

# Stakeholders analysis and risk assessment - non-technical challenges to implementation of interventions

(based on engagement workshops and insight  
activities in the target cities)

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**WP2 / Deliverable 2.1**

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Short Description	The report not only identifies the challenges and risks associated with setting up the iSCAPE living labs but also highlights what is going well in each of the living labs in order to share learnings and inspiration across the iSCAPE cities. In addition to this it provides a set of recommendations and solutions to the challenges. The report is primarily intended as a resource for the iSCAPE partners but may also be useful for other cities or organisations embarking on similar living lab projects.		
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**Statement of originality:**

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## List of abbreviations

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

**ENoLL:** European Network of Living Labs

**EU:** European Union

**FCC:** Future Cities Catapult

**FMI:** Finish Meteorological Institute

**iSCAPE:** Improving the Smart Control of Air Pollution in European cities

**LBW:** Low Boundary Wall

**TUDO:** Technical University Dortmund

**UCD:** University College Dublin

**UH:** Universiteit Hasselt

**UNIBO:** University of Bologna

**UoS:** University of Surrey

**WP:** Work Package

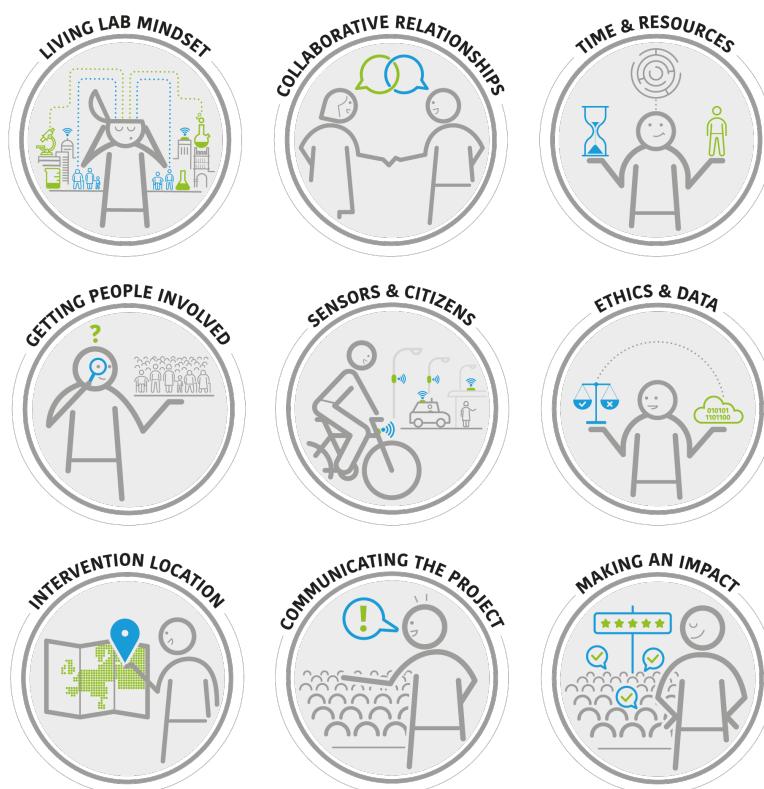
# 1 Executive summary

This deliverable aims to assess the non-technical challenges to implementation of a set of living labs in six target cities across Europe; Bologna<sup>1</sup>, Bottrop, Dublin, Guildford, Hasselt and Vantaa. This will involve running a series of citizen engagement activities on the topic of air pollution and climate change, as well as deploying physical or behavioural interventions in each of the cities. We see non-technical challenges as all challenges that make the creation and execution of a living lab difficult or impossible because of human influence. The focus is on all stakeholders included in the project – businesses, government, academia and citizens - and includes their interaction with each other as well as their interaction with the living lab.

The report not only identifies the challenges and risks associated with setting up the iSCAPE living labs but also highlights what is going well in each of the living labs in order to share learnings and inspiration across the iSCAPE cities. Finally, a set of recommendations and solutions to the challenges are proposed.

All findings in this report have been based on a series of community engagement workshops and insights activities run by Future Cities Catapult (FCC) in each of the iSCAPE cities during February and March 2017.

We have grouped the individual challenges each city is facing into a set of topics we believe are necessary for our iSCAPE living labs to prosper. These include:



<sup>1</sup> Unlike the other iSCAPE living labs which only have one project, Bologna has two projects running in parallel – one in the city centre and the other at the Lazaretto university campus.



These topics are prerequisites for the creation of living labs in order of priority. The report highlights which of these issues are most pressing for each city, and it is recommended that the partners focus on that challenge first. For Bologna and Dublin this is embedding a 'living lab mindset', for Bottrop this is understanding the role of 'sensors and citizens', for Guildford this is finding solutions to a lack of 'time and resource', for Hasselt and the second project in Bologna this is about 'communicating the project', and for Vantaa this is working on establishing more 'collaborative relationships' with their stakeholders.

Overall, this report aims to, not only mitigate risks in the project, but promote and encourage an inclusive and open environment that promotes the co-creation of solutions between the scientific community, the municipalities and their residents. It is primarily intended as a resource for the partners of the iSCAPE project to better understand the risks and challenges they are likely to face when setting up the living labs as well as recommendations for how to mitigate these. The report may also be useful for other cities or organisations embarking on similar projects.

## 2 Introduction to the report

### 2.1 Aims and objectives

This report forms Task 2.1 of the second work package (WP) in the iSCAPE project. Below is a description of the aims for the WP in general as well as the objectives of the task taken from the project proposal.

#### **WP2: Living lab set-up and management**

##### **Aims:**

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

##### **Description of work:**

The overarching purpose of WP2 is to ensure an effective management of stakeholders by bringing together key local actors and the scientific community involved in iSCAPE.

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. This will be done through the engagement of piloting cities and their local stakeholders in order to:

- (i) identify risks (such as preconceptions and mismatched perceptions)
- (ii) manage expectations,
- (iii) adjust implementation plans to accommodate such insights and
- (iv) make sure that technical implementation of the living labs runs smoothly.

#### **Task 2.1: Engagement workshops and insight activities in target cities**

Building upon our previous experience with urban multi-stakeholder interactions, Future Cities Catapult has run a series of community engagement workshops and insights activities in the target cities during February and March 2017. These activities were adapted to the needs of each city and depended mostly on whether interventions were already in place or not.

##### **Aim of this task:**

- To understand the non-technical challenges that the implementation of physical and behavioural interventions might face.

- To examine the experiences and lessons learnt, be it at legal, governance or community level.

Both the workshops as well as the insights activities included representatives from city authorities (who presented the specific air quality/climate change issues in their city), and to the local partner (introducing the measures planned). We also met with relevant community groups, e.g. 'Urbane Gärtner' (Urban Gardeners) in Bottrop, and the Windlesham Heathpark Wood Group in Guildford, wherever and whenever possible.

At the time of our visits none of the cities had fully confirmed which living lab activities they were planning or, in the case of Hasselt, who they would recruit for the behavioural intervention. It was therefore not possible to speak to relevant citizens or businesses about the project. We will include in the next task and deliverable (Task 2.2.3 Stakeholder management plan / Deliverable D 2.4) how we see engagement with citizens working in each of the participating cities and how to gauge opinions from them towards the intervention.

The outcome of this task (each city's implementation risks and recommendations for future activities) will be shared with the rest of the consortium via this report, thus feeding into the subsequent WP2 tasks.

## 2.2 Our approach – the city workshop

To find out what the non-technical challenges to implementation of both the physical and behavioural interventions in WP3 and WP4 are, we visited all 6 partner cities. Our goals were:

- Get buy-in for the living labs (validating the intervention) from the city stakeholders
- Together with the partners and the city stakeholders identify target groups for the living labs
- Understanding non-technical challenges to implementation of the intervention (already in place)

We see non-technical challenges as all challenges that make the creation and execution of a living lab difficult or impossible because of human influence. The focus is on all stakeholders included in the quadruple helix<sup>2</sup> and includes their interaction with each other as well as their interaction with the intervention.

In order to achieve this, we created an agenda that was used flexibly depending on the availability of partners and city stakeholders. We used post-it notes and printed templates to facilitate the discussion and collate our findings.

### Agenda for city visits (February - March 2017)

- **Tour of the city and intervention sites** – partner

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<sup>2</sup> According to ENoLL the quadruple helix principles brings together companies, civil servants, academia and citizens. <https://issuu.com/enoll/docs/enoll-print> (ENoLL, 2016)

- **The intervention** – presentation about the nitty gritty of the intervention, e.g. how does it work exactly, what is the impact etc. (90 minutes including discussion) – partner to lead
- **City stakeholder survey** – presentation about stakeholder opinions in general, about the intervention and challenges regarding Urban Environment, Citizen Perception and Government Policy (using outputs from WP1, Task 1.1) – a preview to the challenges (90 minutes including discussion) – FCC to lead
- **A living lab in your city** – what type of living lab is possible in your city? – FCC to provide suggestions for discussion (90 minutes including discussion) FCC to lead
- **Your target audience** – exercise to find out more detail about who could take part in the testing of the intervention. Brainstorm to identify potential target audiences and discussion of related topics, e.g. recruitment, incentivising, potential community groups to involve (90 minutes including discussion) – FCC to lead
- **Communication** – how do you want to communicate with your living lab audience – FCC to lead

At the iSCAPE consortium meeting in Barcelona on the 28<sup>th</sup> and 29<sup>th</sup> of March 2017, we conducted some exercises that were an extension of our city visit. These included a stakeholder mapping exercise, individual feedback sheets for each of the living labs and brainstorming solutions to some of the key challenges to come out of the city visits so far. The outputs for these have not only fed into this report but have already been given to each partner for instant feedback on their living lab.

