City: Antwerp

Integrated Action Plan for Urban Resilience

1. Introduction

For the city of Antwerp, the concept of urban resilience provides a new frame to integrate social and spatial issues into the climate adaptation policy development process. As a connecting and integrating lens, urban resilience is used to experiment with co-creative methods to improve life quality in the city.

The Antwerp municipality has an innovative platform for urban living: **StadsLab2050**. This platform invites experts, civil society organisations, citizens and the local government to co-produce experimental urban interventions and processes.

The urban living lab, as part of the RESILIENT EUROPE project, complies with this mode of operations and even extends it by introducing the lens of **urban resilience**.

Resilience themes in the URBACT project RESILIENT EUROPE
Resilient people: People are a city's most important asset and comprise its social capital, thus making the level of social inclusion and self-reliance of citizens in our cities an important indicator.
Resilient places: Urban fabric consists of infrastructure and ecosystem elements that jointly structure how cities look and how they can adapt to shocks. The vulnerabilities of infrastructure assets and urban ecosystems in the face of chronic stresses and acute shocks, such as climate changes, crime (e.g. cyber) and terrorism, require consideration. Examining the ways in which infrastructure can become more robust and adaptive and to investigating how urban ecosystems can be restored and repurposed to provide multiple benefits, is therefore paramount.
Resilient institutions: The institutional matrix that cities have in place provides not only the backbone organization of day-to- day operations, but also the base for service delivery to citizens and businesses. As such, it is important to consider how institutions can become more adaptive, enabling greater interconnectedness between multiple actors like decision-makers, delivery agents, the municipality, the private sector and community groups.

Taking a more place--oriented approach, we chose to focus on the Sint-Andries area. **Sint--Andries** was selected due to the fact that the neighbourhood already had

affinity with the theme of climate adaptation. Two large infrastructure projects (redevelopment of the Gedempte Zuiderdokken and the Scheldt Quays) that include measurements of climate adaptation are currently in preparation and the people of Sint--Andries are being consulted throughout the participation process. Additionally, several smaller redevelopments of local streets and squares are planned in Sint--Andries in the coming years.

Sint-Andries is a neighbourhood located in the old city centre and connected to the Scheldt river. Despite its slightly higher topographical position compared to its surrounding, it still faces a water management challenge, due to its large proportions of paved areas and a lack of green. The municipality's options to tackle this challenge are limited. Sharing the responsibility for a climate--robust neighbourhood is therefore indispensable.

The area of Sint-Andries

Sint--Andries' urban fabric consists of a mixture of functions (housing, offices, retail, horeca, etc.) and demographic groups. Housing in the neighbourhood is defined by different types of ownership (private housing, social housing etc.) It is also a neighbourhood characterised by the presence of social capital, social cohesion and a strong feeling of identity by its inhabitants, of which the well--organised neighbourhood committees and several youth programmes are proof.

2. Current Situation (stresses and shocks)

The main stresses and shocks due to climate change in Antwerp in general, and Sint Andries in particular, are:

• Extreme temperatures

- Pluvial and fluvial flooding
- Sea Level Rise and storms
- Drinking water scarcity and drought
- Changing biodiversity
- Financial impacts
- Health issues
- Limited infrastructure capacity

The stresses and shocks that are addressed within this process can be identified by looking through the different resilience lenses of people, places, infrastructures and institutions.

People resilience in Sint--Andries:
In general, the neighbourhood of Sint--Andries can be described as a place where social capital is present. It has a strong social network including self--organisation of inhabitants such as the 'local transition group', 'Stuurgroep Sint-Andries', 'Betonnen jeugd', 'vzw Onze tuin', and more. Furthermore, Habbekrats- a non--profit organisation working with vulnerable youths - is overtly present in the neighbourhood. Despite the presence of these formally organised groups however, some groups within Sint--Andries that are harder to include in the social network. The two most vulnerable groups to stresses and shocks are probably the elderly and inhabitants of social housing. Given the high percentage of elderly and elderly homes in this area, this remains a group that requires special attention. The social housing stock accounts for 30% of the total housing stock.
These differences in ownership fuel the perception of people that Sint--Andries is divided. The perception of house owners is that Sint--Andries is becoming a more up-market, popular area. There is an increasing group of two--salary income households that are new to the neighbourhood and are therefore often socially less attached to the area than the 'original inhabitants'. People fear for forms of gentrification, due to the pressure on housing prices.

Infrastructural resilience in Sint--Andries:
Sint--Andries is located in the inner city, close to the historic centre and right by the Scheldt River. The area is densely built, bounded by several higher category roads (Nationalestraat, Kloosterstraat) and is accessible for cars. There are several streets being carried out as 'home streets' without the typical street profile of roads and sidewalks and are usually quite narrow. The underlying idea is that these streets belong to the pedestrians and are preferably only accessible for local traffic.
In general, there is a lot of pressure on parking space, whilst households are allowed two free parking spaces each. Along the Nationalestraat, the main street, severe traffic jams often occur that cause air pollution on very hot and very cold days. Since housing densities are high, the area consequently lacks sufficient green space. This is the case

for both the public and the private space. However, the public opinion towards green in the city is altering for the better and people are becoming more aware of the multifunctional and beneficial aspects of planting and keeping trees. Furthermore, Sint-Andries has multiple large flat roofs that could provide opportunities for greenification on a higher level. Yet, the fact that there is a mixture of ownership in this area must be taken into consideration.
Nonetheless, a lot remains to be gained in terms of climate-proof infrastructure. People have very little knowledge of their private situation in relation to drainage, water buffering and their connection to the sewage system. People are still largely unaware of the possibilities of making their own contribution to water management. In addition, the large stock of social housing makes it difficult for individuals to invest in the housing infrastructure. There are several plots in Sint-Andries that are currently undeveloped or being used as (illegal) parking space. These kind of places could provide opportunities to implement greenery. The area is generally lacking playgrounds for children for instance. Options to introduce multiple usage areas must therefore be explored. Since the Scheldt river forms the boundary of Sint--Andries, many opportunities lie in the redevelopment of the cays. Presently, the cays consist of a vast paved area without green spots or shadow (cool spots), which is problem for the wider Sint--Andries area in general. Another challenge involves the infiltration of pluvial water in the ground, taking into consideration the relatively old age of the sewage system here. Systematically renewing the sewage system in the coming years is not an option. Exploring other options to infiltrate water is therefore mandatory.

Ecosystem's resilience in Sint-Andries:
As mentioned before, Sint-Andries is lacking green spots. The few places that are formally developed as green spaces, such as Munthof, Bogaardeplein and the inner areas of the social housing blocks, are frequently being used as leisure zones by the inhabitants. There are few places with quality green areas and the ones that do exist are not connected. Private green is scarce as well. Small initiatives that are currently being carried out are small-scale gardening projects, bird housing projects and small-scale beekeeping projects. These kind of projects could be enhanced and strengthened if people are given professional advice. People are often sceptic about the so-called 'facade gardens'. People fear attracting too many insects or fear they have to put up with too much maintenance work. The allocation of such projects could also be more strategic to ensure maximum strengthening of the ecosystem. It is a challenge to increase natural green areas that need less maintenance and have a more natural character. It is important to rally support from local inhabitants for this kind of green concepts.
Some parts of Sint--Andries are topographically located slightly higher than the surrounding parts of the city. As a result, pluvial water is flowing to the lower adjacent areas without having the opportunity to offer a cooling effect during summer. The challenge lies in making this surplus water available for cooling purposes and at the same time prevent the water from flowing to lower lying parts of the city. Green roofs could be part of the solution to the green scarcity, but people

currently lack experience and the necessary techniques to implement this on a larger scale. Also, the fact that ownership is very fragmented makes it hard to implement green roofs. Density remains a challenge as well for the ecosystems in the area. With the ever increasing pressure to provide more housing in the area, one of the main challenges will be to preserve undeveloped areas and the create new open areas while at the same time make existing green spaces more accessible to the public.

