AmsTErdam BiLbao cItizen drivEn smaRt cities

Deliverable 7.3:
Creative and deliberative interventions in the development of two Positive Energy Districts

WP7, Task 7.2

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Document History

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DoA	Linked to WP2 “City Vision 2050”, this task employs artistic, creative and deliberative methods to help bring about a shared grasp on the future of energy in the city among city residents. Resident artists will be invited within the context of the Lighthouse City demonstrators to create works or interventions that help to visualize the local possibilities and implications of positive energy technologies and the broader energy transition. An accompanying program will allow citizens to express their needs and insights. This will be documented and used to substantiate and enliven the City Vision 2050.	

Date	Version	Author	Comment
01/05/2023	0.1	Julia Jansen, Tessel van Leeuwen, Jon Gonzalez	First draft of deliverable
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16/03/2023	1.0	Julia Jansen	Final version of deliverable
28/04/2023	1.0		Submission of deliverable

Table of Contents

Abbreviations and Acronyms

Acronym	Description
PED	Postive Energy District

0. Executive Summary

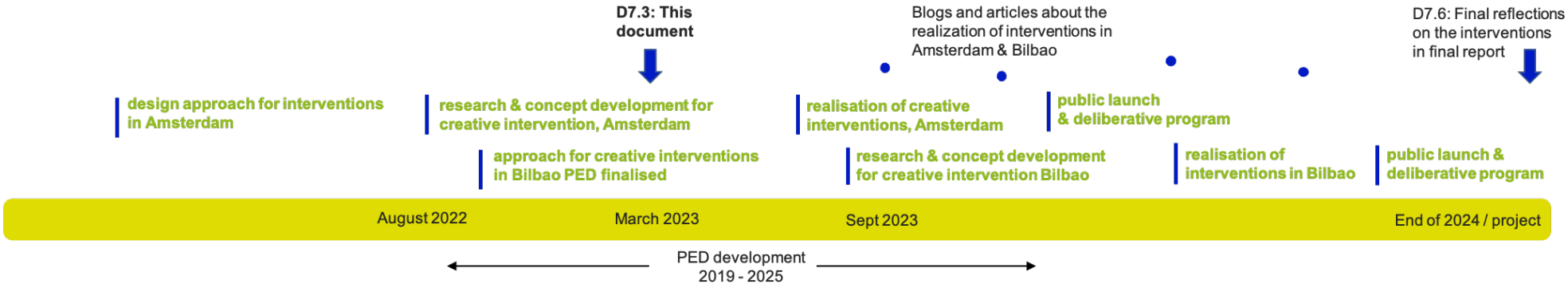
This document reflects the first phases of the processes leading up to creative interventions in Amsterdam and Bilbao. The interventions make use of creative and deliberative methods such as dialogues and are meant to include people's experiences with the energy transition into its development, and especially the development of Positive Energy Districts. The development of these interventions is part of ATELIER, executed under work package 7: citizen and stakeholder engagement.

In the list of deliverables, this deliverable is described not as a report, but as 'other'. The reason is that the eventual results will also consist of the interventions in both cities. Yet, here the reader finds a report. The eventual interventions are expected to be realised in the second half of 2023 and 2024, but with this document we inform about the steps we took to come to its realisation: The goals of the artistic interventions in Amsterdam and Bilbao, the call and selection procedure of the artists or designers, and the plans to enhance reflection and deliberation of the public with the creative interventions.

1. Introduction

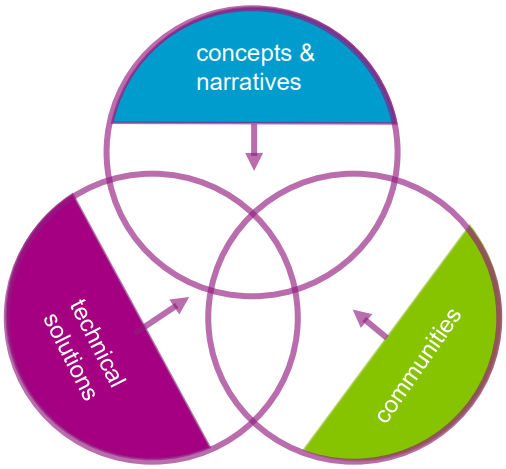
ATELIER is an innovation project that aims to contribute to the energy transition. The project **implements a combination of technical, social, financial, and legal solutions that will deliver Positive Energy Districts (PEDs)** in Amsterdam and Bilbao that together save 1,7kton of CO2 emissions. Discussions and work on the energy transition often focus on its technological aspects, whereas this transition is a **societal transition that changes the way we live, play, work, consume and move**. It concerns how we as humans live, in relation to each other and our environment, and how we keep that liveable on the long term. Think for example of changing our daily schedules and matching it with neighbours in order to prevent peaks in electricity demand and overburdening the electricity grid. It is hard to imagine what the energy transition exactly implies for residents, their households and public space. In spreadsheets, masterplans and dashboards of developers, the experience, concerns and needs of citizens barely have a place. Nonetheless, **citizens' experience is a crucial part of this transition**.

In and around the PED areas of ATELIER in Amsterdam and Bilbao, **creative and deliberative interventions will take place to help bring about a shared grasp on the future of energy in the city among city residents**. Artists and designers will be invited within the context of the demonstrator areas to create works or interventions that help to visualise the possibilities and implications of positive energy technologies and the broader energy transition. This contributes to making PED development and the energy transition more understandable and easier to discuss. A program accompanying the creative interventions will allow citizens to express their needs or insights. The process will be documented according to the timeline below. This document reports on the process leading up to the interventions.


D7.3: This document
Blogs and articles about the realization of interventions in Amsterdam & Bilbao
D7.6: Final reflections on the interventions in final report
design approach for interventions in Amsterdam
research & concept development for creative intervention, Amsterdam
realisation of creative interventions, Amsterdam
public launch & deliberative program
approach for creative interventions in Bilbao PED finalised
research & concept development for creative intervention Bilbao
realisation of interventions in Bilbao
public launch & deliberative program
August 2022
March 2023
Sept 2023
End of 2024 / project
PED development 2019 - 2025

1. Purpose of the creative interventions

Artistic interventions can bring about new perspectives into ongoing discussions and development processes. Artists and designers can observe a question or topic with a fresh pair of eyes, without any interest in a specific outcome. Moreover, they often pay attention to a subjective perspective, one of the *experience* of various communities. A central challenge of citizen and stakeholder engagement in innovation projects such as ATELIER is to bring closer towards each other three dimensions depicted in the figure below. The purple circle symbolizes the technical solutions (technological, legal, operational, design) and the experts working on it. The green circle symbolizes the communities impacted by the transition and taking part in it. The blue circle symbolizes the concepts and narratives we have to talk about the changes happening and proposed. In the middle we find the space of a democratic, community driven energy transition. This is especially relevant in the development of a positive energy district, due to the collaborative action that is needed from many different stakeholders; PEDs require the integration of systems for energy production, consumption and management under one governance framework with the planning of living, working and transport in the area. Therefore, a diverse set of actors – from different disciplines and varying professional or experiential backgrounds – is engaged in development of PEDs.