This report will include the following:

- Overall implementation risks for the living lab
- Implementation risks (non-technical challenges) for the living lab per city
- Recommendations on how to solve the challenges – these recommendations will be expanded upon in Task 2.2.3 Stakeholder management plan / Deliverable D 2.4

The recommendations are of general nature so that cities who are considering having a living lab in their city can easily look at all the recommendations and adapt it for their city. At the same time, we are listing suggestions that are specific to the living labs included in our project.

## 2.3 This report is an ongoing process

This report is intended to capture live learnings from each of the cities in the iSCAPE project. This means that by the time we have delivered this report some of the challenges may already be addressed, as we are in constant contact with the living lab partners to advice on how to proceed with their living lab. Therefore, this document should be read as an ongoing process and a collection of challenges that existed, but are already being worked on or solved. This is reflected in the narrative way in which we have written many of the challenges.

The progress reports (included in Task 2.3: Managing the Living Labs) will act as a device to facilitate ongoing discussion of the challenges each partner is facing and to address these in an collaborative and iterative way. Constant communication between the management team and the living lab leads is critical for this to be a success.

### 3 Implementation risks for the living labs (non-technical challenges)

We have identified a set of risks or challenges based on the workshops and insight activities conducted in each of the iSCAPE cities. Both partners and stakeholders were asked what their biggest worries are regarding the interventions and the engagement with the citizens and the following is the summary of the most common findings per city.

In order to make sense of these for each of our cities as well as a wider audience, they have then been grouped into a set of topic areas we believe to be important for the successful creation of a living lab. All partners are struggling with a number of these topics, but before we go into specific detail about each city, we have first listed a summary of these topics in order of priority. They relate either to citizen engagement, the intervention or both, and always include a human element. These risks have been considered when designing D2.2, the Living Lab Implementation Plans.

The most prominent implementation risks involve ‘time & resources’ and ‘recruiting participants’ as well as ‘communicating the project’ and having a ‘living lab mindset’. Here they are explained in more detail.



#### LIVING LAB MINDSET

This refers to how far the partners have taken the principles of a living lab on board – we define these principles as using a citizen centred approach in collaboration with others to experiment in a real-life setting. It also refers to how far they have got with planning their living lab activities in detail, e.g. active citizen engagement versus more passive provision of information, each partner’s level of experience with citizen engagement methods and how well formed their current idea for the living lab is.



#### COLLABORATIVE RELATIONSHIPS

This refers to collaboration between partners in the iSCAPE cities as well as their individual city stakeholders. In many cases the partners have already built collaborative relationships with city stakeholders, but others have found this difficult for various reasons and need support to strengthen the relationship going forward.



### TIME & RESOURCES

Time and resources – or the lack thereof - is the biggest issue for a lot of the partners in our project. The reasons for this are different for each city. For example, for some of the interventions and/or citizen engagement activities, a high level of logistical effort is required. Further issues involve coordinating the right time for the citizen engagement to take place, depending on stakeholder's availability.



### GETTING PEOPLE INVOLVED

Several partners have questions about how to recruit citizens either for their intervention or for general engagement. Challenges range from the issue of reaching out to new and diverse sets of participants, to how to incentivise citizens to participate in the living lab. Sustained citizen engagement and keeping people interested over time is also a concern when thinking about the future of the living labs.



### SENSORS & CITIZENS

Some of the partners have already thought about how they want to use the Citizen Sensing Kit as well as the Living Lab Station (see Smart Citizen Kits, 2017) provided by our partner in Barcelona (IAAC). However, some are yet to do this or have only considered one of the sensors.



### ETHICS & DATA

This refers to concerns people have about data protection, privacy issues and permissions needed for the execution of the intervention.



### INTERVENTION LOCATION

This refers to concerns relating to where the intervention and living lab might be located in the city. These include challenges about the security of expensive measuring equipment and whether there is enough space for citizens to engage with the intervention.



### COMMUNICATING THE PROJECT

Good communication with citizens is a vital part of a successful living lab. This is about making the intervention more tangible for citizens, making the purpose of the project more explicit and explaining the intervention in simple terms. It should run through the whole project from set up to communication of results and integrating citizen feedback, and is critical for keeping people interested and involved in the living lab.



### MAKING AN IMPACT

This is about a long-term impact with a lasting effect on the city and its citizens. Challenges include behaviour change, longevity and replicability of projects and the worry of not making an impact.

## 3.1 Specific implementation risks per city

Each city is different and their specific implementation risks vary. In order to make this report as useful and as actionable as possible for each of our cities, we have highlighted which challenge needs particular attention. Although all challenges need addressing this should help each city to understand which to prioritise.



## 4 Bologna and the street canyon (project 1)



The University of Bologna (UNIBO) has two projects running in parallel. The first of these is planning on running a series of events in the Urban Centre to inform citizens about the measurements they are doing in two different street canyons (streets with tall buildings either side of the road) in Bologna. The aim is to educate and raise awareness about the topic of air pollution and collect feedback from the public. They are also planning to show air pollution levels at the street canyons locations via posters etc. to find out if citizens would change their behaviour if aware of this information at a local level<sup>3</sup>.

### 4.1 What's going well in Bologna (project 1)



#### **City stakeholders have citizen engagement expertise and are keen to collaborate**

Bologna have a number of existing living labs and citizen engagement initiatives that we can use to connect to citizens more easily. The Urban Centre in Bologna aim to encourage links between citizens and the municipality to help everyone to 'take care of the city'. The visit by FCC in February 2017 sparked the first meeting with the Urban Centre and other city stakeholders. The exact type of engagement e.g. one off event, exhibition, co-creation space etc. still needs to be planned but there was a clear indication that the Urban Centre already applies a citizen centric approach to their work and is happy to support the project going forward.

<sup>3</sup> For further detail of all the citizen engagement and the intervention refer to D2.2 Implementation Plans.



**Close connection between Bologna and Lazzaretto**

The two projects in the city (Bologna city centre and Lazzaretto campus) are working closely together which provides a great opportunity to share learnings and resources when it comes to stakeholder and citizen engagement.

## 4.2 Implementation risks for the living lab in Bologna (project 1)

**FOCUS ON THIS FIRST: Ideas for citizen engagement need further exploration**

Due to the partners' lack of experience in this area, they may require additional support from FCC in generating ideas for engaging citizens in creative ways.

**Connection between the intervention and the citizen engagement is unclear**

The intervention focuses on the measurement of the air flow in the street canyon and so there is no obvious route for citizen engagement. They will therefore need to think creatively about how to engage citizens in a relevant and meaningful way.

**Lack of experience with living lab methodology**

The partners from UNIBO and ARP AE have a background in physics and engineering. They recognize that citizen engagement is not their expertise and so may need a greater amount of training in these methods.



### **Continued engagement with city stakeholders**

Initially Bologna hadn't been in touch with their city stakeholders, but since they met during FCCs visit it became apparent that Bologna's city stakeholders are an excellent resource and the partners at UNIBO should take advantage of this. The conversation has now been started and it is important for the partners to continue this relationship to get additional resources, ideas and access to citizens and a great central venue.



### **Lack of time and resource for the living lab**

The partners in Bologna are currently relying quite heavily on other organisations and, in particular, the Urban Centre in Bologna, to support with the iSCAPE living lab. They feel that there is a lack of time and resources for them to do citizen engagement and have therefore explored a simple top down approach to explain to citizens the effect of street canyons on air pollution. More active citizen engagement than this is needed to properly count as a living lab.



### **Safety of equipment**

The intervention will require expensive equipment to be placed on a street 24 hours a day for a series of weeks. The partners in Bologna plan to keep the equipment in a van which will be parked on the street during the intervention. They plan to approach the city council to ask permission to use a parking space at the taxi rank but this has not yet been confirmed. We should consider whether any additional security measures will need to be put in place to avoid the equipment being stolen or vandalised.

## 5 Bologna and the photocatalytic wall (project 2)



The second project taking place in Bologna will involve an existing living lab, students and university employees on the Lazzaretto campus at UNIBO in the painting of a wall using Pureti® photocatalytic paint which absorbs harmful pollutants from the environment (see Pureti® Group LLC, 2017). They also plan to invite them to think about how they can visualise air pollution and the effect of the photocatalytic paint in an easy to understand way<sup>4</sup>.

### 5.1 What's going well in Bologna (project 2)



#### **Lazzaretto already has a living lab**

Lazzaretto already has its own living lab established (Lazzaretto Living Lab) and the organisers of the lab are already interested and engaged in the iSCAPE project. They attended the workshop we had there during the city visit and were willing to collaborate with the iSCAPE partners to engage students and citizens in the air quality topic.

#### **Bringing together different disciplines**

The second project in Bologna is currently managed by academics from a social science background who are used to involving students and citizens in their work. This is likely to help the project take a more interdisciplinary approach than it would otherwise have.

<sup>4</sup> For further detail of all the citizen engagement and the intervention refer to D2.2 Implementation Plans.

### **The Lazzaretto living lab are already thinking about environmental issues**

The lab did a recent survey about conserving water which involved asking students how much water they used to flush the toilet as they left the bathroom. This means the staff and the students are already thinking about ways to engage people in these types of topics and so are likely to respond well to involvement in the project.



### **Close connection between the two projects**

The two projects taking place in the city (Bologna and Lazzaretto) are working closely together which provides a great opportunity to share learnings and workload when it comes to stakeholder and citizen engagement more generally.



### **Incentivising student participants**

Incentive methods for students are likely to be easier than for other user groups. The citizen engagement/air pollution element could also be included in a course curriculum or form a dissertation topic.