Institutional resilience in Sint-Andries:
Currently, planning processes initiated by the city of Antwerp are becoming more inclined to include citizens. Yet, there is still room for improvement when it comes to citizen participation. Urban resilience is also about gaining ownership and commitment from people through participation trajectories. For the Sint--Andries area, it means the creation of a local network dealing with the challenge of climate--adaptation in a co--creative manner with the city. This includes mapping the expectations, needs and strengths of local stakeholders and offering a platform to experiment with technologies and methodologies involving sustainability and sharing this with the broader public. In trying to achieve this, the main challenge lies in enabling the collaboration between local stakeholders and the city government.

3. Working for urban resilience in urban living labs (co-creation, description of process in ULL = TM)

Project process

Description of the objective of the integrated action plan

- The overall objective of Resilient Europe is to strengthen urban resilience. For the city of Antwerp, the concept of urban resilience provides a new framework allowing the integration of social and spatial issues into the climate adaptation policy development process.
- Antwerp has no city-wide climate adaptation strategy yet. Through the experiences with the local action plan of Sint-Andries (proces, experiments, co-creation) we want to put a step forward towards a city-wide climate adaptation strategy.
- We also want to learn from the experiment for the 'water plan', which the city will be preparing in the coming years.
- As a connecting and integrating lens, urban resilience is employed to continue experimenting with co-creative ideas in order to improve livability and sustainability in the city.

Description of the process used to produce the integrated action plan

- Focus at the **start of the transition process** was on getting commitment from different city departments, hiring an expert to help with the process and mapping and contacting relevant actors of Sint-Andries.
- **December 2016**: expert consultation meeting (15 experts). The goal was

identifying the most important challenges on climate adaptation of Sint Andries by experts in various scientific fields (people, ecosystems, infrastructures, institutions). This would at a later stage give input to the local action group. Method:

- Mapping the possible future impacts of climate change on the scale of the neighbourhood;
- Formulating relevant challenges and goals for the area;

- **February 2017** ULG kick-off meeting (44 participants). Goal was to get a better understanding -and identify challenges- of climate adaptation in St Andries. Method:

Dealing with heat waves is a challenge...

- Mapping Sint Andries from a climate adaptation perspective (in small groups);
- Formulating challenges in small groups and sharing them with the larger group;
- Adding the input from the Expert consultation: fact and figures;
- Giving priority to the most important challenges by using the Can Do – method;

Which challenges are priority?

- Quick brainstorm on possible actions;
- Evaluation of the workshop and first scan of possible individual

engagements;

In between workshops… Processing the input of the challenges and action ideas into a mind-map resulted in 5 objectives, 20 challenges and 50 action-ideas, identifying 20 potential experiments. Together with the external expert, we started contacting potential 'experiment owners'. We discovered that the themes and challenges defined can function as a vision. The lead expert agrees.

- **March 2017, April 2017** ULG workshops on actions (15 participants, 14 participants). Goal was validating the challenges and objectives (vision) and mobilizing the group to take up actions, forming experiment teams. Method:
  - Presenting the mind-map as a synthesized outcome in order to validate the outcome with the local action group;
  - Summing up the action experiments showing great potential;

Choosing position on the mindmap

  - Specifying and defining experiments in group by using a project template;

The start of a project idea

- Mini-coaching (what is needed to make this project a success)
- Presentation on means of support in the further action phase

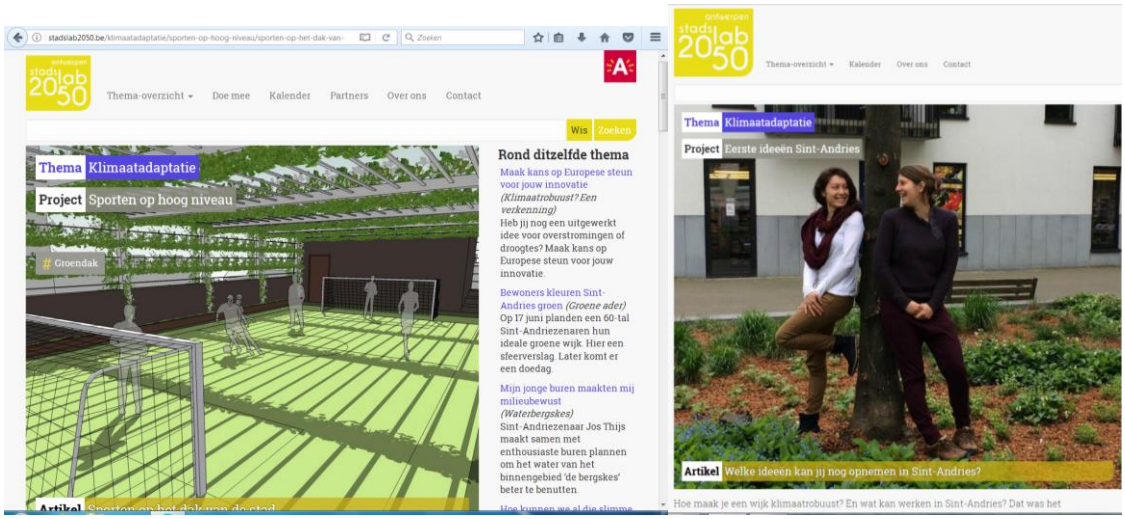
After this first action workshop, we collected "calls" from the experiment teams and communicated these via our Stadslab2050 channels (e.g. call for flat roofs).

In between workshops… The process experts we have contracted are based in Antwerp and have a considerable network in the ULL area, proving beneficial: after the ULG workshops, they saw possible synergies with local organisations and tried to get them on board as well. New interesting actors kept on joining the ULG throughout the process. We have done and still do the same networking within our administration and expert networks to link the proper organisations and people. Within the administration we've linked a relevant colleague to each experiment of the ULG so that the experiment teams have directaccess to the city administration and expertise.

As several interesting actors could not make it to the action workshop, we redid it a few weeks later. Some ideas from the previous session were elaborated upon, other new ideas were conceived from the vision.

Project groups also started to meet outside the "official" workshops. To help these teams, we organised a coaching session during the easter-holidays, where project owners could get support from the external process expert and city experts.

The Stadslab2050 communication office started to make interviews with the experiment owners.



Communication via the [Stadslab2050 website](#)

- **May 2017**: [ULG inspirational visit to Rotterdam](#) (22 participants). - We invited members of the ULG and local politicians to join us to Rotterdam and learn from their experiences and draw lessons for our own experiments. The Rotterdam administration hosted the entire day, giving us insight into urban resilience, rooftop policies, water management, etc through a presentation and a site visit. Great.

Getting inspired by the City of Rotterdam

During the Ioannina partner meeting (April 2017) our weather report read: "Antwerp needs more wind, and let that wind blow – to inform even more Sint-Andries people and get them enthusiastic to come on board." Afterwards, we started looking into

which of the experiment ideas had the most *potential to activate many locals*. Read more about this in chapter 7: experiment "Groene ader".

- **Summer-Winter 2017**: coaching of experiments. As described above, we follow-up on all experiments. Two of them got a special treatment however, receiving coaching over the entire course of the projects: 'Groene Ader' and 'multifunctional rooftops'. We offered guidance for both these projects on how to integrate results of the experiments to the city policy, how to upscale individual achievements, how to provide a supportive platform from Stadslab2050 for future ideas for Sint-Andries in order to achieve long term goals of the vision.

- **Oktober 2017**: Resilient Europe partner meeting in Antwerp - the local ULG gets an important role in the partner meeting. Ten members of the ULG led the European partners around in the neighbourhood, elaborating on the process, first experiments, dreams and challenges. There is also an exchange between the ULG members on the working methods of other cities.

ULG guiding the URBACT partners in Sint-Andries

The core community members of the ULG feel the need of continuation and working on an action plan for 2018 with 10 ten actions that will contribute to the resilience goals of the neighbourhood.

- **December 2017**: mid-evaluation - dissemination happening (35 participants). Goal: providing an overview of the process and achievements so far, of experiments currently running and looking forward (10 actions planned for 2018). Both the ULG and local politicians participated.

In preparation, an independent evaluator conducted interviews and workshops with all kinds of actors of the Sint-Andries process. During the event the group reflected further on the process, on how the cooperation was goeing and what the added value of the process was.