The challenge we face is to bring activities within the three circles closer to each other, to bridge several technical communities with local communities and find a shared language to deliberate. New experiences and imaginations of ongoing and future changes related to the energy transition in a neighbourhood, can support finding a shared language and foster dialogue.

An example that illustrates how design can bridge technology and communities through finding shared narratives is the project 'Zonnestof' (Solarfabric) of Bureau Ruimtekoers from 2020.[1] This design bureau developed a series of weaving workshops, introducing solar panel technology to residents by weaving this with them into fabrics. The workshops matched the interests of residents in two neighbourhoods where residents had been difficult to reach for civil servants in dialogues about the energy transition. Through the workshops, participants were not only familiarised with solar technologies by making these technologies tactile and 'soft', but also offered an opportunity to explore their dreams and show the role solar energy can play in their daily lives. The use of textile crafts and design provided a bridge to start a conversation about sustainable energy technologies with residents that usually would not visit more traditional participation evenings of the municipality about the energy transition and sustainability.

[1] See https://bureauruimtekoers.nl/projecten/zonnestof-2020/.

2. The process

Creative and deliberative interventions are developed in the context of the ATELIER positive energy districts in Amsterdam and Bilbao in order to bring about a shared grasp on the future of energy in the city among both residents and professionals. In Amsterdam, in the year of 2023, interventions are realized or executed in public space. In Bilbao, the selection of artists and interventions takes place after the summer of 2023, as a collaboration with university students is foreseen. The following chapters discuss the development process leading up to the interventions in Amsterdam, existing of the following elements:

- Goal of intervention
- Selection of designer
- Research process
- Concept development
- Realisation of the concepts
- Accompanying deliberative program

3. Amsterdam plan

During a walk through Buiksloterham, the area where the Amsterdam Positive Energy District (PED) is located, we hear the sounds of construction sites. Cranes surround the residents that have already moved into this area in development. In the past decade, many workshops and small-scale industry in this area have been replaced by housing. Both the municipality, developers and residents in Buiksloterham have set ambitious goals related to circularity and sustainability. The construction of the building complexes Republica and Poppies is also coloured by these ambitions, as they will make up a PED. However, it is hard to imagine what this exactly means for residents, their houses and public space.

By developing a creative intervention, we aim to bring a new perspective into ongoing discussions in the neighbourhood and aim to engage local communities in the innovations that ATELIER is expecting to implement. A central question for the concept development was: How can we achieve a better understanding amongst residents as well as professionals on – the technological changes of – the energy

transition and its implications? How can we discuss the ways in which the changes impact on our living environment?

Waag has obtained an understanding of ongoing discussions around the PED area and of activities of residents related to sustainable development in this part of the city, through:

- a stakeholder analysis;[2]
- observations in the PED area;
- conversations with residents, neighbourhood organisations and local entrepreneurs;
- the organisation - and visiting - of events in the neighbourhood around sustainability and energy.

Taking into account the ongoing activities of residents and other stakeholders in the PED area, the central goal of the creative intervention is to contribute to:

- Stimulating imagination in regard to the impact of the energy transition on daily life
- Open discussion on the changes in the neighbourhood related to energy in the area
- Make it better understandable for a broad target group what the energy transition entails
- Enable local and professional communities to express and share wishes and concerns about the future of energy.

3.1 Selection of designer

The selection of a designer took place in three phases.

Designing the selection process

Leading up to the selection of a designer, various conversations were held with experts in the field of artistic interventions – in public space – in Amsterdam. Conversations took place with a.o. the 'Stadscuratorium', a body providing the Amsterdam's municipal executive with solicited and unsolicited advice on art in public space, local art and exhibition organisations such as Stichting NDSM and FramerFramed, and local municipal bodies responsible for policy around art and culture in Amsterdam Noord. These conversations provided useful advice for setting up the selection process. We opted for a closed call with a clear briefing, rather than an open call which would have required a larger budget. The advice conversations moreover resulted in some recommendations for artists from the area.

Defining the briefing & selection process

Besides laying out the context of the interventions, ATELIER and Buiksloterham, the briefing made explicit abovementioned goals of the intervention and sketched out the conditions. Such as

- offering possibility of interaction with audience;
- being accessible for a large audience;
- offering possibilities for documenting the intervention;
- and allowing for realisation in a neighbourhood in development.

[2] The stakeholder analysis has been documented in an earlier deliverable: D7.1.

The briefing aimed at providing conditions for a design intervention that explicitly connects the technological changes in the area to the social environment. The choice for form or concept of the intervention was deliberately left open, because this is where the power of the artists lies. Waag views the collaboration with an artist or designer as research process to get to solutions that can only be developed by designing. The following paragraphs present the first part of this research process, the concept developing phase.