## 5.2 Implementation risks for the living lab in Bologna (project 2)



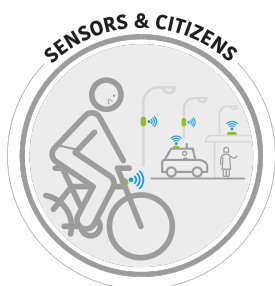
### Linking up both of the interventions in Bologna

As there will be two projects taking place in Bologna, we need to establish how closely these two interventions need to be linked together in terms of the citizen engagement activities. E.g. do we run separate engagement activities for each of these two interventions or should we schedule the citizen engagement activities to coincide with each other? Should each intervention have a different target group to avoid participants getting fatigue with this topic? How can the two interventions learn from each other?



### Fishing in the same pond

A lot of students on the Lazzaretto campus have already taken part in living lab activities so they need to think creatively about how they can engage a different pool of students or thinking even broader, think about citizens living in the area.



### Use of Citizen Sensing Kit not considered yet

The partners have not yet considered how to use the Citizen Sensing Kit alongside the photocatalytic paint. They need to decide whether the sensors should be part of a separate student engagement activity or part of the photocatalytic paint activity.



### University location and student participants

The location for the photocatalytic walls is around the back of the Lazzaretto campus at UNIBO. As the general public are not officially allowed on campus, this will mean that the intervention will only be seen by university students. This may reduce the impact of the intervention as it will only reach a specific target group and those most likely to be engaged in these topics already.



### FOCUS ON THIS FIRST: Lack of visibility of the intervention

The intervention will involve painting a wall/walls with a photocatalytic coating that is transparent. A big challenge is therefore how we make the intervention visible to people. The partners will need to think about creative ways to communicate the intervention and its affect to passers-by e.g. physical signs, colours, messages etc. They could also engage people beyond the physical space using social media.



## 6 Bottrop and the ‘Wanderbäume’



The partner in Bottrop is planning several public events with a local urban gardeners group (GemeinSinnsschafftGarten, 2016) in which trees will be ‘paraded’ through different parts of the city (‘wandering trees’). These events aim to make citizens think about how trees can improve the air quality in their city<sup>5</sup>.

### 6.1 What’s going well in Bottrop



#### Embracing the living lab methodology

Bottrop is keen to use a bottom up approach to empower people to come up with their own ideas and projects rather than imposing projects on citizens.

#### Already have experience with living lab methodology

When we conducted the workshop in Bottrop, the city stakeholders were keen on learning about living labs and its methods. During the workshop, however, we discovered that they already had a lot of experience in these types of methods. The German word for this is ‘Reallabor’.

#### The idea for the ‘Wanderbäume’ came about through citizen engagement

Previous ‘Reallabor’ activities (workshops with citizens about their

<sup>5</sup> For further detail of all the citizen engagement and the intervention refer to D2.2 Implementation Plans.

vision of the future of Bottrop) found that citizens wanted a greener city. The 'Wanderbäume' ('wandering trees') was thought to be a good way to bring their vision to life.

### Likelihood of citizen uptake

ENoLL believe that this project will have a high citizen uptake, as it doesn't use a 'technology first approach'.



### City stakeholders have an excellent relationship with the partners

Our partner in Dortmund and the city stakeholders in Bottrop have a strong working relationship. This meant that during the workshop with FCC they were both able to conduct a very honest and open discussion. As a result, they collaboratively selected the 'Wanderbäume' out of four possible interventions.



### The intervention is fully funded

All of the interventions suggested initially including the 'Wanderbäume' are fully funded by the city. The stakeholders intent to prepare the project starting in fall 2017. The implementation of the parades is scheduled for summer 2018.



### Already engaged community group

The city stakeholders also have a very good relationship and are actively involved in a community group of urban gardeners called 'GemeinSinnschafftGarten'. This group is happy to get involved in the 'Wanderbäume' project.



### Intervention has been tested and is replicable

The 'Wanderbäume' has already been implemented in Munich and the city stakeholders should see what they are able to learn from this project. The project should also be easily replicable in other cities, both in Europe and worldwide.



## 6.2 Implementation risks for the living lab in Bottrop



### Lack of resources

The partners and city stakeholders are concerned about the lack of time and resource they have to engage citizens in the project, as both teams are very small and have no full-time resource to work on the project. Technical University Dortmund (TUDO) is currently thinking about how they could use students to plan events and support in the living lab activities as a solution to this.

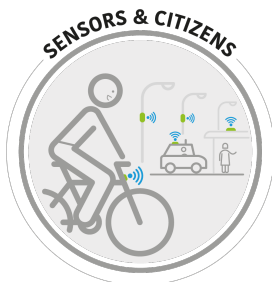


### Concern over parking spaces

Our city stakeholders told us that citizens in Bottrop have a big reliance on cars as well as parking spaces due to a lack of public transport and adequate cycle lanes. City stakeholders feel that this is the biggest risk in terms of backlash for the 'Wanderbäume' project. They feel people may not want to take part or host the 'Wanderbäume' in their neighbourhood as a result.

### Fishing in the same pond

Bottrop citizen stakeholders do a lot of citizen engagement already and have found that a lot of the same type of citizens tend to come to these events. They need to think creatively about how they can engage a different pool of citizens.



### FOCUS ON THIS FIRST: Use of Citizen Sensing Kit and Living Lab Stations not considered yet

At the time of our visit Bottrop had not yet considered how to use the Citizen Sensing Kit alongside the 'Wanderbäume' initiative. By the time of writing this report, The Bottrop partners have already made a decision on this: They want to use the Citizen Sensing Kits to measure air quality a) before the trees come to a certain street and b) while they are there. This way, the impact of the trees can be measured.



### **Communicating air quality and climate change**

Citizens may not automatically see the connection between the 'Wanderbäume' and the aims of the iSCAPE project – to communicate air quality and climate change to citizens. The partners will need to think about how to make this clear to citizens.

### **Difficult to make aims of project tangible for citizens**

The partners are hoping that they will get a similar level of citizen engagement to the existing 'Urban Gardeners' project (GemeinSinnSchafftGarten, 2016) which is a great success. However, there is a concern that it will be more difficult to engage people in the 'Wanderbäume' as the results are less tangible e.g. improved air pollution is less visible than being able to take home your own vegetables.



### **Keeping people interested in the 'Wanderbäume' events over time**

A series of events is currently planned to move the 'Wanderbäume' around the city throughout the duration of the project. We need to think about how to keep people interested in these events, how we can engage different communities, and how we can make each event feel new and interesting.

## 7 Dublin and the low boundary walls



Dublin will engage citizens in pop-up events using LEGO®-like giant bricks to explain the function and effectiveness of low boundary walls and promote behavioural change. Citizens will be invited to help build the giant LEGO®-like walls<sup>6</sup>.

### 7.1 What's going well in Dublin



#### Clear idea for citizen engagement

During the workshop with FCC one favourite idea was born – creating a low boundary wall out of large LEGO®-like bricks with citizens. This idea is currently being explored.

#### Multiple ideas for citizen engagement

During the workshop with FCC the partners and other workshop participants generated a lot of creative and engaging ideas that could be a good alternative should the giant LEGO® project not be feasible. This provides a bank of citizen engagement ideas that could be useful in the future.

<sup>6</sup> For further detail of all the citizen engagement and the intervention refer to D2.2 Implementation Plans.



### City stakeholders have a good relationship with the partners

Our partner and some of the city stakeholders in Dublin know each other personally. During the workshop with FCC there was an engaging and open discussion about all topics and the city stakeholder is open to the ideas of a permanent living lab.



### Opportunity for corporate sponsorship

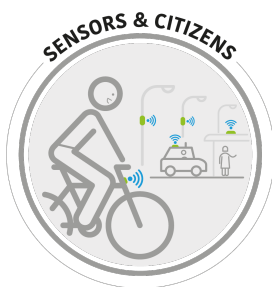
Our partner is currently exploring if LEGO® could join the project as a sponsor.

## 7.2 Implementation risks for the living lab in Dublin



### FOCUS ON THIS FIRST: Getting the LEGO®

It might be difficult to get the right amount of giant LEGO®-like bricks in time for the intervention for a feasible amount of money. LEGO® also may not be willing to be associated with the event. If this is the case Dublin will need a back-up plan as currently all citizen engagement hangs on this.



### Use of Citizen Sensing Kit / Living Lab Stations not considered yet

Dublin have not yet considered how to use the Citizen Sensing Kit alongside the low boundary wall initiative. They need to decide whether the sensors should be part of a separate citizen engagement activity or a tag onto the building of the giant LEGO®-like walls.



### **Finding a suitable neighbourhood for the low boundary giant LEGO® walls**

As the LEGO® activity is a fairly new idea, no considerations have been made as to where to build these new low boundary walls. Ideally the neighbourhood should reflect a diverse set of citizens from Dublin.



### **City stakeholders are concerned about the long-term impact of citizen engagement initiatives**

One of the city stakeholders in Dublin is unsure about the impact of citizen engagement. In his experience citizens have become less engaged over the years and continuous citizen engagement in a project is very hard to achieve.

## 8 Guildford and roadside green infrastructure



The partner in Guildford is planning to create awareness amongst citizens about air pollution and green infrastructure. They want to create an interactive display with real time information about pollutants using low-cost sensors in order to demonstrate the impact of road traffic on local pollution and the benefits resulting from roadside green infrastructure (such as hedges and trees) in terms of reduced exposure<sup>7</sup>.

### 8.1 What's going well in Guildford



#### Already engaging with citizens

During our visit to Guildford we met with a citizen group who were seeking advice on reducing exposure to air pollution due to a new development in their neighbourhood. In addition to this a number of other citizen and hedge management groups, schools and local councilors are keen to be part of the project and could be involved with the Citizen Sensing Kit or the Hasselt Experiment (See section 8). Local residents close to their intervention sites have also expressed an interest in getting involved in the iSCAPE project.