One year, 16 important moments - Reflecting on our ULG process so far

- **December 2017**: internal mid-evaluation (12 participants). Goal: Taking a moment together with our colleagues to reflect on the process so far and evaluate the collaboration between the different departments involved.

During this session we discussed the learning objectives that were formulated at the start of the project. We also discussed about ways to facilitate the current dynamics in the neighbourhood, by looking at the role of the government and new governance structures. Furthermore we discussed the conditions in which these kinds of project could be replicated elsewhere.

To be continued...

4. The vision of Urban Resilience (vision and objectives)

In conclusion to the current situation as described above, there are two main challenges to be tackled:

Resilience challenges

- How to deal with increasing risks of flooding due to heavy rainfall?
- How to deal with increasing summer temperatures and heat-island effect in this dense urban area?

Ambition

- Setting up experiments in an urban living lab based on the local challenges of climate adaptation in Sint Andries.

The urban resilience vision we produced in our Urban Living Lab

Sint-Andries is a lively neighbourhood that provides a pleasant living area for all people, including the elderly and youths. The area is adaptive to the impacts of climate change. It has lots of qualitative greenery in order to decrease heat stresses and increase the water infiltration capacity. Even on hot days people can find cool spots to work, rest and play. During storms, rainwater is captured in various ways which prevents lower situated neighbourhoods from being flooded. Rainwater is used for playing, gardening, washing, drinking etc. so that periods of drought become less of a problem. Local roofs offer pleasant green spaces as well. Furthermore, the neighbourhood provides qualitative urban space that can be used in different ways in order to cope with the increasing densities and population growth. Many stakeholders in Sint-Andries are willing to work together on climate proof initiatives, which provide an added value for the neighbourhood. They support each other in dealing with stresses and critical moments (shocks). They show initiative and keep on setting climate adaptation on the agenda. Over the years, multiple experiments have taken place in Sint-Andries, which makes it a showcase neighbourhood in dealing with climate adaptation.

The objectives operationalized from the vision statements
At the kick-off meeting, the ULG group formulated their shared challenges for Sint-Andries from a climate adaptation perspective. From these shared challenges the group distilated shared objectives, which resulted in identifying 5 objectives and 20 challenges that were put together in a mind map.

The 5 main objectives are:

1. Making Sint-Andries a pleasant neighborhood to live in
2. Using the roofs of Sint-Andries in a multifunctional way and considering climate adaptation objectives
3. Increasing the capacities of infiltration, buffering and recuperation of water in order to improve water robustness
4. Increasing people's resilience in order to cope with climate adaptation stresses
5. Stimulating co-creation of various stakeholders in Sint-Andries

The ULG formulated 9 principles to look at these objectives:

1. Sustainability and climate robustness are coherent goals.

2. Learning by doing: learning from actual experiments leads us closer to our dream.

3. **Maximum support:** from the start, we are committed to creating the largest possible support in all sections of the neighborhood

4. **Social sustainability:** we want to get all residents on board, including the more vulnerable and not just the 'green boys and girls'

5. **Joining forces:** we want to optimize cooperation between citizens, administration, politics, organizations and companies

6. **Learning process in citizen participation:** this process also forms a laboratory for the cooperation between residents' associations and administration / policy

7. **From neighborhood to city:** to scale up the experiments in Sint-Andries to the other parts of the city

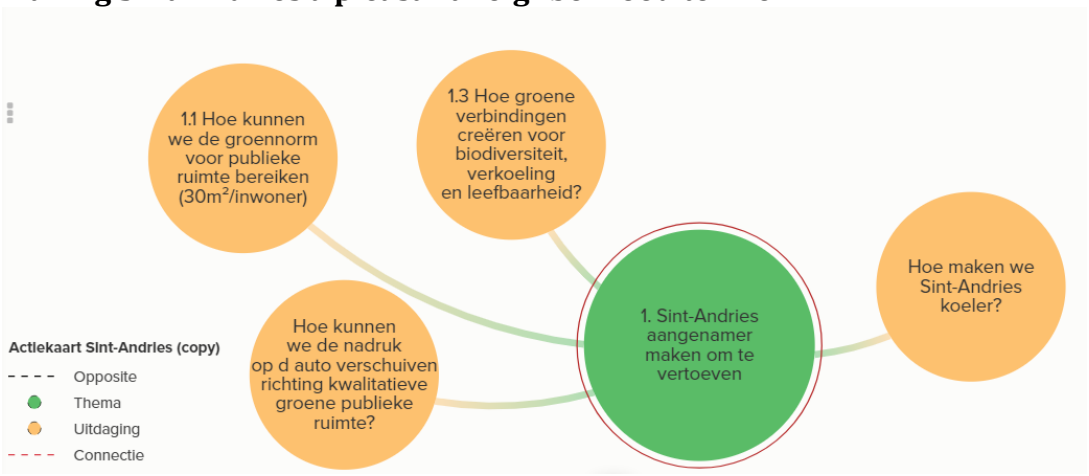
8. **From experiment to policy:** our experiments in the neighbourhood find their way into urban policy

9. **Networking:** working together with other cities (from the European network): eg. Rotterdam and learn from each other.

5. **Pathways to Urban Resilience (actions for people, places, institutions)**

Description of pathways as different mixes of actions over time. Identification of who (which actors) can contribute in realizing every pathway. (We describe one pathway per urban resilience objective below. The Dutch text in orange, green and grey in the graphics are translated in English below the graphics.)

1. Making Sint-Andries a pleasant neighborhood to live in



1.1. How to meet the Flemish requirements on green per square meter per inhabitant (30m2/inhabitant)?

1.2. How to make Sint-Andries cooler in order to tackle heat stress?

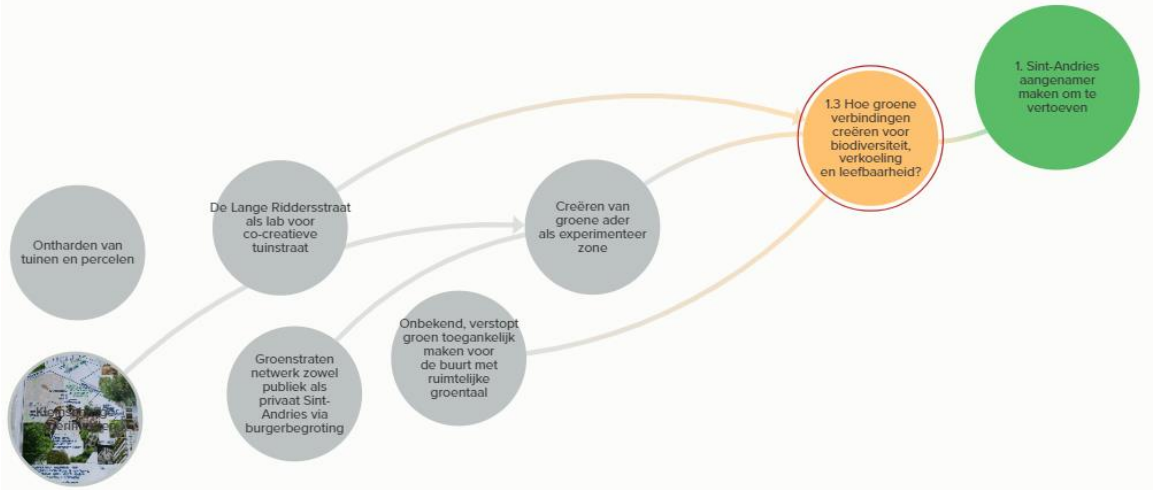
1.3. How to create green corridors to enhance biodiversity, cool spots and improve the quality of the living environment?

There are four challenges to tackle in order to get here. We need:

- A strategy (made by the *ULG*) for where the green corridor should best be located for a maximum added value to the neighbourhood (2017).
- Showcase: The ULG (in collaboration with an ambassador from the municipality administration) to facilitate the attraction of *innovators* (entrepreneurs, knowledge institutions, municipality,…), to test and showcase their products and services that to contribute to the climate adaptation vision of the neighbourhood along the "Green corridor" (2017, 2018, …)
- Participation/co-creation: ULG stimulating *inhabitants* and local *organisations* to host the innovations and to replicate these elsewhere in the neighbourhood (2017, 2018, …)
- Living-lab: real life test area where the *municipality* and *knowledge institutions* can test, measure and learn about new approaches.