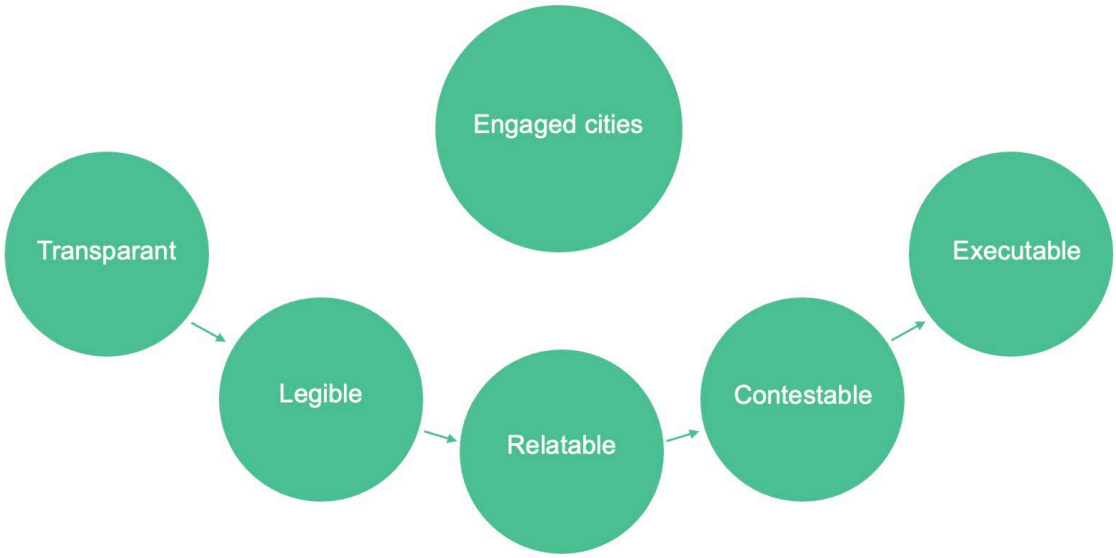
Selecting the designer

We made a preselection of artists and designers based on conversations with experts in the field of artistic interventions, the context of ATELIER and Buiksloterham and the goals we wanted to reach. We finally got in touch with three artists / designers, who were willing to reply to the briefing, through:

- a search on (social) design bureaus in the Netherlands with a focus on work in societal transitions;
- a series of workshops on designing for meaningful interactions in urban spaces;
- and an event by the learning community 'Urban Interaction Design' of the Amsterdam University of Applied Sciences of speculative thinkers, urban planners and engaged citizens alike discussing how speculative design can be used to understand citizen perspectives and help make more informed urban planning decisions for the technologized city of the future.

3.2 Introduction to designer: Bits of Space

After a round of interviews, we selected a designer by reviewing how their ideas aligned with the goals and questions we formulated, their personal affiliation with the topic of the energy transition and their knowledge of the PED area in Amsterdam Noord. The search resulted in a collaboration for research and concept development with Bits of Space, a design bureau of designer and architect Tessa Steenkamp, resident of Amsterdam North.



Relatable cities model of Bits of Space

Bits of Space realises design interventions and experiments that make complex systems transparent, legible, relatable or executional for users. This is depicted in the model below. Only when people can see and use systems, they can experience their value and perhaps improve them. By engaging people through design around digitalisation processes or spatial development, she fosters public dialogue about societal transitions.

See more about her projects: https://www.tessasteenkamp.com/about.

3.3 Research process and findings

Over the months of July, August and September in 2022, Bits of Space and Waag Futurelab conducted research in the area of Buiksloterham on energy installations that are introduced because of the energy transition in this neighbourhood, which is developed free from natural gas supply. Interviews were conducted about the ongoing changes with (future) residents of Republica, residents of a nearby energy community, a resident in the neighbourhood that built various small scale energy installations, social housing corporations, electrical engineers, installers and partners of ATELIER.

The main question during the research process was *"what technology will we encounter due to the energy transition, how does it work and how do we live (comfortably) with it*"?

The findings of this research process were input for the concept development phase that followed.

Methods

The research phase was a collaboration between Waag Futurelab and Bits of Space. Waag provided insights from the earlier research in the area. The research for the creative intervention was conducted over a period of two months and consisted of:

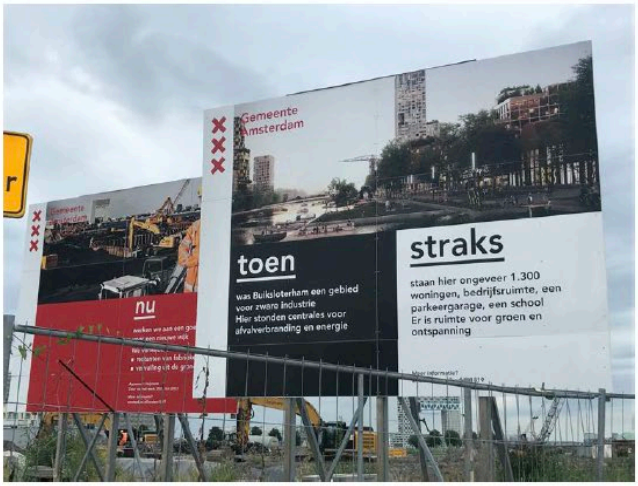
- observations in public space, documented in pictures and field notes;
- interviews and conversations with stakeholders: residents, electrical engineers, building developer, municipality, installation parties;
- visits of various buildings in Buiksloterham with different energy installations.

The following images illustrate some of the intermediate findings and depict locations that were visited during the research phase.

1 Communication on solutions beforehand, hidden innovations after realisation

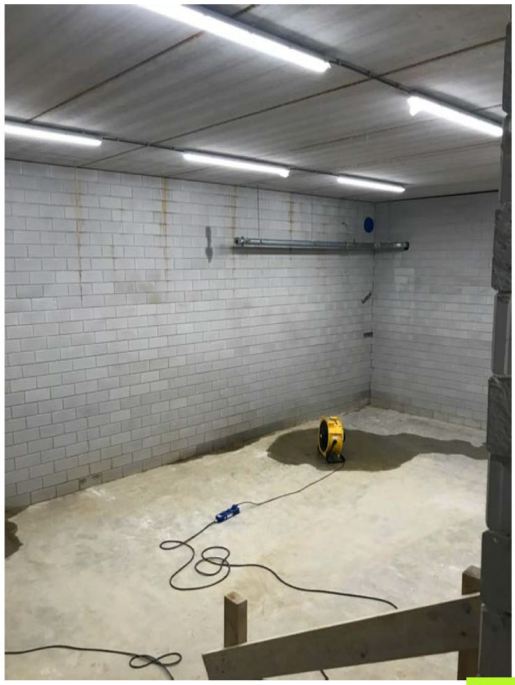
During construction, communication on the changes and installations is present. Below depicted are information signs on construction sites and a temporary building of the municipality where visitors can get information about the area.

When building development is finished, most of the energy installations are placed behind closed doors (below, left) and in basements (below, right, the basement where the battery of Republica will be placed).