<sup>7</sup> For further detail of all the citizen engagement and the intervention refer to D2.2 Implementation Plans.



### **Citizen panel**

Guildford stakeholders have a citizen panel with the contact details of over 1000 citizens across the borough. This could be a useful resource when recruiting participants for engagement activities.

### **Engagement with Stakeholders**

Guildford team is actively interacting with the local councils to engage them in the ongoing air pollution measurement campaigns for assessing the impact of road-side vegetation barriers on exposure reduction as well as the proposed living lab activities.



### **Excellent communication skills**

During our visit to Guildford we observed that Professor Kumar from the University of Surrey (UoS) had excellent communication skills when talking about the project – particularly when it came to explaining Guildford's experiment or discussing air pollution with citizens. He has extensive experience making his research accessible to the public through media publications.

## **8.2 Implementation risks for the living lab in Guildford**



### **Connection between the intervention and the citizen engagement**

The interventions are in 6 different places along busy roads, aiming to address a number of scientific questions as a part of other work packages. Additional sites have also been identified for sensor deployment and citizen engagement (see iSCAPE deliverable 2.2).

### **Sharing knowledge of living lab methodology**

Some of the partners already have experience with living labs. For example, Bologna has a living lab in Lazzaretto, Bottrop has used living lab methodology previously, Hasselt is already engaging citizens in their intervention and Vantaa is just finishing off with a citizen engagement project that the project partner can learn from (Climate Street, 2017). Sharing this expertise amongst the iSCAPE living labs will be useful to the partners in Guildford to build and improve their experience in this area.



### **FOCUS ON THIS FIRST: Ambitious idea for the living lab**

The partners in Guildford have an innovative idea to create an interactive and portable installation at a location in the city to engage citizens in the subject of air pollution. As a consortium we need to work out an effective solution to realising this idea. The idea to create an interactive installation within the scope of the project appears to be replicable to other iSCAPE cities in order to make the most impact.

### **High level of logistical effort for the intervention**

The current plan is that the partners in Guildford will do their measurements on a daily basis by carrying the instruments to 6 sites in Guildford. The equipment cannot be left unattended which means the partners will need to stay with the equipment for 12 hours each day. This is a very high level of logistical effort. For this reason, as indicated above, the alternate plans to use sites which are easily accessible to the public and the stakeholders are being considered for the living lab activity.



### **Safety of equipment**

The measuring equipment is expensive and cannot be left outside unattended for fear of vandalism and theft. This means the partners will have to be present during the measurement / living lab activities.



## 9 Hasselt and the behavioural intervention



With the help of a travel diary app the partner in Hasselt wants to encourage citizens to change their travel behaviour to be more sustainable and less polluting for the air quality of their city<sup>8</sup>.

### 9.1 What's going well in Hasselt



#### The intervention already involves citizen engagement

Hasselt's intervention is all about behaviour change. It has two parts, one is an app based behavioural intervention that asks people to report their travel behaviour and gives them feedback on their preferences. The second part is a stated preferences task. Out of all the interventions this has been the most citizen focused from the outset and so the citizen engagement element should come naturally.

#### Pilot study already underway

During the city visit to Hasselt we took part in a briefing session for a pilot for the behavioural intervention. This gave us the opportunity to support the partners at University of Hasselt (UH) to simplify the briefing materials and run a series of feedback activities for participants to make suggestions for improving the study. It will also ensure the final intervention is more robust and is aligned with the iterative design methodology common to the living lab approach more

<sup>8</sup> For further detail of all the citizen engagement and the intervention refer to D2.2 Implementation Plans.

generally. The pilot has been taking place throughout March.



### **New connections with engaged stakeholder established**

Hasselt have a close connection with one key stakeholder but he has many commitments and seems to have less time for the project than we had hoped. However, through the course of our city stakeholder workshop in Hasselt we made a new connection to a second stakeholder who seemed very engaged and willing to help with our challenges regarding recruitment and communication.



### **Timings finalised with city stakeholders**

The fact that the intervention *is* about citizen engagement means that the team in Hasselt are well underway in planning the engagement activities. They have already started the pilot study and the main behavioural intervention is due to start in June 2017. These timings have been agreed with the city stakeholders and have been scheduled around other engagement activities that they are running on similar topics e.g. the launch of the 'Positive Drive' initiative that is happening in May 2017.



### **Already thinking about ways to engage a more diverse sample**

Although the current sample of participants for the pilot study are all students the partners are thinking of ways to collaborate with the city stakeholders to engage a more diverse group of people, rather than just those who always get involved in these types of projects/topics.



### **Planned to be replicable in other cities**

As part of WP4 all cities are expected to replicate this intervention. This means that the experiment has been designed with this in mind and work has already started to support the other cities to do this.

## 9.2 Implementation risks for the living lab in Hasselt



### **The intervention demands a lot of time from participants**

Currently the intervention requires three weeks of the participant's time. This includes a 'warm up' period of one week and two weeks for data collection. During this time the participants are asked to provide information on every journey they make throughout the day. This is a substantial amount of time and is likely to encounter problems such as participant fatigue towards the end of the intervention, missing days or participant drop off. It will also require adequate incentives to get participants to take part.

### **Incentivising participants**

Due to the high demand on participant's time, there is likely to be a high drop off rate even with a good incentive. The partners in Hasselt will therefore need to be creative about coming up with ways to incentivize citizens e.g. prize draw, cash incentive, gamification.

### **How to recruit participants**

Hasselt needs to think about cost effective ways to recruit participants e.g. leaflets, stickers, social media, street recruitment.

### **Accessibility issues**

The intervention currently uses an app that is only available for android phones – which limits the type of participant for the experiment. A QR code is also needed to access the app and the data needs to be input to a website from a computer/tablet. This means that accessibility issues will need to be considered and whether there are ways to assist those participants who are less digitally savvy in order to include a more diverse group of participants.



### Privacy issues when collecting GPS data from participants

The study involves collecting detailed GPS data on where the participant is going throughout the 3 week duration of the study. People might have concerns about what the data is being used for and how it is stored. Consent forms will need to include details about this information.



### FOCUS ON THIS FIRST: The brief needs to be simplified

During our visit, we were able to attend a briefing session for the pilot and ask for feedback from the students on how easy the brief was to understand. Since our visit the presentation has been improved but should be tested again for general understanding with citizens (that are not mobility students) and also to make it easier to translate into other languages.

### The brief needs to be target group appropriate

The participants for the pilot study almost exclusively consisted of students from the same department as the project partners. The briefing material has only been tested on them and we don't know if it is suitable for a more representative set of the population.

### Help with branding / communicating the intervention

Given the demand on participant's time for this intervention the partners in Hasselt also need to think about how to communicate and 'sell' the project to a wider audience through branding and compelling communications.



**Providing ‘average user’ data may discourage behaviour change:** Part of the intervention includes providing participants with a report on their daily behaviour in order to encourage behaviour change. This includes information on their CO<sub>2</sub> emission compared to the average user. In some cases this may discourage behaviour change if a participant sees that they are performing better than average and see no reason to change.

### **Need to consider additional citizen engagement opportunities**

Although Hasselt have the benefit that their intervention already involves citizen engagement, they need to think of other engagement methods to fully utilize the living lab approach and broaden the reach of the project.

## 10 Vantaa and meteorological modelling of green urban spaces



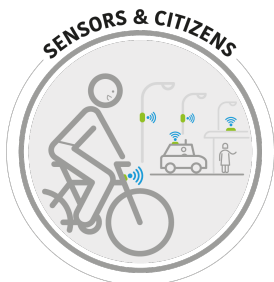
The partner in Vantaa is planning to engage with local school children as well as with visitors of the Heureka Science Centre to explain the measurements done within the iSCAPE project. They will also involve the school children in using the Citizen Sensing Kits<sup>9</sup>.

### 10.1 What's going well in Vantaa



#### Identified two clear routes for citizen engagement

Vantaa can either build upon an existing citizen engagement initiative with local residents and businesses called 'Climate Street' (although this ends in summer 2017) or through engaging local schools/students in the air quality and climate change debate. Since our visit to Vantaa our partners have also formed a new relationship with a local Heureka Science Centre who is interested in collaborating on the iSCAPE project.



#### Encouraging citizen sensing

Once FMI have established the best route for citizen engagement and decided between the two target groups (businesses verses schools) they plan to hand over the Citizen Sensing Kits to the participants and give instructions on how to use them, with the possibility of encouraging older students to teach younger ones.

<sup>9</sup> For further detail of all the citizen engagement and the intervention refer to D2.2 Implementation Plans.



### Providing open data to city planners

The FMI are keen to make the data produced through their modelling interventions open to city planners and other interested parties with the hope that it will feed in to guidelines for future planning. The team at FMI seem committed to making sure the iSCAPE project has a long-term impact beyond the intervention.

## 10.2 Implementation risks for the living lab in Vantaa



### Disconnect between two interventions happening in parallel in Vantaa

As there are two distinct intervention streams in Vantaa we need to ensure they complement and learn from each other. It was not clear what the difference between the two interventions was at first and only one of the interventions (Achim's) was presented during the stakeholder workshop.

### FOCUS ON THIS FIRST: Relationship with city stakeholders still weak

Although there is the potential for a good relationship with the Climate Street organisers this initiative is ending soon. The partners in Vantaa need to foster collaborative relationships with more influential stakeholders including Leena Maidell-Münster, Head of Environmental Protection for the city of Vantaa, who is on the iSCAPE advisory board.



### Fishing in the same pond

One issue with using the first option of continuing the existing 'Climate Street' project is the potential of serial participants and participant fatigue. On the one hand, we recruit participants too often from the same pool of commonly engaged users. On the other hand, local residents and businesses have already been participating in a project of a similar nature, and may lack enthusiasm to continue with the initiative. Engaging with school children may therefore be the better option.