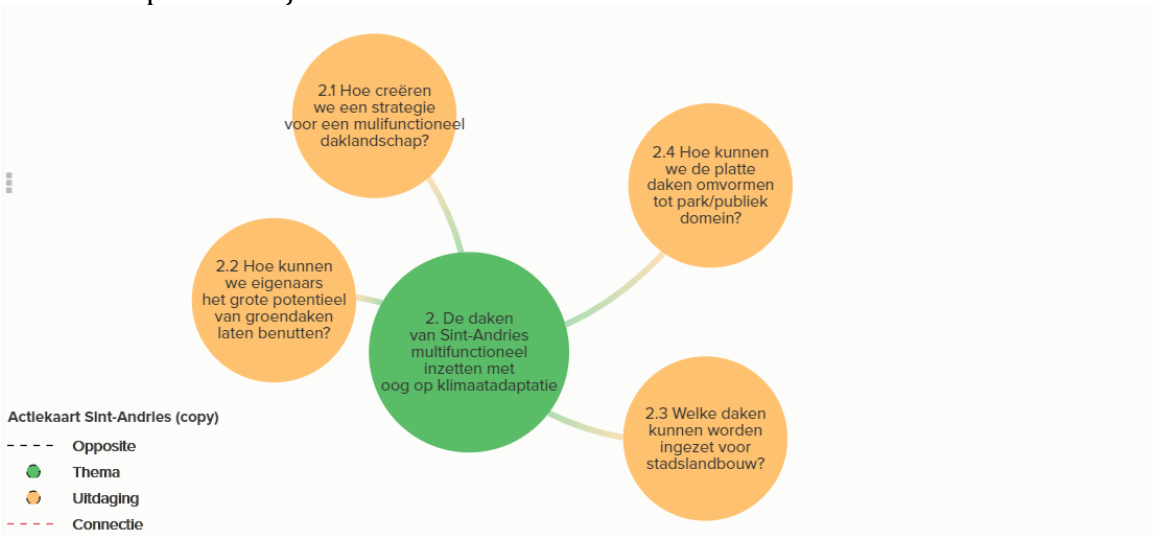
Ideas for experiments within this pathway:

- Pilot project 'garden street': co-creating a climate robust green design for a street with the neighbourhood. Collecting evidence on the effectiveness of greenification of streets by using 'smart city' data collectors (process starts in 2018).
- Child-friendly urban fabric policy document: looking for synergies between child-friendliness and climate robustness in co-creation with the neighbourhood; the ULG and especially the youth organisations (process starts in 2018).
- Experiment green corridor 2017-2018.



1.4. How to shift from a car-oriented mindset to attractive green public space?

2. Using the roofs of Sint-Andries in a multifunctional way considering climate adaptation objectives



2.1. How to turn flat roofs into parks/public space?

There are six challenges to tackle in order to get here. We need:

1. a conceptual framework: exploring of possible uses and users of Antwerp roofs by learning from international examples, defining framework conditions and barriers and analysing the potential for Antwerp (*municipality* and *experts,* winter 2017).
2. To raise awareness and enthusiasm for the potential of using roofs (e.g. roof festival 2018 by *municipality, cultural sector*).
3. To create willingness within the *municipality* to consider roofs as strategic space and a framework to facilitate such projects.
4. *the municipality* (or a new organisation) promoting the added value for *roof owners* to share their roof with the community and promoting co-creation as a business model.
5. *the municipality* facilitating the first pilot projects to build up know-how about legal, technical, financial and management aspects (-> *roadbook* to implement multifunctional green roofs). ULG can benefit from this, municipality can learn from the ULG experiments.
6. *the municipality* creating a *policy and financial framework* that stimulates a multi-functional use of flat roofs city-wide.

Ideas for experiments within this pathway:

- Intelligent green roof: a scientific experiment that optimizes rainwater retention by 'reading' the weather forecast (2017-2018).
- Taking sports to a 'high level': youth organisation Habbekrats creates a climate adaptive rooftop area as a safe place to play outside (2018-2020).

- Rooftop festival: citywide cultural festival promoting the use of rooftops and including Sint-Andries roofs (2018).

2.2. How to stimulate roof owners to explore the possibilities of their roofs?
2.3. Which roofs can be used for urban farming?

Increasing the capacities of infiltration, buffering and recuperation of water in order to improve water robustness

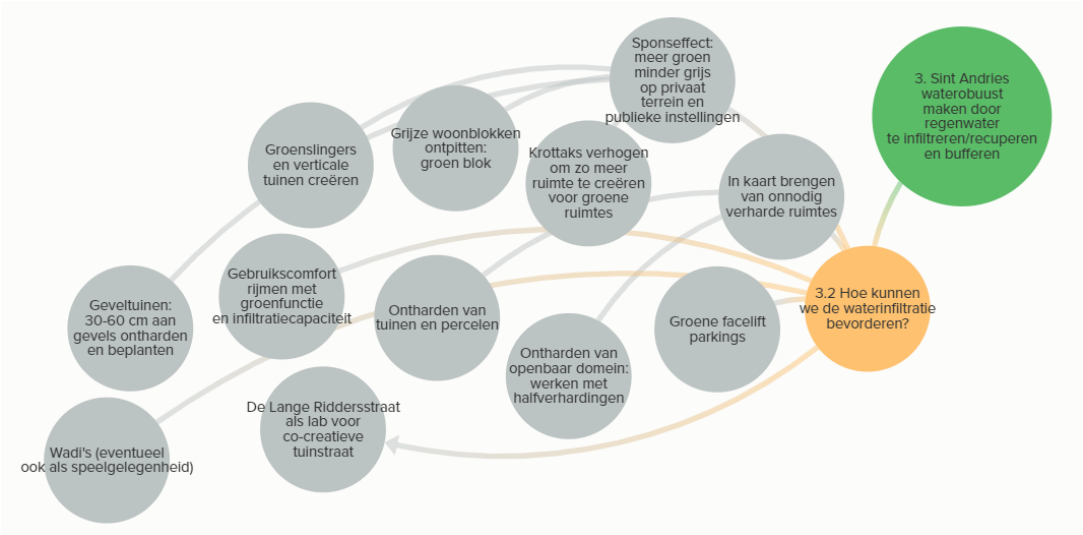
2.4. How to improve water infiltration in Sint-Andries?

There are four challenges to tackle in order to get here. We need:

1. A mapping of places in the neighborhood where rainwater could gain more space (water consulent of the municipality on the basis of ULG input)
2. to make a short term action plan for water infiltration measures (ULG and water consultant)
3. to make water infiltration measures one of the focal points within the 'waterplan' of the municipality so that future investments include rainwater infiltration measures mandatory when re-designing streets and public space (municipality)
4. the ULG to promote small scale measures which local actors can take in and around their property for quick wins.

Ideas for experiments within this pathway:

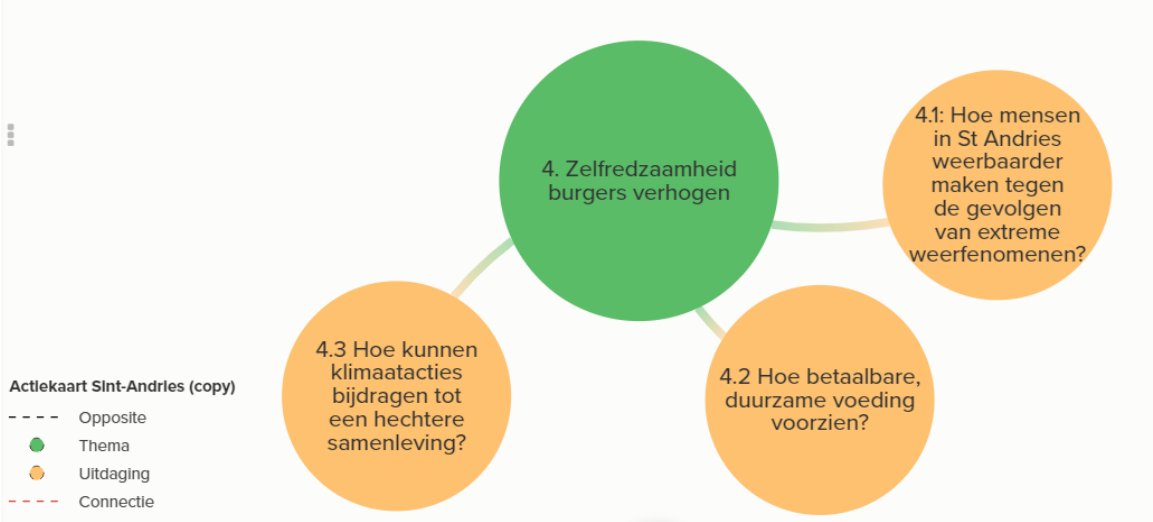
- Rainwater on the streets: experimenting with innovative products that allow to collect rainwater for greening projects on the street (rainwater collector in combination with greenery) 2018.