Papaverweg

Distelweg



Republica

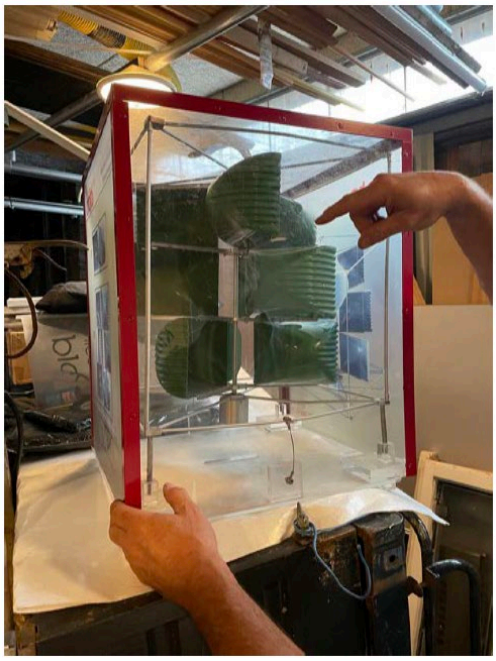
Grasweg

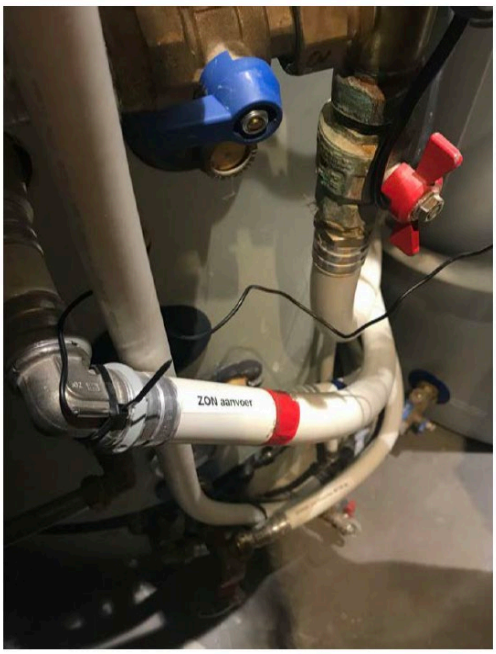
De Goudvink

Below this uninteresting-looking ‘well cover’ is the borehole for a heat-cold installation of 180 meters deep (higher than the highest building in Amsterdam)

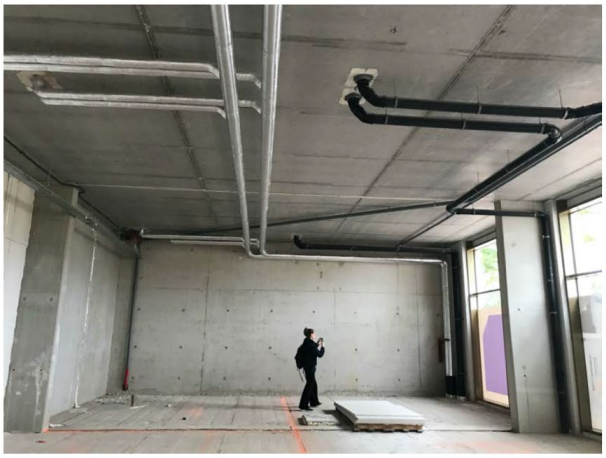
2 The energy transition entails new shapes, skills and craftsmanship

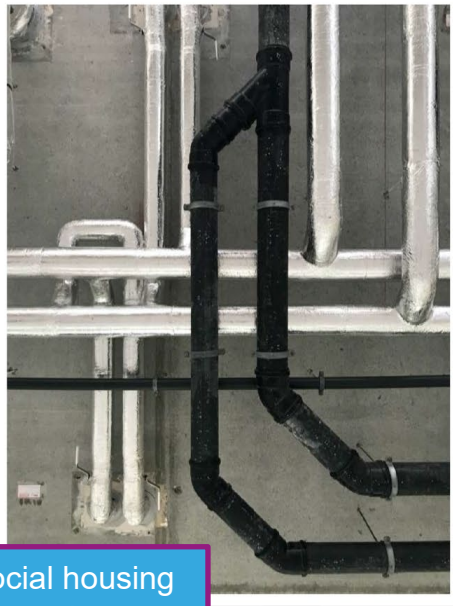
The energy transition brings different energy installations in the buildings throughout the Buiksloterham area. These new installations entail new shapes in the city, but moreover they require new skills and craftsmanship. Pictures on this page depict step by step developed self-built energy installations and energy designs of a neighbourhood resident.





This installation for heat cold storage supplies five residential buildings with heat. Cold tubes are well insulated in black foam, the hot pipes in silver. Every little bold and nut is carefully wrapped.





This is where city district heating enters a building of Ymere, a social housing corporation. The heat is coming from waste incineration in Amsterdam.

 # 3 The energy infrastructure ties everyone together, but is not visible or tangible

In conversations and news on Buiksloterham it is repeated over and over: the energy system is showing cracks and reached its limits. Reported in a local newspaper (Het Parool) on the right. Congestion in the area prevents big consumers to get a grid connection – including Republica. However, the built environment does not show any signs of this problem, nor about the collectiveness of the problem. The local electrical substation, depicted below, on which the whole neighbourhood depends for electricity, does not visually show any 'cracks'. Also, it is not legible as 'communal'.

Stroomnet Noord loopt tegen grens aan: geen plek voor nieuwe grootverbruikers

Opnieuw blijken stukken van het stroomnet in Amsterdam overvol. Dit keer gaat het om een groot deel van Amsterdam-Noord. Daar kunnen geen nieuwe grootverbruikers van elektriciteit worden aangesloten.

Bart van Zoelen 28 oktober 2021, 09:00

BEELD ANP/KOEN VAN WEEL

Newspaper heading Amsterdam newspaper, 28th October 2021. Translation: "**Electricity grid in North is reaching its limits: no room for new large-scale consumers.** Once again, parts of the power grid in Amsterdam appear to be overcrowded. This time it concerns a large part of Amsterdam North. No new large-scale consumers of electricity can be connected there."
Image: ANP/Koen van Weel

3.4 Concept development

A central question for the concept development phase: How can we achieve a better understanding amongst residents as well as professionals on the – technological changes of – the energy transition and its implications? How can we discuss the ways in which changes caused by ATELIER impact on the living environment?

What follows is a description and sketches of three out of six concepts for design interventions in the area of Buiksloterham, Amsterdam Noord. These were the result of the research and concept development phases

#1 'Insights'

The Insights are objects in public space that give local residents and passers-by literally more insight into the energy transition that is underway. The Insights are recognizable objects, scattered throughout Buiksloterham, that show how energy is generated, stored or transported behind the walls or underground.

Images by Bits of Space

The objects invite to investigate. Think of a brightly coloured viewing tube or binoculars protruding from the wall, a 3D drawing in the middle of the sidewalk or an engraved plexiglass plate for a construction site. Videos and photos let you look through walls or explain how deep the pipes lie and what they carry. Or they show the size of the battery that supplies five buildings with electricity.

