a general discussion about air pollution in Burpham.

METHODS USED

Presentation, participatory mapping, group presentation

To ensure the participants, each with different background knowledge, could take part in the discussions, Professor Kumar set the scene by covering topics such as: defining air pollution; how iSCAPE interventions in Guildford such as GI in open-road environments (i.e. trees and hedges) can help reduce exposure to air pollution in near-road environments; iSCAPE research results; and general results on the effects of GI. This presentation led directly into a co-creation activity, where the participants were divided into smaller groups. Participants then marked in coloured pen on large A0 maps where, and what type, of GI they would like to see in Burpham. This then helped facilitate a group discussion about GI. Each group then presented their conclusions from the participatory mapping to the others. Once everyone had presented and discussed their findings, this part of the exercise concluded with a general discussion about air pollution in Burpham. Using an interactive display system, the event finished with an air pollution quiz that helped review and reinforce the learnings from steps 1-3 outlined above.

IMPACTS

How this activity impacted participants

- Burpham Community Association have described the workshop as informative and entertaining.
- The workshop has raised awareness about air pollution problems in Burpham and how GI can contribute mitigate these issues.
- The workshop has spurred a push for a greater level of organisation in Burpham towards lowering air pollution levels. It is hoped that the citizens and their respective organisations can drive this development with the support of the UoS team.

How this activity impacted our pilot

- As yet, participant input has not influenced the pilot on hedges or the interactive display system. The event highlighted a lack of knowledge about both the magnitude of the air pollution problem in Burpham and existing GI in Burpham.
- The event also showed that where GI should be located in Burpham, which

naturally centred on traffic hotspots, busy roads and schools – although this is arguably not new information, and as such can't be said to have impacted on the pilot.

- The event has demonstrated citizen interest in hearing more about the work performed by the research group at the university, and in participating in the actual research, e.g. hosting citizen science sensors, and in harnessing this knowledge into political change to deliver cleaner air in Burpham.
- It is hoped that future collaboration can harness this energy to produce both better and more relevant research to the citizens, and to support political change that would bring cleaner air to Burpham.

TIPS FOR OTHER LIVING LABS

- Internal and external collaborators may not always deliver the full extent of their promised contributions. This can be mitigated through adaptability of activity contents and Living Lab structure based on increased self-sufficiency.
- Move on quickly once a collaborator is under-delivering rather than losing valuable time waiting.
- It can be challenging to schedule events with local stakeholder groups that were long enough to accommodate co-creation activities. Most local groups meet for less than 90 minutes, and were disinclined to dedicate a full meeting to this activity. The Guildford Living Lab succeeded in scheduling two long dedicated events, with interested stakeholder groups as well as a number of shorter events. This has been a challenge for several Living Labs, and is an ongoing challenge to overcome.
- Connecting the work in the other work packages with the Living Lab activities – i.e. defining meaningful questions that could be discussed with participants whilst also being beneficial for the research can also be challenging. Careful consideration of these questions is therefore critical.

FUTURE EVENT

ACTIVITY: AIR POLLUTION WORKSHOP WITH GUILDFORD LABOUR PARTY

DATE: January 2019
LOCATION: Guildford Institute, Guildford, UK

DESCRIPTION

- Short presentation – Introduction to air pollution, introduction to GI interventions and their relative pros and cons, as well as iSCAPE results.
- Short discussion on whether GI should be pursued as a solution in Guildford, and if so how?
- Voting on which neighbourhood and which type of GI should be pursued.

ACTIVITY: AIR POLLUTION WORKSHOP WITH GUILDFORD

VISION GROUP

DATE: January 2019
LOCATION: Trinity Centre, Guildford, UK

DESCRIPTION

- The plan is the same as for Event 1, but with the discussion changed to focus more on GI as part of the Guildford Vision Group Master Plan for Guildford Town Centre.
- The voting procedure will only focus on the type of GI and not on which neighbourhood.