2.5. How to make water visible in the area?

2.6. Tackle the issue of water scarcity on the one hand and water floodings on the other hand: how can we capture rainwater and reuse it?

3. Increasing people's resilience in order to cope with shocks and stresses of climate change



3.1. How to prepare people to deal with the impacts of climate change?
3.2. How to provide sustainable and affordable food on a local scale in order for people to provide for themselves?

Ideas for experiments within this pathway:

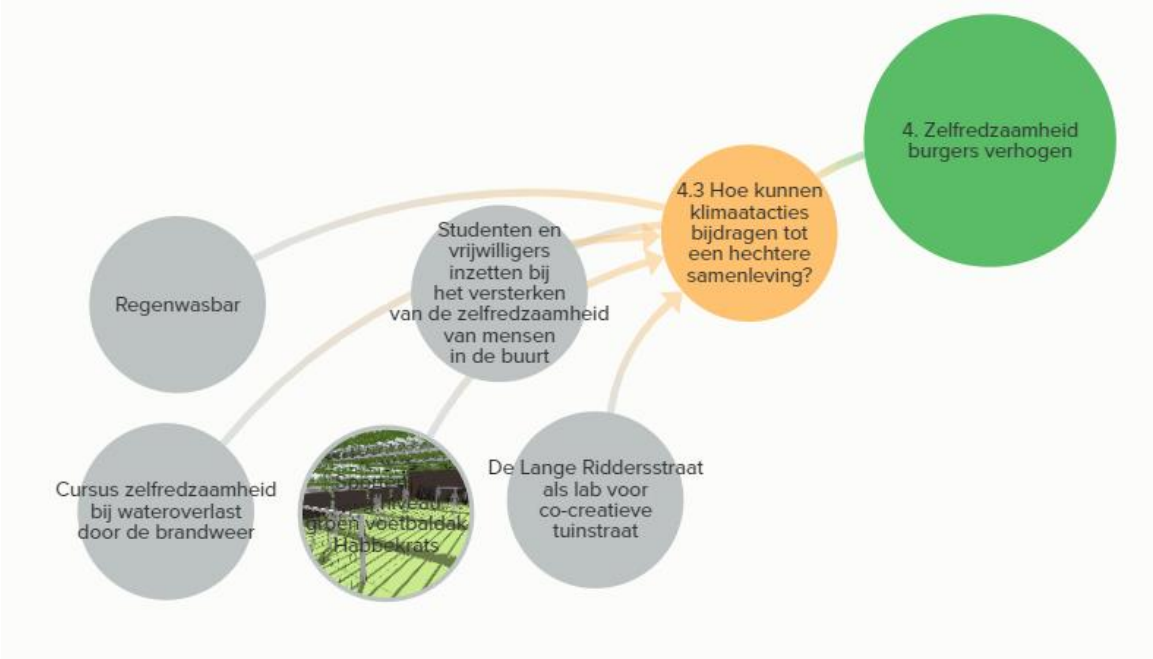
- Farmers market: local products on the main square of the neighbourhood (2018).

3.3. How can climate robust actions contribute to a strong community?

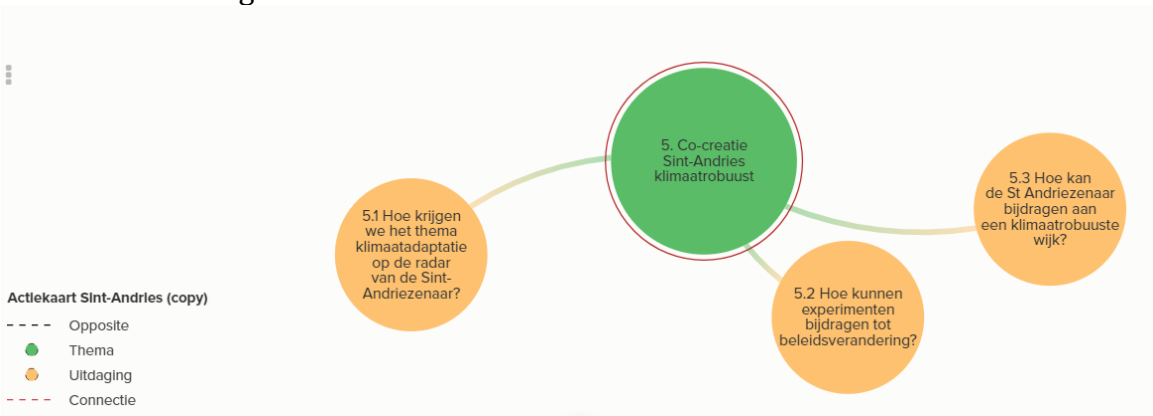
There are four challenges to tackle in order to get here. We need:

1. a co-creation process to set up the local action plan, where members of the community get to know one another and start engaging with each other on actions they find important (ULG).
2. ULG members to build up knowhow on the area, and develop strategies on how to deal with stresses and shocks the community might encounter in the future.
3. the ULG to consciously integrate a social dimension in all experiments.
4. to celebrate successes of pioneering with climate-adaptation and overcoming difficulties as a group.

Ideas for experiments within this pathway:



4. Stimulating co-creation of various stakeholders in Sint-Andries



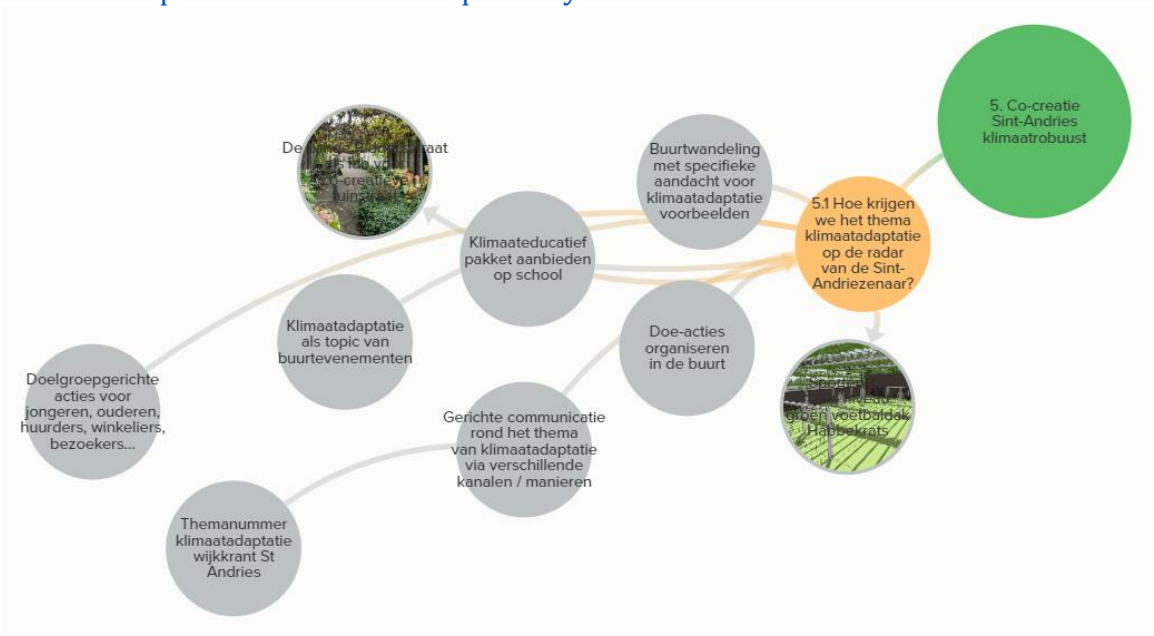
4.1. How to make climate adaptation a hot topic on the radar of the people of Sint-Andries?