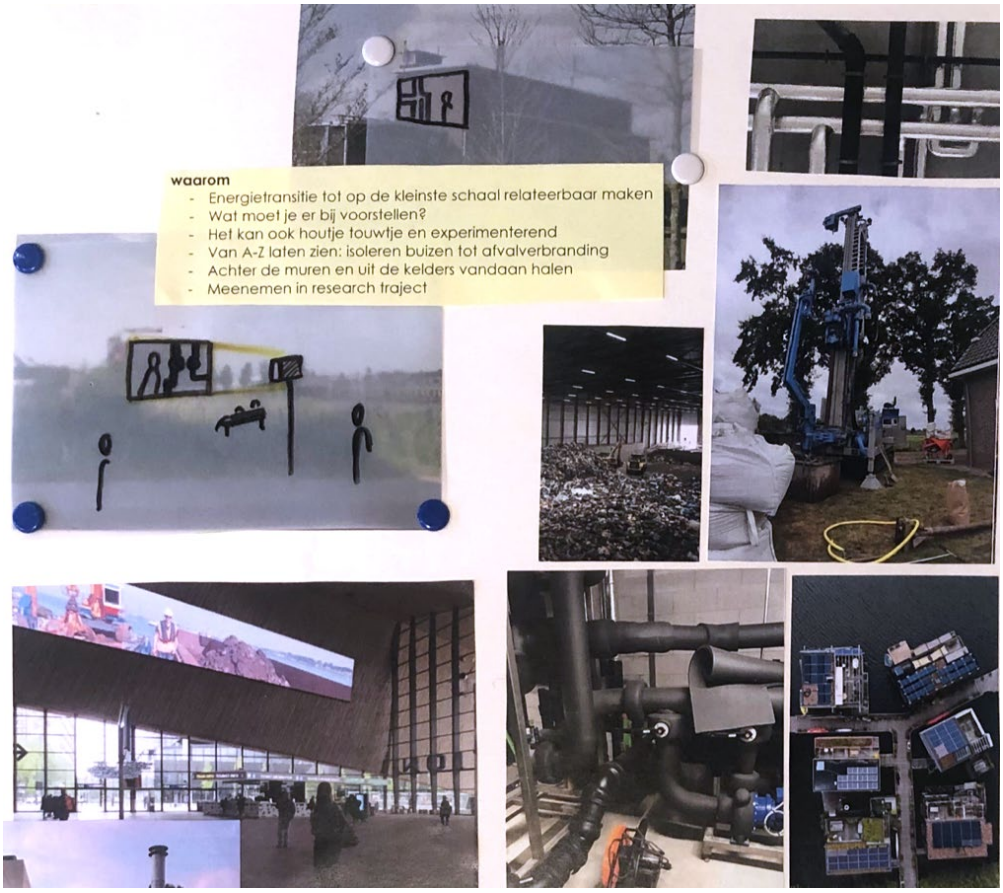
The objects are recognizable as part of a collection. Together they make up a tour through the neighbourhood.

#2 Transition Craftsmanship

In order to make visible the invisible energy installations as well as their construction process, a silent movie will poetically depict the skill and craftsmanship that goes into renewable energy. Think of the drilling of a deep bore hole, installation of solar panels or insulating pipes with heat and cold. The images of various installations under construction will make the transition more

relatable: what does the energy transition entail in practice? The movie shows how this transition takes place step by step, pipe by pipe and incrementally.

The movie will be projected in public space on a large screen or on the walls of a large building in Buiksloterham.

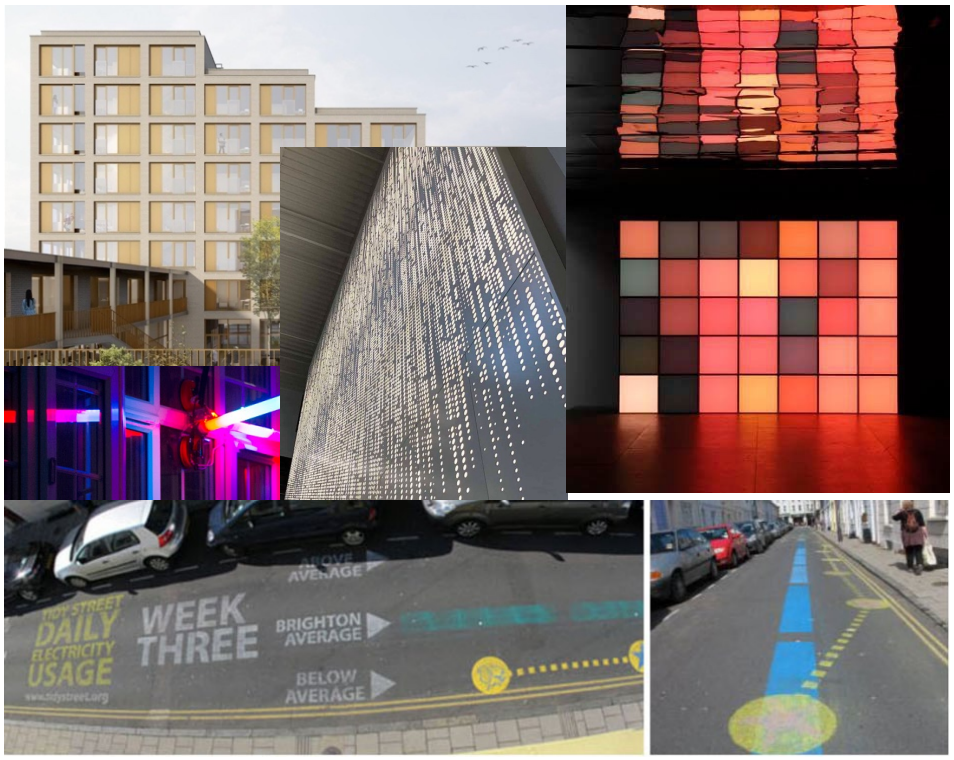


Moodboard for 'Transition Craftsmanship'

Depth of intervention by relatable cities model

#3 Electricity Equalizer

These light objects make visible in an ambient, non-quantitative manner, how much energy is used, produced or stored. This can be done either on the level of individual households or on a collective level such as buildings or a street. The light objects provide an insight into the energy consumption and make it possible for neighbours to compare with each other or for a neighbourhood to see whether problems (congestion) are lurking for the neighbourhood.