### **Ethical issues if working with schools**

One of the possible routes to citizen engagement that Vantaa has suggested is working with school children. This brings with it ethical issues and the Finnish regulations on this will need to apply.



### **The intervention is difficult for a lay person to understand**

The interventions in Vantaa have been the most complex to communicate in a simple way. FMI need to think about creative ways to communicate the two projects and key differences between them, especially if wanting to engage children.



## 11 Recommendations for future activities

We've used the risks identified at the beginning of the report to guide us in creating a set of recommendations for future activities for each of the living labs. We've taken each of the challenge topic areas in turn and delved into each of them to find specific practical examples for each city to work on. In order to differentiate between the two projects in Bologna, those recommendations labelled 'Bologna' refer to the city centre street canyon intervention, while those labelled 'Lazzaretto' refer to the photocatalytic wall and are named after the university campus the wall will be based at. These recommendations are a mixture of learnings from the city workshops, the feedback activities run during the consortium meeting in Barcelona and FCC's expertise.

### 11.1 Living lab mindset



#### LIVING LAB MINDSET

This refers to how far the partners have taken the principles of a living lab on board – **using a citizen centred approach in collaboration with others to experiment in a real-life setting**. It also refers to how far they have got with planning their living lab activities in detail, e.g. who are they collaborating with, are they informing or engaging citizens, different levels of experience with citizen engagement etc.

#### Finding inspiration

Think broadly about where to find inspiration for your living lab. How you can learn from other initiatives that aren't directly linked to your intervention or the topics of air pollution and climate change?

**ALL** Attending the Open Living Lab Days (ENoLL, 2017) will be a great opportunity to learn about living lab techniques from other practitioners and to connect the other living labs working on similar projects across the globe.

**BOLOGNA**



Check Deliverable 1.1 from WP1, as it contains a lot of different examples of existing living labs

**BOTTROP**



Take advantage of the fact that Munich have already piloted this initiative. What can you learn from their successes and failures?

**HASSELT**



What can you learn from other travel or air pollution related apps? E.g. Clean Space (2017) and City Mapper (2017).

### Level of citizen engagement

Citizen engagement activities sit on a continuum from passive citizen engagement e.g. information giving, talks and lectures, to more active engagement ranging from creating a partnership with citizen bodies to empowering them to make decisions, take action and co-create solutions themselves. Each city needs to decide where they currently sit on this continuum, as well as where they would ideally like to sit. They should then try to push their ideas to achieve this goal. Some living labs will need to work harder than others to do this.

**BOLOGNA**


Could Bologna educate people but at the same time do a brainstorming session about how to solve air pollution in Bologna?

**GUILDFORD**


How can we design the interactive tool to be generate as active engagement from participants as possible? E.g. enable them to make choices, or gather feedback so it is more than just educational.

**VANTAA**


Think about what the citizen engagement activities will be and whether these will link directly to the intervention. It will help to think about specific target audiences to do this.

### Citizen brainstorming and co-creation workshops

The idea of the ‘wandering trees’ in Bottrop came up, because the city stakeholders had conducted workshops with citizens to find out about their needs – one of which was to have a greener city. Being involved in brainstorming helps citizens to feel more engaged than just being talked to. Co-creation gives citizen an even high level of involvement. Those cities who are yet to define their citizen engagement activities should run citizen workshops to help define further engagement.

**BOLOGNA**



Think about conducting a brainstorm with citizens and city stakeholders on how they would solve the issue of air pollution in their city – this gives Bologna the opportunity to take a ‘real’ living lab approach. Starting with a workshop to brainstorm ideas with citizens and then co-creating solutions. This event could be held in the Urban Centre to draw on their expertise. FCC can provide material to do this.


**LAZZARETTO**



Run a workshop in conjunction with the Lazzaretto Living Lab to brainstorm around ideas for ‘making the photocatalytic paint visible’.

### **Citizen led design**

Think about how to get citizens more involved with the design of the intervention.


**BOTTROP**  Run citizen workshops to decide how and where the trees will be placed e.g. community designed gardens. Get citizens/children to paint the plant pots and moveable beds to give them ownership and make them more fun.

**DUBLIN**  Get school children to design how the walls should be built e.g. should steps be included on one side? Explain to them how different shaped walls/bricks might impact air flow.

**LAZZARETTO**  Involve students/citizens in painting the wall with the photocatalytic paint.

### **Involving citizens in decisions**

Think about whether you want to involve citizens in any of the decisions that need to be made about the living lab e.g. location, date, design etc. Each city should think of ways to push their engagement methods to be as active as possible in order to make the biggest impact in line with the living lab methodology.

**BOTTROP**  Could citizens be involved in selecting the location for the Wanderbäume? Could they vote on how long the trees should stay in their area?

### **Running a pilot**

If you are not sure about if your citizen engagement will work, create a prototype of what you are planning to do and run a pilot. Hasselt did this and they learned a lot about what they could improve – talk to them if you want any advice.

### **Open your data**

Think about making any data that you are gathering during your intervention open source - whether from your measuring instruments, the Citizen Sensing Kit or the Living Lab Station - encourage your city and citizens to further explore its potential. Vantaa is planning to this and can probably share their thoughts.

## 11.2 Collaborative relationships



### COLLABORATIVE RELATIONSHIPS

This refers to collaboration between partners in the iSCAPE cities as well as their individual city stakeholders. In many cases the partners have already built collaborative relationships with city stakeholders, but others find this difficult for various reasons and need support to strengthen the relationship.

### Learning from other partners

Where possible all partners should share ideas and learn from each other. There are varying levels of expertise in living lab methodology and many different skill sets that complement one another. In addition to this D1.1 (WP1) highlighted the many similarities between the challenges our iSCAPE cities face, sharing ideas in terms of how to overcome these challenges is therefore likely to benefit more than just one living lab.

GUILDFORD 

Can Guildford use air pollution data from all the partners for their interactive tool to make it international?

GUILDFORD   
VANTAA 

Both interventions are centred around measuring the impact of green infrastructure, are there any synergies the two partners can explore?

GUILDFORD   
HASSELT 


Can Guildford learn from Hasselt when it comes to thinking about gamification and citizen engagement using technology?

BOTTROP   
BOLOGNA 

Both living labs are looking at the impact of trees in urban settings, however, they are coming at this topic from two very different viewpoints – one from a technical, and the other from a social perspective. This has the foundations for a great collaboration.

**Learning from Outside iSCAPE**


Think broadly about other organisations that might be willing to get involved with iSCAPE and how you can involve a multitude of disciplines in the project.


**DUBLIN**  Can you involve city planners and architects within the city council in the LBW project?


**ALL** What grass roots initiatives could you reach out to in your city?

**Using local exhibition spaces**

Partnering with local community spaces and other organisations will help to embed the iSCAPE project in the city.

**BOLOGNA**  Continue to build links with the Urban Centre, use their space for citizen engagement.

**GUILDFORD**  Continue to build links with local community centres e.g. church, library etc.

**VANTAA**  Talk to the Heureka Science Centre about what the options are regarding using their space for brainstorming with citizens, exhibitions etc.

**Online platform**

We need to ensure partners have easy methods to share learnings. This will include regular progress reports throughout the project (D2.5, co-ordinated by FCC). It should also include an online platform/forum for more regular contact as part of the virtual living lab

**Strengthen the relationship with your city stakeholder**

Whether the relationship is just being formed or whether you are already great friends, it's important to put a lot of effort into the relationship with your city stakeholders. Clearly explain the iSCAPE interventions and make the research understandable. Explain why involving them and their citizens in a living lab is important. Listen to their worries and concerns – build a trusting relationship and don't over-promise what you can deliver. But do show them what's in it for them and give them something back in return for their support and involvement. Keep them informed on a regular basis. Make the iSCAPE project relevant to your city stakeholders and the cities current issues around the topic of air pollution. Try to use the project to solve these issues

- ALL** Get in touch with your city stakeholders on a regular basis, e.g. once a month to inform them about your progress, however small it is, just to keep them engaged and in the loop. An email with bullets is fine.

## 11.3 Time & resources



### TIME & RESOURCES

Time and resources – or the lack thereof - seems to be the biggest issue for a lot of the partners in our project. The reasons for this are different for each city. On the one hand, some of the interventions and/ or citizen engagement activities need a high level of logistical effort. On the other hand, the issue can also be coordinating the right time for the citizen engagement to take place, depending on stakeholder's availability.

### Make a plan

Planning helps you to identify where there is a lack of time or resources. Look at the upcoming months and try to be realistic about when you can work and how much time you can spend on your living lab. Don't forget to consider annual leave, bank holidays or festivities in people's calendar, e.g. during summer holiday time it might be tricky to involve citizens in activities. When making a plan think long term, but be realistic about what you can achieve. Once you are happy with your plan, agree with your stakeholders about it and keep them updated on a regular basis.

**BOLOGNA** 

Start with thinking about what the information is you want to convey and how you can best present it. Check with your colleagues from Physics Education if they can support you.

**BOTTROP** 

Plan how you can continuously do activities with citizens. Even if the weather is not good enough to start with any outdoor activities for the 'wandering trees', think about how you can get people excited through social media during the winter months. What are the practicalities for the 'wandering trees' and how can you involve people between the events?

Include students of TUDO in the event to help you when you need more hands-on deck, e.g. to carry trees, lead people along the way etc.

**DUBLIN** 

Think about how often you are planning events – is it every month, every 6 months or just a one-off event?

**GUILDFORD** 

Your idea is technologically complex. Plan carefully, and manage expectations and ensure its achievable. You need to also think about any financial or practical constraints you might have.