There are six challenges to tackle in order to get here. We need:

1. to use different intermediaries to engage people of Sint-Andries
2. to bring together experts and the ULG to build up know-how and open up perspectives
3. to create a sense of urgency by using the momentum of a climate shock to learn lessons from it.
4. a communication-mix on different levels (local networks, city-wide..) to explain climate adaptation stresses and shocks and to appreciate the experiments in the neighbourhood (ULG, municipality, media)

5. to add climate adaptation as a new topic to existing initiatives
6. low profile, fun-to-do actions in the neighbourhood, spread over time and aimed at different target groups by the ULG

Ideas for experiments within this pathway:



4.2. How can experiments contribute to policy changes?

4.3. How can the people of Sint-Andries contribute to a more climate-robust neighbourhood?

6. Monitoring and assessing the progress towards urban resilience

Our results framework:

Overall objective	Specific objective	Result indicator	Output indicator
Making Sint-Andries a pleasant neighborhood to live in	**->** How to create green corridors to enhance biodiversity, cool spots and improve the quality of the living environment?	Depavepent rate along "Groene ader" (baseline study needed) Increase in m2 green along "Groene ader" (baseline study needed) by 2019 Summer temperature in Lange Ridderstraat (before and after greening it)	Show case: 10 innovations by 2019 along the "Groene ader" 5 innovations integrated in municipality interventions by 2019 along the "Groene ader" Living-lab: 3 experiments where scientific measurements are conducted on
Using the roofs of Sint-Andries in a multifunctional way and considering climate adaptation objectives	**->** How to turn flat roofs into park/public space?	Number of green roofs in Antwerp (baseline: 2012, 2020) M^2 public green space per inhabitant in Sint-Andries (baseline 2016: less than $1m^2$)	*5 pilots* in Antwerp to learn from by 2020 *Road book* to implement multifunctional green roofs *Policy framework* that stimulates a multifunctional use of flat roofs *Financial framework* that stimulates a multifunctional use of flat roofs
Increasing the capacities of infiltration,	**->** How to improve water infiltration in Sint-Andries?	Water infiltration index (or similar) of the neighbourhood	2300 m^2 "Tuinstraat" created by 2020

buffering and Recuperation of water in order to improve water robustness		(baseline, or sensors in the sewage IMEC)	… m^2 "depavement" in Sint-Andries m^2 wadis created in Sint-Andries
Increasing people's resilience in order to cope with climate adaptation stresses	**->** How can climate robust actions contribute to a strong community?	Replication: 20 times Living-lab experiments are adopted by other actors in Sint-Andries by 2019	Participation: 70% of the living-lab experiments are maintained by inhabitants and local organisations. 15 local events and happenings with climate adaptation as a topic Project that focuses on dealing with stresses and shocks the community might encounter in the future
Stimulating co-creation of various stakeholders in Sint-Andries	**->** How to make climate adaptation a hot topic on the radar of the people of Sint-Andries?	Increased awareness of climate adaptation Increased readiness to act for climate adaptation	Number of guided walks along "Groene ader" Stadslab2050 website on Sint-Andries climate robust Sint-Andries climate robust in the press

We will use the results framework to monitor and assess the lessons learnt from our experiment. The way we plan to monitor the experiment with selected participants to share learning experiences is to be discussed with the members of the ULG.

7. Experimenting for urban resilience (description of experiment and lessons learnt)

Experiment: The green corridor ('De groene ader')

The idea for this experiment was conceived at the beginning of the process. One of the ULG members was proactive in identifying the synergy between this project and possible funding sources. He submitted a project idea proposal at the district of Antwerp's 'Civil Participation Budget' tender in the initial phase of our project. The neighbourhood committee already conducted a local research project involving the area's walkability in the previous year. The idea was to complement their vision of a pedestrian-friendly neighbourhood with the aspect of climate adaptation.
During the various brainstorm sessions, more and more ULG members became interested in the concept of creating a green corridor that runs through the neighborhood showcasing and inspiring climate proof measures. On the long term, the idea is to upgrade this corridor into a green, water infiltrating, cool, climate robust area that connects different innovative experiments and functions as a living lab.

The experiment 'green corridor' proved suitable for activating people to work on climate adaptation. One of the advantages is that a number of actions will take place in a rather small and confined area. This makes experiments tangible and allows people to take care of their own creations.

Dream day 17th of June
The experiment took off with a 'dream day', organised on the 17th of June by the ULG, in which various proposals for the action day in September 2017 were formulated and debated. The ULG took care of the communication for the event and even got a local celebrity to promote the dream day on social media.

The event was organised in the local community centre and welcomed approximately 60 participants. It was an interactive workshop session in small groups, where participants could pick a theme to work on, for example ‘water infiltration’, ‘green spots for playing’ or ‘functional green’.

The workshop leaders provided a lot of working material and tools for the various groups, including inspiring examples and images of the current situation. Each group then created a collage (24 in total) of the way they would like their street to look like in the future.

Dreams of the neighbourhood

At the end of the day, each group showcased their collage and explained their creation to the other groups. Besides from working on different themes, the groups also worked on different segments of the 'green corridor'. When putting all the collages together, the idea of the green corridor clearly emerged.

Dreams along the 'Green corridor'

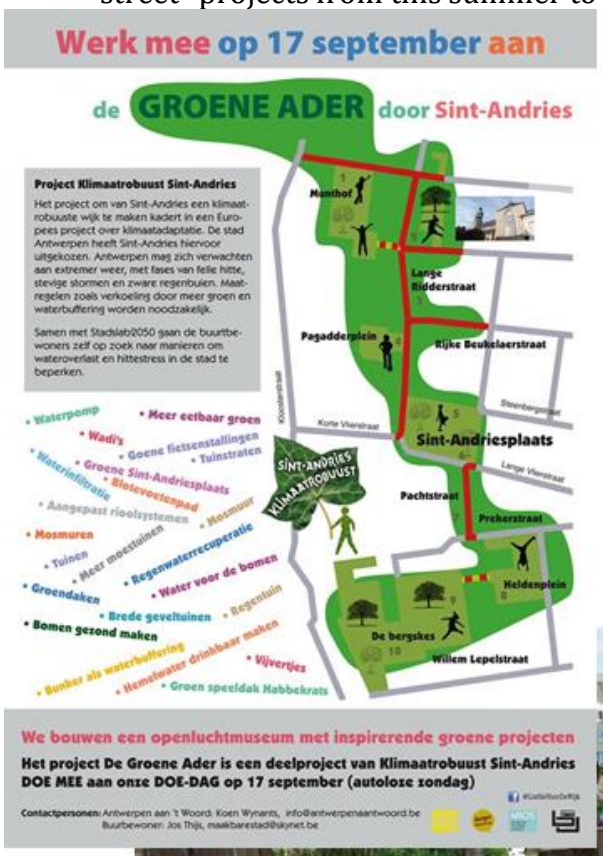
Although people were encouraged to dream, they were asked to identify a number of actions that could be carried out on the short term as well. These actions should be able to be implemented on the action day that was already planned on the 17th of september. To create ownership, the participants were also asked to write down their names on actions they would like to carry out.

Lessons learnt: the dream day proved a solid method to work on collective vision building, enabling dialogue and an exchange of thoughts and ideas, often making the participants realise their ideas were shared by their peers. The method used on the dreamday is part of the experiment itself, since this was for us an altogether new way of imagining a new situation instead of conducting a rather traditional public consultation. Even though not every participant of the dreamday actively contributed to the preparations of the action day, the dreamday provided the necessary public support from the community.