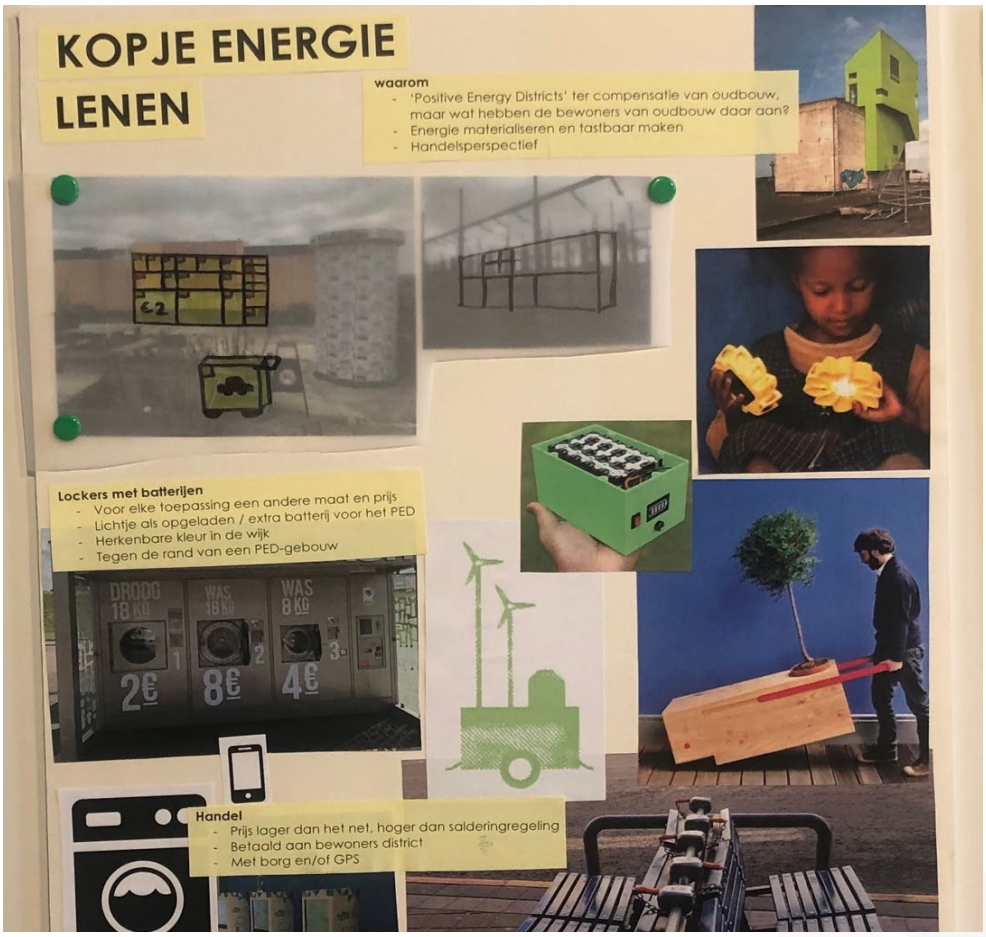
Moodboard 'Electricity Equalizer'

The light objects make visible the current talk of the town: energy. Moreover, the objects provide information for residents that can feed into their actions. Usually, these insights are only reserved for those who own their houses or energy production installations. This concept has to be further developed in cocreation with residents to address a pressing question: in what ways are residents willing to share insight about energy usage with each other, how and for what goals?

Depth of intervention by relatable cities model

#4 Borrowing a cup of energy

One of the questions that submerged during the research phase was what the function of 'positive' energy districts is, and if it is to compensate for the capacity of other areas to provide for their own energy production, how can residents of other parts in the city – with older constructions – actually benefit from the 'positivity' of this district?



A wall with batteries, in varying sizes and shapes, could be placed in the PED area. The batteries charge when surplus energy is produced. Residents from neighbouring areas could some over and get a battery for various uses: a very big one for charging the car, a small one for using the water cooker or charging a phone. Should people pay for using the batteries? And if so, how much?

The battery installation puts central a discussion of justice and distribution, both of energy itself and the financial benefits of the energy transition.

3.5 Realisation of the concepts

In order to make a selection for realisation of the concepts, the three concepts that seem to be able to realise within a realistic budget, were presented to stakeholders in the ATELIER consortium, local government bodies and potential funders. The concept 'insights' was most positively received by most parties. Not only because of the accessibility for an audience to interact with the intervention, but also because of the feasibility to realise this concept. The movie 'transition craftsmanship' received positive responses about centring the craftsmanship of the transition and the focus on the labour needed to realise the energy transition, but stakeholders did wonder whether the form of this concept would convey the message to a wide audience. The 'electricity equalizer' was met with most mixed responses. This concept surely launched interesting discussions, but stakeholders also feared that sharing energy information about households would be too sensitive for many residents. In order to realise this last concept, there would have to be enough time and funding for a cocreation process with the residents taking part in the intervention. The concept 'borrowing a cup of energy' was not further presented due to both technical and financial barriers foreseen when realising this concept. However, it is a good conversation starter on the justice of PED development and the energy transition more broadly.

During the first months of 2023, ATELIER partners are looking for suitable locations, enthusiastic residents and additional funding and support in order to realise one or more of these concepts. The local municipal department for area development has showed interest in realising 'insights'. Bringing this concept further will be the focus for the first half of 2023.

Further cooperation is sought with various project developers in the area, social housing corporations, neighbourhood organisations and education institutes. This cooperation should not only help realise the concepts, but also contribute to engage the local population around the interventions and foster discussion on the energy transition in the neighbourhood.

3.6 Accompanying deliberative program

The creative interventions developed by Bits of Space aim to bring about conversations on energy production and consumption as well as the physical impact of the energy transition in the neighbourhood Buiksloterham. The concepts make the technological systems introduced by projects such as ATELIER transparent, legible and relatable. In order to increase the impact of the concepts, Waag Futurelab organises a public program around the interventions that will be realised.

The public programs are targeted both at local residents and residents of neighbouring areas as well as professionals from governments and private sector from within and outside Amsterdam. Both The Insights and the movie Transition Craftsmanship will be accompanied by low threshold engagement activities such as tours for and with the neighbourhood, tailored to the different audiences and facilitated by experts on the installations. Where possible, the activities will be organised in collaboration with existing events or local partners. The activities will create a space for learning and dialogue. For example, to discuss both what the innovations in the neighbourhood imply in terms of labour, material, cost and skill, but also in terms of a changing

environment and social relations. Do we share energy or renewable energy sources with neighbours? How is this experienced?
Next to activities targeted at the local population, the interventions will be accompanied by a public program that enables professionals working in the areas of building development, energy and sustainability to learn about the innovations implemented in the PED area and around. The municipality has appointed this area of the city as testbed for sustainable and circular innovations. The public program around the interventions contribute to a dialogue about the innovations for the energy transition with professionals from governments and other sectors in and outside of Amsterdam.