5
EVENTS

HASSELT

WHAT WE'VE DONE SO FAR

The main aim of Hasselt Living Lab is to design informational-based behavioural interventions that encourage pro-environmental behaviour among citizens. In particular our focus is to influence travel behaviour by recording individual activity-travel patterns using a smartphone application and other platforms. A Behavioural Intervention Tool (i.e. a Customised Information Package) can provide users with the consequences of their travel behaviour and suggest travel solutions that are more environmentally friendly. Living Lab Hasselt is involved in various activities such as co-creating the information material, collaborating with key stakeholders to acquire other required datasets, leading participant engagement to execute studies, and dissemination of study results.

ACTIVITY 1

25
CITIZENS ENGAGED

ACTIVITY 1: CO-CREATION WORKSHOP: MOBILITY-BASED INFORMATIONAL INTERVENTION FOR ECO-FRIENDLY ROUTES TO SCHOOL

DATE: September 2018
LOCATION: Universiteit Hasselt, Campus Hasselt
CITIZENS ENGAGED: 25

DESCRIPTION

The aim of this workshop was to introduce informational intervention, and then conduct a co-creation activity around the intervention to better understand how positively affect change in the target audience. The co-creation workshop was delivered as part of the summer school organized within Hasselt in the 3rd week of September 2018 and was attended by participants from the Summer School, including other iSCAPE Living Lab representatives, University Hasselt students (with a background in environmental sciences), some other collaborators (such as Flemish environmental agency representatives) and a few parents living in Hasselt and the surrounding region. The ideas generated at the workshop will help improve the information provided to the school children and their parents, which in turn will help them make healthy behavioural changes to how they undertake that journey.

METHODS USED

Co-creation Workshop

Participants were recruited through social media, as well as via channels available to the summer school organized in HASSELT, who partnered with us on this workshop. The workshop itself opened with a detailed presentation covering the methodology and implementation of the exercise. This then led into a short warm-up exercise to brief participants on how to present their findings so that they inform behavioural change. Participants then divided into groups of 5-6, and each group was given a worksheet-based exercise based on key information about physical activity and exposure to pollution, and two hypothetical home-to-school route examples. The participants were tasked with proposing improvements from which they could develop an info-graphics-based poster that could influence behavioural change. Feedback on what worked and didn't work at the workshop was collected on post-it notes at the end of the session.

IMPACTS

How this activity impacted participants

- The students that attended – the majority of participants – appreciated the interactive sessions and enjoyed learning from experts about the effects of information on behaviour.
  Participants praised the workshop for:
  - Finding solutions to a common problem through collective wisdom
  - Being a fun, interactive and educational session.
  - Offering a high level of engagement and generating lots of discussion, although somewhat compromised due to time constraints.

How this activity impacted our pilot

- Based on the co-creation activity, the intervention information sheet has been re-designed and many changes made to improve the content and the way information is conveyed to its target audience.
- The execution of this intervention is now underway, as is associated recruitment from three schools.
- Participants highlighted the need to present information more simply, and to add some light-hearted imagery to make the it more appealing.

TIPS FOR OTHER LIVING LABS

- Always undertake a pilot workshop to ascertain proper timings for each step of the activity.
- Wherever possible simplify tasks for the participants. For example, the informational material contained too much detail and too many hypothetical scenarios for ease of comprehension. Based on this, several questions were asked on the worksheet. Whilst most groups demonstrated a clear understanding of the material, and also provided suggestions to improve this information, the facilitators felt that groups may have been better able to focus on specific suggestions if the information sheet had been more concise.

ACTIVITY 2

ACTIVITY 2: MEETING COLLABORATORS TO GATHER DATA FOR INTERVENTION DESIGN

DATE: October 2018
LOCATION: Hasselt University
CITIZENS ENGAGED: 5 participants, 2 from VITO (Flemish Institute for Technological Research , Belgium) and 3 from IMOB (Transportation Research Institute (IMOB) UHasselt)

DESCRIPTION

A meeting was held in October 2018 with collaborators that provide the relevant data to formulate the intervention. A detailed presentation was delivered that covered the information intervention design, the required data (especially pollutant concentration data at street level) and how collaborators can provide the required data in the required formats. Participants considered the information intervention and made suggestions about how to improve the overall study design. Furthermore, appropriate means for sharing the relevant data for intervention design were agreed.