### Involve outside support

Think about how you could involve other people who could help. Maybe there are students from a local university who would be interested in helping for the chance to receive an internship certificate or extra credits for their studies? Are there organisations in your city who would be interested in the topic and therefore happy to get involved? Is there any community group in your city with similar interests that you could involve? Hasselt has recently attended Belgian Living Lab Day 2017 - check if there is something similar going on in your country. The ENoLL website is a good source for this information.

**BOLOGNA** 

Involve the Urban Centre as much as you can – they have citizen engagement skills as well as a great venue to engage citizens.

**GUILDFORD** 

Is there any other faculty at your university that you could involve, e.g. the Faculty of Arts and Social Science which has a department of sociology? Guildford is also a centre for the UK gaming industry (Nesta, 2016) – could this be a project where they could be included?

**VANTAA** 

Involve people from Heureka Science Centre in the project as much as you can. Think about students you could involve in Vantaa and find a contact person at the university or school that could help. Think about particular faculties/courses that would be a good fit e.g. Aalto University has an MA on 'Creative Sustainability' (Aalto University, 2017).

### Reach out to potential sponsors

Think about brands or organisations who have synergies with the iSCAPE project overall or your particular intervention that you could reach out to e.g. similar goals or beliefs.

**DUBLIN** 

Reaching out to LEGO® or alternative sponsors to provide bricks for the community event to build a LBW.



### Low tech solutions

Sometimes you don't need a polished final product to achieve a goal, think about alternative products and materials.

**DUBLIN** 

Instead of giant LEGO®, could you use other material that can easily be used by people to build their own LBW? What about paper/cardboard, wood or bricks?

**GUILDFORD** 

Consider how you can create an engaging interactive experience in a low-tech way, sometimes the simplest things are the most impactful.

## 11.4 Getting people involved



### GETTING PEOPLE INVOLVED

Several partners have questions about how to recruit citizens either for their intervention or for general engagement. Challenges range from the issue of reaching out to new and diverse sets of participants, to how to incentivise citizens to participate in the living lab. Sustained citizen engagement and keeping people interested over time is also a concern when thinking about the future of the living labs.

### Specifying your target group

It is important to think about who is the right target group for your intervention.

- Working with children is different from working with cyclists.
- Think about including people with accessibility needs, e.g. visual impairment, motor impairments etc.
- Involve policy makers in the living labs from the beginning. They might want to take part as it will give them great insights into the topic. It's important that you communicate to them on a regular basis at fixed points in time. Explain to them what's in it for them and talk to them about the cost benefits of your intervention.

**BOLOGNA** 

Could you narrow down your target group to commuters? How can you engage residents on each of the streets?

**BOTTROP** 

Who exactly will you target? Are ‘all citizens’ right for this engagement? You need to involve physically strong people or think about mechanisms to make it easy for less able people to be able to move the trees.

If you think there will be a lot of resistance against giving up parking spaces for ‘wandering trees’, start communicating about the event very early to start selling the benefits to citizens and get buy in.

**DUBLIN** 

Can you engage middle school children with giant LEGO® or would they consider LEGO® to be too childish? Think about how to widen your target group to not just involve schools. Can you play on the nostalgia factor LEGO® has?

**HASSELT** 

Would it make sense to include a control group in the study, e.g. pedestrians? Check if people are doing a walking challenge somewhere else in your city, you could give those some extra points who are walking a low pollution road.

**LAZZARETTO** 

Think about how to engage the local community more and not just students.

**VANTAA** 

Make sure that visualisation for educational purposes is targeted to different age groups.

### Accessible technology


In general, everything you do in your citizen engagement should be inclusive for all, whether accessible technology or access to a location.

**HASSELT** 

Could you develop the app for other platforms as well (iOS), so that you are targeting more people?

### How to recruit people

Think about all forms of media you have access to – from print (newspapers, magazines, leaflets, posters etc.) to digital (Twitter, Facebook, LinkedIn etc.). Think about where these types of media are best placed, e.g. leaflets in the local library or distributed at events. Maybe you can leave flyers in the local library, in a repair café or you can put an ad in your city magazine? Some cities might have existing user panels that you can tap into, e.g. Guildford found out that Surrey has access to a user panel of over 1000 citizens across the borough. Sometimes local newspapers might have a database of customers who have agreed to be contacted for marketing purposes.

**HASSELT**  Check if Hasselt has an existing user panel and contact your local newspaper if they have a database of customers. The newspaper might also be happy to publish an article about the project through which you could recruit people.

**ALL** Recruiting is location specific, so think about how best to approach this in your city. Think about local press or community spaces to communicate the project in. These are likely to reach a very different audience compared to alternatives such as social media platforms e.g. retired people.


### Incentives


We should not take people's time for granted and assume they will do things for free. Incentives don't necessarily have to be money – although this does help. First of all, think about communicating the non-monetary benefits. Attending an event like the 'wandering trees' parades already promises a good day out, which might be enough of an incentive to take part, while a 2-3 week diary study might require a bigger incentive.


Providing someone with a valuable service or tool is also an incentive in itself e.g. telling runners and walkers the healthiest routes – think about what you can give back to your participants.

People also respond well to prize draws, Hasselt is thinking of having a prize draw for participants of their study and are offering an electric bike as the 1<sup>st</sup> prize. Movie tickets, gift cards or tokens for the local pool can be a cheap way to incentivise a larger group of citizens.

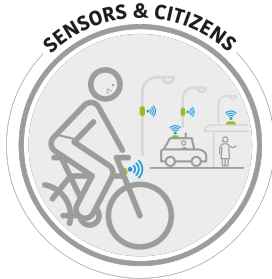
To find out what the right incentive is, think about what you are expecting from people. Also try to find key opinion leaders – influential people within the community, e.g. community group leaders, peer mentors etc. If they attend an event or take part in the living lab activities, others might follow.

**BOTTROP**  Communicate the 'wandering tree' parade as a great day out and consider including food vendors to sell at the final location of the 'wandering trees' to make it into an event.

**DUBLIN**  Building LBWs from giant LEGO®-like bricks can be communicated as a great day out. Include food vendors to sell on location.

**HASSELT**  As your experiment requires a lot of time from participants, consider paying them with money or a voucher of their choice to make sure they participate until the very end of the experiment.

## 11.5 Sensors & citizens



### SENSORS & CITIZENS

Some of the partners have already thought about how they want to use the Citizen Sensing Kit as well as the Living Lab Station provided by the Fab Lab partner in Barcelona. However, some haven't or have only considered one of the sensors.

#### Plan for ALL your sensors

All partners who will have a living lab in their city will get access to different types of sensors besides their own. The Living Lab Stations and the Citizen Sensing Kit. Make sure you are planning for all those sensors in your project.

#### BOLOGNA



Think about how Bologna can use its Citizen Sensing Kits. Could you recruit citizens with the support of the Urban Centre to take part in using them during the time you are planning measurements of the street canyons?

#### BOTTROP



Does it make sense to place the Living Lab Stations on the trees themselves? What is your plan for the Citizen Sensing Kits?

#### DUBLIN



How will you integrate both sensors in your living lab? Could the Living Lab Stations measure in front and behind the LBWs and display the results live at the location? Could the Citizen Sensing Kits be given out to attendees of the giant LEGO® LBW event?

#### GUILDFORD



Will the Living Lab Stations be stationed at all the intervention sites permanently or will you carry them around like your own measurement instruments? If the Living Lab Stations will feed into your interactive installation, what are your plans for the Citizen Sensing Kits?

#### HASSELT



Could your participants also carry the citizen sensors while using the travel diary? Can you validate the travel diary data against the sensor data?

#### LAZZARETTO



Will the students use the Citizen Sensing Kits on campus only? Where will you put the Living Lab Stations?



Will the pupils/students use the citizen sensors? Will the Living Lab Stations be next to your measuring instruments?

## 11.6 Ethics & data protection



### ETHICS & DATA PROTECTION

This refers to concerns people have about data protection, privacy issues and permissions needed for the execution of the intervention.

#### Privacy issues

You have to think about how to deal with privacy issues and data protection for the people you are involving in your intervention or citizen engagement. Besides checking your universities rules and regulations about this topic, use some common sense. What would you worry about if someone used your data? What information would you be willing to give, what wouldn't you? What explanation would you want to have about the project before agreeing to participate?



Explain exactly why you need the data and what you will be using it for. Allow them at any stage of the experiment to retract their permission to use their data.

#### Getting permission

It's important to start getting your permissions as early as possible, as this can often take a lot of time. Think about identifying all of the relevant authorities, e.g. city council, town planning, police, schools etc., in case anyone should worry about the intervention or complain about it, the police will already know about it. This will not only allow people to voice their concerns, but will also help to communicate the project to the local community. You could also distribute leaflets in the neighbourhood to tell people about the project.

## 11.7 Intervention location



### INTERVENTION LOCATION

Whether the location for an intervention is a challenge depends on several factors. It can be more about the security of the measurement instruments or whether there is enough space for citizens to engage with the intervention.

### Make the most of your unique surroundings

You're not in the lab anymore! The location of your intervention is rich with local context for you to take advantage of.

**BOLOGNA** 

Bologna has some unique issues with air pollution. Firstly, the city's geographical location in the Po Valley means they regularly suffer from air pollution. Secondly, the city's historic streets have been built with covered walkways on either side of the road which can trap air pollution inside. Many citizens are unaware of these issues and so Bologna has a unique opportunity to raise awareness of these issues and inform citizens know what actions they can take to minimise their exposure to pollutants and reduce pollution more generally.