A public launching or closing evening will be organised to bring together different audiences of the creative interventions – both residents and professionals – and make room for in a conversation about the impact of the energy transition on the living environment, taking the creative interventions as starting point.

3.7 Concluding remarks from Amsterdam

The process

With the expertise of other organisations that work with artistic interventions, our designed selection process of an artist / designer and the research process of Bits of Space, we managed to develop six concepts – of which three have been presented in this document – that can contribute to our defined goals. A central question for the concept development was: How can we achieve a better understanding amongst residents as well as professionals on the – technological changes of – the energy transition and its implications? How can we discuss the ways in which the changes impact on our living environment?

We assume that realising one of these concepts in Buiksloterham will stimulate the imagination about the impact of the energy transition on daily life, allows for dialogue about the changes in the neighbourhood and makes it better understandable for a professional and lay audience what the innovations entail. This is something that will be tested in the following realisation phase.

Intermediary outcomes

The research and concept development so far have resulted in valuable insights and cooperation. As far as we have been able to test the different concepts within the Waag team, with stakeholders like the municipality and visitors of other Waag events, the concepts are received positively and are contributing to our ambitions. The concepts are conversation starters about the changes related to energy in Buiksloterham and they are helping to make these innovations more visible and understandable. However, the next phase will be crucial for reaching the desired outcomes, since we will then realise the intervention and residents and other audiences will get the chance to interact with it. This will define our impact.

Bringing an artist / designer to this complex urban challenge helped making important questions and explorations more open, tangible and understandable. This goes for the developments around the energy transition in Buiksloterham, but also for Waag's overall role in ATELIER. The research process leading up to concept development – including conversations and observations – has thus been a valuable outcome by itself for Waag as partner in Amsterdam pilot.

For the PED development, it is a question whether creative interventions can play a role in building a bridge between the different technical and specialistic experts together with the other communities that play a role in the PED development. One of the six concepts brought up a question about the 'positiveness' of the PEDs. An installation with batteries, filled when more energy is produced than consumed, could be a fysicalisation of the energy surplus that Republica is expected to be producing. The concept 'borrowing a cup of energy' (pg. 22) moreover posed the question of sharing energy (and capital) between residents in different economic situations and different housing complexes. Over the coming months, we will experience what the realisation of one of the concepts will bring to the stakeholders developing the PED and those finally using the buildings and facilities.

So far, the fresh pair of eyes brought a fresh look on developments in the PED and the broader area. The design approach brought up questions and insights about PED development and the energy transition. Most of the **innovations** are hidden away, thereby also **literally being put at a distance from our daily interaction** with these technologies that we are so dependent on for electricity and warmth. Also, Bits of Space brought forward that although the energy transition implies a collective challenge to make best use of the existing infrastructure, **the urgency and collectiveness of this challenge is not visible** in public space or around the energy installations. Anyone would just pass these installations on the street without noticing. Moreover, the critical reflection of the designer on the 'positive' in positive energy district, illuminates the **questions of justice related to the energy transition and PED development**. Lastly, what the research and concept development process brought to our attention, is the **incrementality of the energy transition**. Builders, installers, governments, residents and researchers… all are looking for solutions that might contribute to CO-2-free energy supply and energy efficiency. This is a process of exploring, tinkering and tailoring, often in need of intermediate adjustments. This is recognisable in all dimensions of the transition and PED development more specifically: legal, political, financial, social and technical. This might energize at some times but frustrate at other times. We hope that discussing the concepts and realising the interventions will provide an opportunity for many stakeholders to share experiences like this.

4. Goals of the interventions in Bilbao

At first glance, the island of Zorrozaurre, the area where the Positive Energy District (PED) demonstrator is located in Bilbao, is a post-industrial zone in disuse. In fact, it is an area with a great industrial past, that started a huge decline after the industrial crisis. Today only approximately 500 residents live and there are a series of dismantled industrial buildings as well as a limited range of services. However, when exploring the different corners of the island, one quickly realises the cultural enrichment that exists, and the different cultural activities that have been settled over the last few years; theatre companies, design centres, universities. The local ecosystem of the island is developed in more detail in Deliverable 7.1.

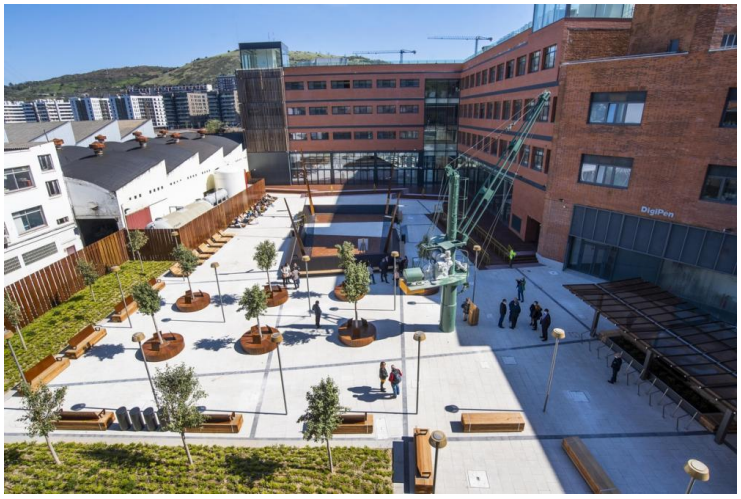
Construction site at Zorrozaurre

Zorrozaurre is an essential site in the urban regeneration of the city in the following years. The cultural dimension will also grow exponentially with the constructive development of the island. The intention is to recover a deteriorated area and convert it into an economic, social and technological driver for the city, with accessible and sustainable residential housing, offices, technology parks, cultural facilities, social facilities... It is important to highlight that a large part of the existing buildings (private and public) have also been recently

refurbished, maintaining some of their most representative signs of identity.

Some of the new construction work has already begun. In fact, the first residential buildings are already under construction, together with the execution of the urbanisation project and the geothermal network, which aims to provide thermal energy to the whole island. Building permits and concessions have accelerated significantly in recent months in response to the demand from private developers. A clear example of the success of these developments is the execution of the boreholes and the urbanisation of the Beta square in the Central Zone of the demonstrator.