METHODS USED

Meeting

The meeting kicked off with a step-by-step presentation detailing the intervention and study plan. The talk also focused on data requirements and how they can impact the effectiveness of interventions. There then followed a discussion on the presented material and how they could be improved further, and what methods might help convey the message. Furthermore, a significant breadth of data available from VITO that could be useful for this intervention was also considered. The meeting concluded with an agreement to share data relevant for intervention design.

IMPACTS

How this activity impacted participants

- Representatives from VITO learned how their data can help informational intervention and potentially drive change in mobility behaviour.

How this activity impacted our pilot

- VITO suggested informational material should use a language that clarifies the data used for ascertaining exposure on different routes is modelled data.
- VITO suggested that as well as identifying eco-friendly routes, estimates on the long term effects on health if eco-friendly routes are followed should also be provided, which would encourage behavioural change amongst participants. VITO are helping to estimate the effects on health of exposure.
- The meeting helped reshape the informational intervention design to use the

data provided by the collaborators.

- Pollutant concentration maps at the street level were provided by the collaborators so the designed intervention could be successfully executed.
- VITO has suggested to implement this on a larger-scale, and have assured full support. Follow-up on this will be made once conclusions have been drawn from the small scale study.
- The idea of making the information intervention in real time was discussed, however it was felt too ambitious at this stage.
- Extending this intervention further to other groups of individuals and for different mobility behaviour was also considered.

TIPS FOR OTHER LIVING LABS

- Face-to-face meetings are a powerful way to expand collaboration ambitions.
- 'Homework' and preparation is critical to achieving objectives.

5
EVENTS

VANTAA

WHAT WE'VE DONE SO FAR

Since the activities documented in the last report, a workshop has been held in November to discuss how iSCAPE can support the development of Vantaa's new City Master Plan. Furthermore, a co-design workshop for high school students took place in December, which was similar to the exercise at the Heureka Science Camp in the summer where students built their local neighbourhood with toy bricks. After the workshop these were transferred into the ENVImet model by FMI experts to examine the resulting differences in the local urban climate of the neighbourhood. The results were then presented back to the school in January 2019.

ACTIVITY 1

6
CITIZENS ENGAGED

ACTIVITY 1: URBAN CLIMATE MODELING IN VANTAA

DATE: November 2018
LOCATION: Kielotie 28, Vantaa
CITIZENS ENGAGED: 6 (all from the Vantaa city planning division)

DESCRIPTION

This workshop was convened to discuss how iSCAPE can support the development of Vantaa's new city Master Plan. The workshop was very positive: it was agreed that the urban modelling in iSCAPE (SURFEX and ENVImet) could examine the impact of the GI on both climatic and air quality conditions across the whole Vantaa scale (lower resolution SURFEX) and the Vantaa city center (high resolution ENVImet). Vantaa city had been grappling with multiple research questions relating to city planning on which they were unsure how to proceed. For example, they had not seen any climate change scenarios for Vantaa, but when showed what we had done for all the iSCAPE cities, they were greatly enthused. Furthermore, the modelling exercises we had done for Vantaa city had already demonstrated their value, and continuation plans for the modelling were agreed upon.

METHODS USED

Co-creation Workshop

Following an introduction and a few warm-up questions – Why are we here? What are the challenges that European cities are facing with respect to air quality and climate change? How can iSCAPE activities try to tackle these? – Vantaa presented the challenges facing their City Master Plan, and FMI experts presented specific iSCAPE topics including:

- Climate change in Vantaa compared to other iSCAPE cities.
- Urban climate modelling in Vantaa: SURFEX and ENVIMet.
- Estimating the costs and benefits of GI in Vantaa.

Next actions and time-lines were then agreed, and a questionnaire (T6) to capture the point of view of local stakeholders on the activities carried out in Vantaa completed.