**BOLOGNA** 

**DUBLIN** 

**GUILDFORD** 

**LAZZARETTO** 

Think about ways to interact with citizens on the street. For example, how can you use what is already there to enhance the citizen engagement e.g. walls, pavement, street signs, pillars and porticoes, road markings, traffic cones etc.

### Enhance your environment

How can you use these physical interventions to not only advance scientific understanding and raise awareness about air pollution issues, but also improve the design of the local urban environment?

**BOLOGNA** 

Is there an opportunity to bring new trees to the street without trees once we have the results of the intervention thus changing the environment based on the results of the intervention?

Use the van that stores your equipment to tell citizens about the project. You or maybe even kids from a local school could decorate it to tell the story of the project and provide contact details to ARPAE.

**BOTTROP** 

Will there just be trees or will the intervention be more like a garden, including e.g. benches, flower beds, turf? Think about how you want citizens to interact with and learn from the trees?

### **Finding a suitable neighbourhood for your citizen engagement and your intervention**

Think about how you plan to interact, and with who. Look for a diverse community to get exposure to different people. Seek out neighbourhoods where active community groups already exist and ensure your equipment is safe and secure.

**DUBLIN** 

Which neighbourhood in Dublin is suitable for the LBW?

## 11.8 Communicating the project



### COMMUNICATING THE PROJECT

Good communication with citizens is a vital part of a successful living lab. This is about making the intervention more tangible for citizens, making the purpose of the project more explicit and explaining the intervention in simple terms. It should run through the whole project from set up to communication of results and integrating citizen feedback, and is critical for keeping people interested and involved in the living lab.

We looked at this topic from different angles:

- Audience
- Timing
- Verbal communication
- Visual communication
- Media
- Events

### 11.8.1 Audience

#### Make it personal

Help people to understand how air pollution is likely to affect them personally, and how they can have an impact on air quality in everyday ways. Give people ownership of these issues and what they can do to help. This will make it more tangible for people.

**BOLOGNA** 

How can we make the connection between measurement/modelling and the real urban context more apparent to people walking down the streets being measured?

Continue making links with the 'Physics Education' department at UNIBO and seek their advice on how best to engage audiences on complex scientific topics.

**GUILDFORD** 

Provide frames of reference to make data more meaningful e.g. How does the air pollution compare to different times of the year or different countries?

**HASSELT** 

Could we give people personal targets to beat, or interesting or facts about their behaviour to spur them on during the experiment e.g. today you could have walked to Brussels and back! Enabling users to set their own goals might also help encourage behaviour change.



**LAZZARETTO**


Could you use the photocatalytic wall as a forum for people to express their opinions/ideas about the issues of air pollution and climate change e.g. create a giant blackboard and provide chalk, use e-ink and allow people to tweet messages to the wall etc.

### **Explaining why citizens should be part of the living lab**

In order to engage people, it's important to communicate to them the benefits of a living lab. Try to not only involve them but also show them how their contribution has an impact.

**HASSELT**


Communicate to citizens that your experiment will be conducted in 5 other cities and that they are part of a bigger European project.

### **Involve science education experts**

Think about who in your network has expertise in communicating to certain audiences, particularly for those living labs intending to engage children e.g. teachers.

**BOLOGNA**


Continue making links with the 'Physics Education' department at UNIBO and seek their advice on how best to engage audiences in complex scientific topics

**VANTAA**


Should talk to schools and the Heureka Science Centre to seek guidance on the best way to talk about scientific topics with children.

## **11.8.2 Timing**

### **Start communicating early**

Your communication strategy is just as important as the rest of the living lab – how will you tell people about the project and spread the word as widely as possible?

**BOTTROP**


This is particularly important for the one-off events planned in these cities i.e. Wanderbäume parades and LEGO® LBW event.

**DUBLIN**


### 11.8.3 Verbal communication

#### Explaining Climate Change and Air Pollution

One of the main findings from WP1, D1.1 was that people find the connection between air pollution and climate change difficult to understand. Some of the recommendations made in this section, e.g. use visual language, tell stories, use of video, making it visible etc. will help to explain this complex topic in more easily digestible ways. The main aim for this is to inform and empower citizens to know what steps they should be taking to help create a sustainable future from changing their behaviour to lobbying city stakeholders.

Use case studies provided in WP1, D1.1. FCC will also provide further guidance.

#### Explain your intervention

You know exactly what your intervention is all about – but that's not the case necessarily for everybody else. Make sure you explain the intervention in a way that is understandable for a layperson.

**ALL** Use all the tips in this section to improve your explanation.

DUBLIN



Can we give the 'low boundary wall' a more engaging name?

GUILDFORD



Think about how to talk about and explain different types of pollutants e.g. an average citizen doesn't know what PM 2.5 is!

HASSELT



Remove acronyms from the brief for participants or explain these explicitly right from the start.

LAZZARETTO



How can we make the connection between the photocatalytic paint and air pollution clearer?

BOLOGNA



BOTTROP



All of these interventions are about green infrastructure and vegetation. How can they work together to explain the impact of trees and vegetation on air pollution?

GUILDFORD



VANTAA



BOLOGNA



VANTAA



Think about how to talk about the modelling interventions in a more accessible way e.g. use visualisations?

### **Tell stories**

Think about how you can build an emotional element into the living lab, give it personality and tell a story around it. A single clear idea will help with this e.g. The Wanderbäume, The giant LEGO®-like wall.

GUILDFORD 

Think about making your interactive display more playful by telling a story or creating a character.

### **Use your local language**

Whenever possible, use your local language. If we provide tips and tools – translate them so that you can share them with your citizens.

### **Have two way conversations**

It is important that we don't just communicate the iSCAPE project to citizens, but also allow them to feedback to us on the project, input their ideas for improvement and that we enable them to feel some ownership over the project. Think about ways you can facilitate conversations about the project between actors both in real life and online e.g. workshops, events, installations, online forums etc.

HASSELT 

Think about creative ways to feedback to participants and enable them to respond to this feedback and input to the design of the intervention.

BOLOGNA 

BOTTROP 

DUBLIN 


GUILDFORD 


How can you create conversations with citizens using what already exists in the urban environment e.g. walls, pavements, street furniture etc. Think creatively about how you could encourage people to write comments to the partners and each other.


## **11.8.4 Visual communication**

### **Think about the visual language**

A clear visual language is key to making complex topics more engaging. Visuals often speak louder than words. Besides using still photos, maps or infographics you can also use videos to explain complex topics or film your pilot studies and post them on YouTube.


**BOTTROP**  How can you connect the visuals of the Wanderbäume to the data collection and explanation of the impact of the project?


**GUILDFORD**  Think about creative ways to display air pollution levels to the public through the interactive tool e.g. coloured lights, maps, playful images. This will also encourage people to share their experience on social media.


**HASSELT**  Currently the SPARROW logo has nothing to do with transport, how can we create a clearer visual language to help people immediately understand the goals of the project.


### Data visualisation


Think about how to tell people about the data you are gathering by visualising the results in a citizen friendly way. Even better if you can make the data and concepts interactive so people can use them in their own way. You can even consider simulating data live to make changes clearer to people.

**BOLOGNA**  Is there the potential for using virtual/augmented reality to show citizens how the air flow in the street canyons is affected by vegetation in situ? What other ways could you visualise the data modelling you are doing? FCC can advise on creative ways for data visualisation.

**BOTTROP**  How will you show the effect the trees are having on air pollution to citizens as they move around the city? Can you calculate removal rate of trees and display this to the public? Could you use maps or geotagging to display the movement/journey of the trees and encourage people to follow them and get involved?

**DUBLIN**  Think about how to visualise the airflow and impact of the LBW. Could you have a display of data during the LEGO® event or permanently next to the LBW? Think about how to display the difference between behind and in front of the LBW.

**GUILDFORD**  Could you visualise data in real time using the interactive tool?

**HASSELT**  Think about interesting ways to visualise the data participants are providing you with to feedback to them in the report or other forms of communication you have with them. Think about how to make this data visible not just to the participants of the behavioural study, but also the citizens of Hasselt more generally.

**LAZZARETTO**


Think about how to make the transparent photocatalytic coating visible – using colours, numbers, pollutant levels or even a poem! A citizen ideation session could help you get some more concrete ideas.

### **Use local artists**

Think about the artistic community in your city and how you could get them involved.

**DUBLIN**


Could you involve local artists in designing/painting/using graffiti the LBWs? You may find inspiration from the Dublin Canvas (2015) project that involved taking unused public space and turning them into artists' canvases to brighten up the city?

**LAZZARETTO**


The photocatalytic wall could be used as a canvas for air pollution related art e.g. mural, poem, street art etc. This could also involve the community more broadly e.g. paint by numbers mural.

### **Gamification**

Think about how you could use gamification to make people more engaged in the intervention and living lab.

**BOTTROP**


There is a real opportunity to devise games around the Wanderbäume intervention e.g. treasure hunt, give the trees a personality of their own etc.

**DUBLIN**





How can you create a competitive element to the giant LEGO® LBW event e.g. treasure hunt for LEGO® bricks, design competition for LBWs in a particular location? There is a great opportunity for communicating this event more widely through social media.

**HASSELT**


How can you make data collection more fun for users e.g. create a competition or give people rewards for certain types of travel behaviour?

### **Multi-sensory approach**

Air pollution is multi-sensory by nature, although it is often not visible people talk about smelling it, tasting it or feeling it in the air. Think about how to incorporate a multi-sensory element into the living lab.