Do day 17th september 2017

Where: different spots within an area of 200m in the heart of the future “groene ader” - the different teams could more or less see each other at work. There was a tent on the square where the dreams were hung up to provide context, and where the team got briefings, coffee, lunch..
What: Some of the experiments had a temporary character:

- inhabitants wanted to try out what their “garden street” (which is to come in the Lange Ridderstraat in the coming years) would possibly look like.
- some of the inhabitants dreamed of a greener square and wanted to test and demonstrate their proposition, namely that it is possible to combine sport, play and more green here. They used material from other temporary “future street” projects from this summer to rearrange the square in their way.



Experimenting on the street

Other experiments have a permanent character

- The youth organisation Habbekrats depaved 30m2 of the square where their youth plays on a daily basis.
- Inhabitants replaced 47 paving stones by "living pavement" (pavement combined with greenery) along the streets.
- City green workers prepared 12 planting holes in the pavement to experiment with different levels of pavement and depavement in the street and their respective effect. The holes' locations were chosen together with the inhabitants of the street, who afterwards added plants and will look after those plants.
- A team of local professionals, together with local youngsters interested in DIY, made a rainwater harvesting installation with a planter on top, so that the new greenery can be watered with rainwater.

Experiments with permanent character

At the and of the day the whole group did a walk to see and discuss the results of the day and ideas on the next steps. A local politician came to see the results as well.

Timing: the **Do-day** was organised **during "carfree day"** on 17 september 2017. The neighbourhood was completely rid of cars, which made it the perfect moment for us to work **safely** on the streets and give our action good **visibility** as hundreds of bikers and families were strolling around. We had two people welcoming stollers, explaining what we were doing. People from the neighbourhood spontaneously offered their help, went home to change clothes and joined us.

Communication: again the project group did a lot of effort to activate the neighbourhood for the do-day. For example, they made huge posters and hung them in windows all around the neighbourhood. Participants of the dream day, as well as each actor of the ULG, were invited to come.

A photographer and a filmmaker eternalized the day. They were paid by Stadslab2050, but the scenario, interviews and editing was done together with the project members. The result of the movie: http://www.stadslab2050.be/klimaatadaptatie/groene-ader/video-wat-gebeurt-er-als-bewoners-samen-hun-wijk-vergroenen

One of the inhabitants engaged himself to be the spokesperson and sent out a press release.

ANTWERPEN

Sint-Andries werkt aan 'groene ader' door de wijk

Bewoners fleuren buurt op met steun van stad en district

Een 'groene ader' doorheen het hart van de Sint-Andrieswijk, dat is de droom van enkele buurtbewoners. Zondag, met Antwerpen Autovrij, kreeg die droom al een beetje vorm, dankzij vergroende trottoirs, aanplantingen op boomspiegels en een regenwatertuintje. Zo'n 40 à 50 mensen staken een handje toe.

Met de opwarming van het klimaat moet ook Antwerpen als stad aan de stroom zich gaan beschermen, zo klinkt het bij de initiatiefnemers. "Meer groen in de stad helpt om de hittestress te verminderen", legt Arduín Cielen (42) uit. "De stad is sowieso warmer dan het platteland, dus alle beetjes helpen. Daarnaast zorgt meer doorlaatbare grond voor een betere opvang en afvoer van water, en helpt dit de riolen te ontlasten."

Die grond wordt op verschillende plaatsen vrijgemaakt door stoeptegels te vervangen door groentegels met een gat waar plantjes in gezet kunnen worden. "In de Lange Winkelstraat heeft de stad bovendien gaten laten boren waar ook plantjes in worden gezet, en enkele bewoners haalden al een tegel weg voor een geveltuin. Verder hebben we de boomspiegels op de Sint-Andriesplaats opgefleurd met extra grond en plantjes, staan er her en der ook bakken met planten en hebben we nu ook een 'gevelregentuin': een bloembak met een regenton eronder, die rechtstreeks gevoed wordt vanuit de regenpijp. Die is groot genoeg om ook andere plantjes mee te bewateren."

Sommige van de ingrepen zijn permanent, andere tijdelijk. Zo maakten de bewoners ook een groene kring met matten op het plein, om aan te tonen dat gras hier perfect zou kunnen met behoud van het basketbalveld.

ARDUÍN CIELEN
Liefde voor de wijk
"Meer groen in de stad helpt om de hittestress te verminderen. Daarnaast zorgt meer doorlaatbare grond voor een betere opvang en afvoer van water, en helpt dit de riolen te ontlasten."

Arduín Cielen bij de 'gevelregentuin'.

Burgerbegroting

Sint-Andries werd door Stadslab 2050, een stedelijk 'labo' voor duurzaamheid, gekozen als locatie voor testprojecten. De bewoners, die zich verenigden via de Facebookpagina Liefde voor de wijk, kregen ook steun van de Burgerbegroting van het district Antwerpen. "Ik ben er zelf ingerold via de pagina Liefde voor de wijk", vertelt Arduín Cielen. "Al was ik eerder ook al bij het Stadslab 2050 geweest. Het is fijn dat we zoveel steun kregen. Zo hebben we hier eenjarige plantjes die eerder gebruikt werden voor de Zomer van Antwerpen en nu nog kunnen uitbloeien in de buurt. We zien deze dag ook nog maar als een begin, en dromen van nog veel meer en structurelere ingrepen langs de groene ader. In het voorjaar komt allicht een vervolg op onze doedag van vandaag, en ook elders in de wijk staan nog dingen te gebeuren. Zoals een mosmuur aan het Heldenplein, waar nu een blinde muur is. En de Lange Ridderstraat wordt een van de vijf Antwerpse tuinstraten die de stad en het district hebben gepland. We praten ook met de mensen van Samentuinen, dus er beweegt veel in de wijk."

De initiatiefnemers doen een oproep aan alle bewoners van Sint-Andries en aan mensen buiten de wijk om een handje te komen helpen. Wie wil helpen, mag een mail naar liefdevoordewijk@gmail.com sturen. Komen kijken mag uiteraard ook.

BARBARA VANDENBUSSCHE

Sommige ingrepen zijn permanent, andere tijdelijk. Zoals de groene matten die tonen waar er gras zou kunnen komen.

"We werken er zelf ook aan, maar de combinatie van privé-initiatieven en stad is nog krachtiger"

"Al dit soort initiatieven die de stad een aangenamere aanblik geven, zijn een goed idee", vindt schepen voor Ruimtelijke Ordening Rob Van de Velde (N-VA). "Zeker in 'densere' woongebieden waar de straten er vaak grijs uitzien. We werken er zelf ook aan, maar de combinatie van privé-initiatieven en de stad is nog krachtiger. Of er echt één groene ader kan lopen door de stad, is moeilijk te zeggen, omdat je ook een evenwicht moet behouden met mobiliteit en de praktische haalbaarheid. Maar bepaalde straten lenen zich er uitstekend toe. Vandaar ook de tuinstraten, zoals in de Lange Ridderstraat. De eerste aanzet daarvoor is al gegeven. In de komende maanden wordt de wijk samengeroepen om de invulling van de straat te bespreken. Eerst gaan we de dialoog aan met de buurt, en dan zien we hoe we alles kunnen organiseren. In 2018 en 2019 worden de tuinstraten dan ingericht. (bava)

gopress
Innovating Digital Content
Gazet van Antwerpen/Metropool Stad 18/09/2017, bladzijden 12 & 13

Do-day of 'De groene ader' in the regional media

Future of the project:

In the coming years, the idea is to keep on setting up innovative experiments (temporary and structural) together with the neighbourhood, the municipality and knowledge institutions.

Lessons learnt from the experiment in respect to

- (a) the **vision** of urban resilience you have in our urban living lab

The following part from the vision statement in particular relates to this experiment: "*Many stakeholders in Sint-Andries are willing to work together on climate proof initiatives, which provide an added value for the neighbourhood. They support each other in dealing with stresses and critical moments (shocks). They take initiative and keep on setting climate adaptation on the agenda*."

Urban resilience is indeed strengthened in Sint-Andries by encouraging bottom up dynamics. The neighbourhood is alert and is taking up action because it is *their* dream. People who were already committed to the neighbourhood have the feeling of contributing to a broader goal by being part of these different small-scale actions.

Within a year, the abstract concept of climate adaptation became more tangible and turned into a starting point to look at the neighbourhood.