In short, Zorrozaurre is presented as a small urban laboratory in which innovative and sustainable technological, social and energy solutions will be integrated. The learning and conclusions gained from the process are fundamental for possible replication in other areas of the city. Obviously, the implementation of these interventions must be clearly and transparently presented to the residents, so that they are not only aware but also an active part of the change. The current inhabitants are already curious about the growth of the island, the construction work and the arrival of new residents.



Precisely in this context, the artistic intervention aims to serve as an instruction for the citizen around key concepts in the project such as energy transition, sustainability and at the same time it will be a suggestive work that promotes interaction and feedback with the visitor.

Beta Square Urbanisation

The main objectives of the intervention are:

- Expose and openly share the challenges of energy transition and climate change.
- Encourage reflection on the impact of the energy transition on daily life and promote a change on behavioural habits.- Show and explain the renewable and sustainable initiatives that will be integrated on the island.- Inform about the PED concept and the relevance of integrating local Renewable Energy Sources into the urban planning.

4.1 Selection of artist

The selection of the artist has been an arduous and costly because several options have been considered. There are also some particular conditions in the recruitment that hamper the agility of the process. In this case, the city of Amsterdam is in charge of managing the budget associated for this purpose and, therefore, the contracting process must be established according to its regulations and procedures. It has been challenging to manage that condition from the Bilbao City Council, since it acts only as an intermediary in the search for an artist.

iED Kunsthal

At the beginning there was a diffuse overview of the typology of the intervention, the possible location and the stakeholders to be involved. During the recruitment process, several alternatives below described have been evaluated and a final decision has been reached.

A) A collaboration with T-Factor, another European project developed on the island of Zorrozaurre. ATELIER and T-Factor share several agents in common that would allow them to join forces and work in various synergies. T-Factor project aims to test prototypes, tools and governance models that serve to improve the quality of life and achieve an economically, socially and environmentally sustainable urban environment. As part of these functions, several pilot projects are to be carried out, one of which will focus on climate change mitigation and resilience. Initially, it was thought that the initiatives of both projects could converge but finally it was rejected. T-factor are to plant an urban garden as a symbol of the fight against climate change and from ATELIER, that option was discarded since it was not entirely representative of the technological and innovative assets of the project.

B) A contracting of a local artist related to sustainability and energy transition topic. To this end, the intention was to manage the process through BilbaoARTE utility. They are an artistic production centre attached to the City Council with an extensive experience working with local designers and artists.

C) A collaboration with an entity established onsite the island. This idea envisages the cooperation with a university centre that works in Zorrozaurre. After various conversations with the different universities (University of Mondragon, Digipen, iED Kunsthal) and after a comprehensive review of the degrees offered, Kunsthal was elected as the suitable option.

After evaluating the three alter-natives, and the pros and drawbacks of each of them, it was determined that C) was the most convenient for several reasons. The main argument is that iED Kunsthal already lives on the island itself, students and faculty have a daily interaction with the residents and they also have first-hand knowledge of the island's urban developments.

Moreover, the students and teachers of iED Kunsthal have already been involved in similar prototyping design projects as well as collaborating in some projects about urbanism development of the island.

Considering the abovementioned, the municipality really believes that it is an ideal framework of coworking iED Kunsthal. Actually, the fact of being settled in Zorrozaurre brings an added value to the intervention. The final format in which the work will be conducted is still to be

decided since diverse options are considered; a competition among students, a creation of a working group with students and teachers, the integration of the task in the academic formation.

4.2 Research process

The representatives of iED Kunsthal are fully aware of the current state of the island and its development. The university is located in a municipal building known as "Papelera" which was refurbished in 2019.

The building is an essential part of the PED of Bilbao and several actions integrated in the Grant Agreement will be undertaken there. On the one hand, the deployment of smart metering on the electrical circuits to monitor all consumptions and facilitate the implementation of energy efficiency measures. On the other hand, the possibility of connecting the building to a series of geothermal boreholes for hot water, heating and cooling is being evaluated. Therefore, the institution is fully committed to the project, the challenge of energy transition and the sustainable development of the island.

5. Conclusion and outlook

The aim of this document was to provide an overview of the processes leading up to artistic interventions in Amsterdam and Bilbao. The use of artistic interventions in the development of Positive Energy Districts is expected to open up imagination about the energy transition and facilitate dialogue about the changes taking place in both cities. Moreover, as research method, it brings up pressing questions related to PED development for the developing parties to address in evaluation.

Solar panels on roofs in Buiksloterham, Amsterdam

The processes in both cities are expected to support finding a shared language between both those professionally interested and those people that are oftentimes ‘confronted’ with changes due to the energy transition. Think for example of new infrastructure, new ways of billing for energy or new ways of heating one’s home. As mentioned

before, the interventions contribute to finding a shared language about the energy transition and make it easier to discuss its implications on many dimensions of urban development. Finding a **shared language and narratives** to talk about the changes that are implemented, is a first step towards making decisions together on how we actually want the energy transition to take place and change our cities. This is essential for democratic decision-making on our future.

What have the processes resulted in so far?

The research and concept development in lighthouse city Amsterdam has brought forth conversations with different stakeholders in Buiksloterham. For example, with project developers, a housing corporation, residents, self-builders and installation parties. Inviting a designer, from outside of the ATELIER consortium provided a welcome fresh pair of eyes on the questions at hand. Intermediary outcomes of the research and concept development are summarised at page 24, 25.

In lighthouse city Bilbao, a collaboration is being set up with the design centre IED Kunsthal, located at Zorrozaurre, the island where the PED is being developed. This collaboration with already existing entities on the island, has added value to the project.

Follow the processes, physically and online

The first part of the research and concept development phases have been completed in Amsterdam. Over the coming months, Bits of Space and Waag will work together with stakeholders in the area to further design and realise the intervention. Depending on additional funding, the interventions will be realised in the second half of this year in the district Buiksloterham in Amsterdam North. The process will be documented and published about in online articles over the course of the coming year. Afterwards, the interventions will be visible in public space, so please come and have a look.

IED Kunsthal in Bilbao

Bilbao will focus on setting up the collaboration with students from IED Kunsthal Bilbao. It is expected that the institute can include a design call in their planning of next academic year 2023 – 2024. The concepts will be developed for the first months of 2024, which would mean implementation of the concepts could take place in the summer of 2024.

Follow the website of ATELIER - https://smartcity-atelier.eu - in order to keep up to date.