- BOTTROP**  How can we add sensory elements to the trees e.g. lights, sounds of nature? Could these lights change colour depending on the level of air pollution that day? Could we incorporate a song for the events/parades when the trees move around the city?
- GUILDFORD**  How can we incorporate visuals (light, smoke etc.), sounds, smells or even vibrations into the engagement tool? This doesn't need to be high tech, but is about thinking of creative ways to express these issues.
- LAZZARETTO**  During the Barcelona workshop our Lazzaretto partner said "we need to put our noses outside of the laboratory". Could we use the idea of the nose as a sensor for air pollution? E.g. Giant 3D printed noses placed around campus with air pollution sensors inside them. This could help tell a compelling story around the project and give opportunities for raised awareness (people will see them and wonder what they are) and the potential for creative visualisations of the data.




### 11.8.5 Media

#### Use local media

Local media is a good way of getting hold of certain (often hard to reach) target groups e.g. elderly. Think about how you can use local papers, websites, community forums and notice boards. Create simple press releases that explain complex topics in a citizen friendly way.

#### Using social media

Ensure you start to think about how to use social media early, and in conjunction with other physical living lab activities. Key social media to target are Twitter (besides tweeting link your account to existing Twitter accounts of key stakeholders, follow everyone who follows you, have an iSCAPE relevant #), Facebook, LinkedIn, but make sure you are addressing the appropriate audience. You can even consider spending some money for advertisement on Google and Facebook. Make sure you also link to research social media. Write blog posts.

- HASSELT**  Could you provide an online platform to enable participants to share their data and come up with solutions themselves e.g. car share?
- BOTTROP**  Both of these interventions have great potential for publicising the event more widely through social media e.g. release teaser videos, treasure hunt, share photos etc.
- DUBLIN** 

### Use the iSCAPE website

There is a general project communication website available for you, but also one specifically for the living labs. As you might know, you can add to your local living lab website whatever you like, so feel free to get carried away and share the direct link as well.

## 11.8.6 Events

### Utilise other events

Think about what other events/initiatives are going on in your city that you could collaborate with.

BOLOGNA



Are there any similar events taking place at the urban centre that you could contribute to and get involved with?

VANTAA



Can you continue the good work that Climate Street have started?

### Use public spaces

If you want to promote the living lab – whether through flyers, posters or anything else, do use spaces where a lot of people gather.

BOLOGNA



Use the Urban Centre

GUILDFORD



What other public spaces are there that you haven't already thought of, e.g. shopping centre, park, etc.

VANTAA



Use the Heureka Science Centre

## 11.9 Making an impact



### MAKING AN IMPACT

This is about a long-term impact with a lasting effect on the city and its citizens. Challenges include behaviour change, longevity and replicability of projects and the worry of not making an impact.

### Behaviour change

This is an important aim of the iSCAPE project and we need to think about how to not only improve the chances of creating behaviour change but also how to record it. People don't only need to be educated, but also provoked to think about the topic of air quality and climate change in a different way. Some recommendations on how to do this are to get them thinking about the cost of air pollution, its effect on health, and how the interventions can have an impact. It's important to start engaging people from kindergarten onwards, as this seems to have a bigger effect, e.g. recycling in Germany was introduced to kindergarten children.

**BOLOGNA** 

Think about how can you record if any behaviour change has happened when people became aware of the pollution level on the street.

**GUILDFORD** 

There is a gap between providing information and stimulating behaviour change – how can you give people the impetus to change their ways?


**HASSELT** 

Get in touch with participants again after a year to see if behaviour has really changed. Awareness raising alone is not a guarantee of behaviour change – what are the results you are expecting?


### Putting the people into impact assessment

We need to think about how we can measure if the living lab is making an impact on people's lives.




**BOTTROP**  It's not clear what (scientific) outcomes you are expecting. Think about how to measure the effectiveness [of the experiment] against air quality and climate change. TUDO students could measure the air quality before and after the appearance of the 'wandering trees'. Communicate the impact of the 'wandering trees' through numbers


How can you collect evidence that the activity actually works?


**LAZZARETTO**  How can we measure people's perception and feelings about the intervention? Think about the outcome of the intervention – how will we know it has worked?


### Thinking beyond the project


You have to think long-term about the impact of your living lab, the intervention as well as the citizen engagement. How can it have a long lasting effect? What opportunities are there to connect to other things that are already going on in your city – don't be a lone wolf!


**BOLOGNA**  Identify streets where new trees are due to be planted by local authorities (2017-2019), work with them on design (type/species of tree).

**BOTTROP**  Let people vote to keep, plant or adopt a tree.

**DUBLIN**  Think about what to do with the giant LEGO®-like bricks afterwards – will the project continue for a long time or do you have to recycle the LEGO® bricks. LEGO® is a good short term idea – think of something more lasting.

**GUILDFORD**  How can you continuously update your interactive display to make it more long term?

**LAZZARETTO**  How can you engage students long term – once the paint has dried?

**VANTAA**  Could your living lab be part of a school curriculum? Make clear to schools what they get out of the data you are giving to them

**Making it replicable**

Where possible all of the iSCAPE interventions should be replicable across cities to allow for maximum impact. The ‘wandering trees’ are a concept that is already tried and tested in another German city, so we know that it works and can improve on it. Hasselt will run their experiment in all partner cities and has already thought about how to make it replicable. Think about how this could work for your intervention.

**BOLOGNA** 

How can you ensure any street level engagement methods are able to be replicated in other cities or street canyon locations?

**GUILDFORD** 

Can the interactive solution be made portable or easy to build, so that other cities can do the same with their data?

**Make the intervention more meaningful to people’s everyday lives**

Engage with people on an emotional level. Connect with topics that people care about. Take into consideration the existing values people have. The effect of the intervention has to be visible to people.

Bringing interventions closer to people and embedding them in local communities will help people to connect with them on a deeper level and foster a sense of ownership e.g. the ‘wandering trees’ go to the citizen.

## 12 Conclusions and next steps

The following are the most pressing challenges that need to be addressed for each city:

**BOLOGNA**



### **Ideas for citizen engagement need further exploration**

Due to the partners' lack of experience in this area, they may require additional support with coming up with ideas for engaging citizens in creative ways.

**BOTTROP**



### **Use of Citizen Sensing Kit and Living Lab Stations not considered yet**

At the time of our visit Bottrop had not yet considered how to use the Citizen Sensing Kit alongside the 'Wanderbäume' initiative. By the time of writing this report, The Bottrop partners have already made a decision on this: They want to use the Citizen Sensing Kits to measure air quality a) before the trees come to a certain street and b) while they are there. This way, the impact of the trees can be measured.

**DUBLIN**



### **Getting the LEGO®**

It might be difficult to get the right amount of giant LEGO®-like bricks in time for the intervention for a feasible amount of money. LEGO® also may not be willing to be associated with the event. If this is the case Dublin will need a back-up plan as currently all citizen engagement hangs on this.

**GUILDFORD**



### **Ambitious idea for the living lab**

The partners in Guildford have an innovative idea to create an interactive and portable installation at a location in the city to engage citizens in the subject of air pollution. As a consortium we need to work out an effective solution to realising this idea. The idea to create an interactive installation within the scope of the project appears to be replicable to other iSCAPE cities in order to make the most impact.

**HASSELT**



### **The brief needs to be simplified**

During our visit we were able to attend a briefing session for the pilot and got feedback from the students on how easy the brief was to understand. Since our visit the presentation has been improved but should be tested again for general understanding with citizens (that are not mobility students) and also to make it easier to translate into other languages.

LAZZARETTO

**Lack of visibility of the intervention**

The intervention will involve painting a wall/walls with a photocatalytic coating that is transparent. A big challenge is therefore how we make the intervention visible to people. The partners will need to think about creative ways to communicate the intervention and its affect to passers-by e.g. physical signs, colours, messages, social media etc.

VANTAA

**Relationship with city stakeholders still weak**

Although there is the potential for a good relationship with the Climate Street organisers this initiative is ending soon. We need to foster collaborative relationships with more influential stakeholders.

This document will be shared with all partners so that they can use the recommendations for the further development of their living lab. It has been designed to help partners identify where they have common challenges and how they can work together to solve these.

FCC will now create the Stakeholder Management Plan (D2.4) which will detail how the living labs will be managed and highlighting communication lines linking the consortium and the local stakeholders. This deliverable is an output of Task 2.2.3. It will also be designed to provide partners with all the tools they might need for successful citizen engagement e.g. recruitment advice, workshop materials etc. In addition to this FCC will suggest training opportunities throughout the year e.g. ENoLL Open Living Lab Days 2017 and will provide other training tools/documents as part of D2.4.

## 13 Author Biographies

**Lucy Barrett** has an MA in Psychology and an MA in Social Research and has worked in research in both the public and the private realm for the past six years. She specialized in qualitative research methods and is interested in devising innovative and compelling ways to explore and communicate complex topics such as ‘the future of energy’ and ‘how to encourage healthy behaviour in cities’. In her role at Future Cities Catapult, she focuses on the big challenges that cities face and how we can use user centred design to tackle these issues. In the context of iSCAPE, Lucy will work across WP1 and WP2, carrying out in-depth research on air quality and climate change challenges in the participating cities, and on the definition and set up of the iSCAPE Living Lab.

**Anja Maerz** has been a UX Researcher and UX Designer working on full UCD projects for a wide variety of clients and has a breadth of experience conducting fieldwork in diverse and unique environments – from exploring the behaviors of commuters in Belo Horizonte / Brazil to expat and local communities in Dubai and the Sorbic people of eastern Germany. She has an MA from Georg August University in Cultural Anthropology and is a Lead Insights Expert at Future Cities Catapult. In this role Anja has conducted research about public transport, the ambulance service and other city relevant topics. She conducts interviews and diary studies,

carries out participant observations and workshops across the UK and internationally. Anja is most passionate about inspiring and enabling research participants to be actively creative in the process, an effort which has proven to inspire more nuanced insights. In the context of iSCAPE, Anja will be leading Work Package 2, which is about setting up and managing the 7 iSCAPE Living Labs.

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