Multiple experiments have been taking place in Sint-Andries which slowly makes it a showcase neighbourhood in dealing with climate adaptation.

Connecting both the social and the climate resilience aspects through local action on the green corridor also establishes social connections and enables the re-furbishing of infrastructure in Sint Andries.

- (b) the **pathways**: what needs to change, which actions in the pathways require attention and which are 'low hanging fruits' based on our experience.

How to create green corridors to enhance biodiversity, cool spots and improve the quality of the living environment?
There are four challenges to tackle in order to get here. We need:

- a strategy (made by the *ULG*) of where the green corridor should best be located for a maximum added value to the neighbourhood (2017).

The idea to organise a dream day worked well to create a shared concept of the green corridor. Local expertise showed the places with the most potential.

- Showcase: the ULG (in collaboration with an ambassador from the municipality administration) to facilitate the attraction of *innovators* (entrepreneurs, knowledge institutions, municipality,…) to test and showcase their products and services that contribute to climate adaptation vision of the neighbourhood along the "Green corridor" (2017, 2018, …)

The challenge is to find the right persons to take up the role of green corridor coordinators. We realise that the municipality has to take up a more active role within this coordination.

- Participation/co-creation: ULG stimulating *inhabitants* and local *organisations* to host the innovations and to replicate these elsewhere in the neighbourhood (2017, 2018, …)

The challenge is to take away barriers of insurance issues and to determine a responsibility framework (to whom belongs the experiment in front of my door..).

- Living-lab: real life test area where the *municipality* and *knowledge institutions* can test, measure and learn about new approaches.

The willingness to learn within the various departments of the municipality needs to increase. The challenge is to take away the fear of failing and to turn this into a desire to experiment.
The challenge is also to find innovators and to create a business model for the green corridor.

- (c) the **results** from the experiment based on the results framework to consider.

Making Sint-Andries a pleasant neighborhood to live in	-> How to create green corridors to enhance biodiversity, cool spots and improve the quality of the living environment?	Depavement rate along "Groene ader" (baseline study needed) Increase in m2 green along "Groene ader" (baseline study needed) by 2019 Summer temperature in Lange Ridderstraat (before and after greening it)	Show case: 10 innovations by 2019 along the "Groene ader" 5 innovations integrated in municipality interventions by 2019 along the "Groene ader" Living-lab: 3 experiments where scientific measurements are conducted on

Result indicators:

Depavement rate along "Groene ader" (baseline study needed)

- Baseline study is still to be run. So far we have realised a depavement of 30 m^2 (Heldenplein) + 4,5m^2 (living pavement)

Increase in m2 green along "Groene ader" (baseline study needed) by 2019

- Baseline study is still to be run. So far we have realised a greening of 30 m^2 (Heldenplein) + 4,5m^2 (living pavement) + 0,5m^2 (facade rain garden) + 20m^2 (greening around trees)
- Lesson learnt: we did not have an indicator to measure temporary greenification actions: 250m^2. However, temporary actions allow people to experience a difference in their direct living environment, which can create support for structural changes in the future. This was definitely the case for the temporary greenification actions on the main square of Sint-Andries. Inhabitants turned the square into a green and welcoming place that enhances the use of public space.

Summer temperature in Lange Ridderstraat (before and after greening it)

- not measured; this can be measured in 2018 before the structural greening of the street.

Output indicators:

Show case:

10 innovations by 2019 along the "Groene ader"

- In 2017, we've realised 4 innovations: the facade rain garden, the living pavement and the municipality experimenting with greenification techniques in an existing street pattern, experimenting with temporary green..

5 innovations integrated in municipality interventions by 2019 along the "Groene ader"

- In 2017 we have realised 1 innovation: the municipality experimenting with greenification techniques in an existing street pattern.

Living-lab:

3 experiments where scientific measurements are conducted on

- No scientific measurements in 2017.

8. **Conclusion** (relation of IAP with other strategies in the city)

How the Urban Resilience Integrated Action Plan relates to other strategies in the city?

- Waterplan:

The Urban Resilience IAP has an influence on how the "Waterplan" will be prepared in 2018. The city is currently working on a strategic 'water management plan' to work out a strategy and long term vision on the role of water within the urban area. The waterplan provides guidelines on building a sustainable green-blue infrastructure, taking into account the effects of climate change and the expected urbanisation. The plan will be providing a set of measures on the scale of neighbourhoods.
How? After the positive experiences with the neighbourhood oriented co-creation process on water-related topics in Sint-Andries, the waterplan will follow a similar working method. The department in charge of drafting the plan is asked to run one or more co-creation processes in water sensitieve neighbourhoods of Antwerp. Moreover, they are also asked to learn from the results and the methodology of the Sint Andries co-creation experiment.

- Climate adaptation plan:

The current Climate Plan 2015-2020 describes the general guidelines, stipulating how the city and partners work on the topic of climate adaptation. It includes evolving risk assessment, mainstreaming no-regret measures in urban planning and investing in pilot projects and good practices. Yetalso communication, co-creation and participation (from the beginning) is one of the key actions for the period 2015-2020. The city therefore uses mainly 2 existing platforms: the Urban Living Lab Stadslab 2050 and the community advice center EcoHuis. The project of Sint Andries is an important pilot project in terms of co-creation, where lessons will be learned about a multitude of factors like: awareness of the topic, the canvas of adaptation options, their effectiveness on public and private spaces, the communication value of those innovations and the creation of common goals of a climate robust city. These lessons will be implemented in the update of the adaptation strategy in 2019-2020.

- Strategic Urban Development Plan of Antwerp

This plan is currently under review. Despite the fact that the current plan posseses interesting key-concepts on adaptation and green, sustainability and the challenges towards mitigation and adaptation will be very present in the new plan.

We hope that our experiments with multifunctional roofs will be able to inspire and shape that plan, so that it looks at roofs as additional space for city planning.

- Pilot project Garden streets:

At the moment, the city has started a pilot project 'Garden Streets'. The aim is to experiment with different ways of making streets as green as possible, and at the same time increase the capacity of the street to buffer and infiltrate water. The IAP provided valuable experiences to rethink the planning process. New methods regarding the designing process are being explored within this project and citizens will play an active role in both the planning process and in maintaining the street afterwards.

- Building code with high regulation towards adaptation measures

https://www.antwerpen.be/nl/overzicht/vergunningen/detail/bouwcode

Potential funding schemes for realizing the Integrated Action Plan

- Pilot project garden street:

The central district of Antwerp has secured a budget for the realisation of the Lange Riddersstraat as garden street. Funding was also acquired to conduct a co-creation process in the neighborhood with support of an external participation expert.

- Participatory Budgeting:

Since 2014, the district of Antwerp initiates a program to enhance the involvement of citizens in its district. The so-called 'Participatory Budget' allows citizens to adjudge ten percent of the district's budget (1,1 million) to self-chosen projects. Each year, people are encouraged to initiate their own projects. Participatory Budgeting strengthens the citizens position to create bottom-up projects, which makes them less reliant on formal, top-down steered implementations. The district functions as facilitator whereas the project itself is carried out by people. In the coming years, several actions within the IAP can be carried out using the funds of this budget. For 2018, two projects in Sint-Andries were chosen.

- Experimenting with roofs

200.000. EUR has been allocated to experiment with roofs in the center of Antwerp in 2018/2019. The idea is to match innovators (with ideas for roofs) with roof owners, administration and experts in order to jointly create iconic roof projects in the center.

- Experimenting for the Waterplan

A 50.000 euro budget has been allocated to experiment with a set of measurs on the scale of neighbourhoods in relation to water management (buffering and infiltration).

- Project subsidies from Stadsmakers (“City-makers”)

Neighbourhood collectives and NGO’s can apply for a budget up to 10.000.- for projects that enhance the quality of life, social cohesion and inclusion.
There are also small budgets to co-finance simple greening initiatives of neighbours in streets.

- Project funding ‘sustainable city’

This funding scheme allocates 15.000 euro per project (100.000 euro in total per year) to people submitting a project that contributes to a sustainable Antwerp and which is innovative and visible. In March 2018 two projects from Sint-Andries have received funding from this sheme.

Antwerp, 14 March 2018