IMPACTS

How this activity impacted participants

- From the very practical-level presentations and discussions, Vantaa gained a clear understanding of how they can directly benefit from iSCAPE expertise, particularly in support of their city planning on many levels
- Raised awareness and understanding of the specific tools/information in iSCAPE that can directly support Vantaa city planning in both the short and longer term
- The Vantaa climate scenarios presented in the workshop was extremely useful new information for the city. The ability to compare Vantaa scenarios with other iSCAPE cities was especially illuminating as it clearly demonstrated Vantaa was warming more than the others.
- The modelling possibilities had not been thought of before, and a number of city planning considerations were then suggested as worth modelling:
  - Present land usage vs. the land usage in the new Master Plan to also consider changing climate.
  - City density should factor in issues such as heat island effect and the role of GI.
  - Effect of high buildings on urban climate (e.g. to winds and air quality).
  - Social and economic impacts, especially segregation (e.g. how might GI such as parks and air quality affect housing prices).

How this activity impacted our pilot

- The workshop highlighted exact locations of interest for urban modelling activities.
- Prior to the workshop, some city locations had been considered useful for the modelling cases, but Vantaa provided much more detailed information on the optimal sites/locations.
- The co-creation made it possible to model the most relevant locations (with respect to their new Master Plan) in Vantaa.

TIPS FOR OTHER LIVING LABS

- Seek inputs and feedback from the city, no matter how challenging resourcing might be their end.
- Whenever possible meet face-to-face to get the best from participants.
- To maximise co-design and information sharing, either recommend that the city is funded as a project partner, or organise an expert from the funded entity to work for at least a year in the city.

ACTIVITY 2

ACTIVITY 2: HIGH SCHOOL STUDENTS AS "GUINEA PIGS" IN URBAN PLANNING

DATE: December 2018
LOCATION: Finnish Meteorological Institute (FMI)
CITIZENS ENGAGED: 45 students, 2 teachers

DESCRIPTION

This co-design workshop was similar to one at the Heureka Science Camp in the summer where students built their local neighbourhood with toy bricks. After the workshop these models were transferred into the ENVImet model by FMI experts for comparing differences in the local urban climate of the neighbourhood. The results were then presented back to the school in January 2019.

METHODS USED

Co-creation Workshop

Following an introduction and a few warm-up questions – Why are we here? What are the challenges that European cities are facing with respect to air quality and climate change? How can iSCAPE activities try to tackle these? How can the you assist in this research? – the group was divided in half (about 20 students per group). One group attended a presentation about FMI's research, whilst the other group attended an urban modelling workshop. The groups then switched tasks after lunch. The workshop concluded with a general Q&A session over coffee during which the students discussed the issues with the experts, whilst the teachers completed a questionnaire (T6). The urban modelling results were then presented back to the students at their school at the end of January.

IMPACTS

How this activity impacted participants

- The students and teachers all learned how city planning directly affects the local climate and air pollution concentrations.
- All learned how state-of-the-art tools are used in climate modelling and how the results can be applied e.g. to decision making.

- All participants particularly enjoyed taking part in actual scientific work instead of just listening to a 'boring presentation'!

How this activity impacted our pilot

- In this activity, co-creation was at the very core of the case: explained the exercise and its motivation was explained, and participants were provided a 'tabula rasa' (i.e. an almost-empty cardboard template outlining the neighbourhood and toy bricks).
- Participants were then instructed to build their neighbourhood as they thought it should look with respect to buildings, green and roads.
- As they worked, organisers circulated among the groups, asked and answered questions and ensured the final outcomes were indeed co-created neighbourhoods.
- Further in-depth discussions on the effects of their decisions subsequently arose when the modelling results were presented back to the students in January.

TIPS FOR OTHER LIVING LABS

- 'Take advantage' of opportunities to visit students and other groups in project work – they are always enthusiastic and can contribute valuable extra manpower to projects.

iSCAPE
Living Labs

The iSCAPE project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 689954.